Socially Inclusive Electricity Tariffs in South Asia to Reduce Energy Poverty –

Subsidy Structuring, Successes and Failures

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https://www.adb.org/publications/tariff-appraisal-study
Study Objective

To examine socially inclusive electricity tariffs in six countries of South Asia

Bangladesh
Bhutan
India
Maldives
Nepal
Sri Lanka
Contents

• Electricity regulatory status, laws, and practice
• Customer classification and tariffs
• Baseline tariffs, subsidies, and features of social inclusion
• Challenges to implement preferential tariffs
• Efficient electricity use and implications for tariff setting
• Policy and regulatory environment for renewable energy development
• Application of tariffs and charges beyond lifeline tariffs
• Lessons for developing member countries on socially inclusive tariffs
Review of Electricity Regulatory Status, Law, and Practice

• **General:** All 6 countries have a regulatory commission or an equivalent, and have a process that offers at least a limited degree of transparency in tariff determination. None have implemented truly cost-reflective tariffs.

• Many countries have retained some traditional principles and practices
  - Providing gross subsidies to electricity industry
  - Setting tariffs to facilitate cross-subsidies across customer groups
  - Providing relief to low-income customers
  - Pricing electricity based on the purpose of use as against the voltage of supply

• Most countries have unbundled the vertically integrated utilities to separate corporate entities.

• Electricity utilities are increasingly required to be technically and financially independent.
Review of Customer Classification and Tariffs

• Customer categories such as households, agriculture, industry, commercial, and public services such as street lighting and water pumps were considered.

• Six states in India were included in the study.
  • Assam, Gujarat, Kerala, Madhya Pradesh, Maharashtra, and Tamil Nadu

• Electricity tariffs to household, commercial, and industrial customers were compared.

• Household customers were divided based on monthly electricity consumption; commercial – contract demand; and industrial – maximum demand
# Review of Tariffs

As of October 2015

<table>
<thead>
<tr>
<th>Customer Class</th>
<th>Electricity Usage (kWh/mth)</th>
<th>Maximum Demand (kW)</th>
<th>Bangladesh</th>
<th>Bhutan</th>
<th>Assam, India</th>
<th>Gujarat, India</th>
<th>Kerala, India</th>
<th>Madhya Pradesh, India</th>
<th>Maharashtra, India</th>
<th>Tamil Nadu, India</th>
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<th>Nepal</th>
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<td>30.77</td>
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<td>5.66</td>
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<td>8.84</td>
<td>17.45</td>
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<td>30.77</td>
<td>11.00</td>
<td>12.09</td>
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<tr>
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<td>20.43</td>
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<td>10.05</td>
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<td>7.15</td>
<td>10.30</td>
<td>11.13</td>
<td>13.61</td>
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<td>7.70</td>
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<td>7.97</td>
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<td>9.77</td>
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<tr>
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<td>7.67</td>
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<td>11.21</td>
<td>33.87</td>
<td>7.10</td>
<td>8.46</td>
<td>9.72</td>
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</tbody>
</table>
All countries provide “life-line” tariffs to households

Comparison of Average Electricity Price for Household Customers

As of August 2019
Commercial customers pay “exorbitant” rates in some countries

Comparison of Average Electricity Price for Commercial Customers

As of August 2019
Industrial Tariffs are Moderate

Comparison of Average Electricity Price for Industrial Customers

As of August 2019
Baseline Tariffs, Subsidies, and Features of Social Inclusion

Electricity Subsidies by Category as of October 2015

(%)

<table>
<thead>
<tr>
<th>Category</th>
<th>Bhutan</th>
<th>Assam, India</th>
<th>Gujarat, India</th>
<th>Kerala, India</th>
<th>Madhya Pradesh, India</th>
<th>Maharashtra, India</th>
<th>Tamil Nadu, India</th>
<th>Nepal</th>
<th>Sri Lanka</th>
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<tbody>
<tr>
<td>Domestic-small</td>
<td>100</td>
<td>46</td>
<td>64</td>
<td>72</td>
<td>41</td>
<td>77</td>
<td>79</td>
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<td>-41</td>
<td>-38</td>
<td>-90</td>
<td>-29</td>
<td>-2</td>
<td>-11</td>
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<tr>
<td>Industrial-small</td>
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<td>-10</td>
<td>-4</td>
<td>-32</td>
<td>5</td>
<td>0</td>
<td>37</td>
<td>29</td>
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<tr>
<td>Agriculture</td>
<td>-</td>
<td>27</td>
<td>82</td>
<td>65</td>
<td>-5</td>
<td>51</td>
<td>100</td>
<td>66</td>
<td>-11</td>
</tr>
</tbody>
</table>

- Tamil Nadu provides a 100% subsidy to handloom weavers
- States of Kerala and Maharashtra provide subsidies for below poverty line (BPL) customers
- Subsidies are provided for agricultural customers in the studied Indian states except Madhya Pradesh
Baseline Tariffs, Subsidies, and Features of Social Inclusion

• Significantly subsidised electricity is provided to small households/low users

• **Bhutan** provides subsidies to low voltage rural customers of all categories. *(Free to very small rural households)*
Baseline Tariffs, Subsidies, and Features of Social Inclusion

Gender Analysis of Tariff Structures and Subsidies

• None of the countries offer any special tariffs to customers based on gender.

• Andhra Pradesh in 2008 and in Maldives in 2015 discussed to provide gender based subsidies, but they have not been implemented.

• Nepal, Sri Lanka, and the states of Assam, Maharashtra, and Tamil Nadu in India offer concessionary tariffs to rural or domestic industries (or small industries), where women are likely to be the dominant beneficiaries.

• Tamil Nadu offers a special tariff for handlooms (free electricity). About 53% of handloom workers are women.
Challenges to Implementation of Preferential Tariffs

- Policies on subsidies vs market pricing
- Mechanism employed to target subsidies
  - A study on Cape Verde, Rwanda, and Sao Tome and Principe shows that subsidized connections would strongly target poor compared with consumption subsidies
  - Need comprehensive analysis of the cost of supply, share of subsidies targeted by socially inclusive tariffs, and alternative tariff structures including VDTs
  - Poor definition of subsidized customer groups
  - Fully targeted subsidies are difficult to implement because, a regular assessment of customer’s financial status is required.
Challenges to Implementation of Preferential Tariffs

• Subsidies committed by the government: how do they finance it?
  • Bhutan – Allocates subsidies by foregoing the royalty due to the government from hydro power plants
  • Assam – State government commitment in subsidies is included in the revenue calculation
  • Madhya Pradesh – Cross subsidy is limited to ±20% of the average cost of supply, does not rely on government subsidies
  • Sri Lanka – Tariff decisions are silent on the subsidy commitment by the government, the government subsidy not received adds to the financial loss of the utility
  • Bangladesh and Nepal – Subsidies are operational, but require further documentation of the costs of supply, and to clearly identify how the subsidized customer costs are financed
Beneficiary Targeting is Poor in Many Countries: Sri Lanka situation in 2016

<table>
<thead>
<tr>
<th>Household Customer Category (consumption kWh/month)</th>
<th>Share of Subsidy to All Households</th>
<th>Share of Government Subsidy to the Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–30</td>
<td>13.2</td>
<td>37.2</td>
</tr>
<tr>
<td>31–60</td>
<td>36.8</td>
<td>103.1</td>
</tr>
<tr>
<td>61–90</td>
<td>42.4</td>
<td>119.0</td>
</tr>
<tr>
<td>91–120</td>
<td>14.2</td>
<td>39.7</td>
</tr>
<tr>
<td>121–180</td>
<td>6.3</td>
<td>17.6</td>
</tr>
<tr>
<td>181–600</td>
<td>-7.4</td>
<td>-20.6</td>
</tr>
<tr>
<td>&gt;600</td>
<td>-5.5</td>
<td>-15.3</td>
</tr>
<tr>
<td>All household customers</td>
<td>100.0</td>
<td>280.7</td>
</tr>
</tbody>
</table>
# Challenges to Implement Preferential Tariffs

## Summary of Electricity Prices in Selected Asian countries

As of August 2019

<table>
<thead>
<tr>
<th>Customer Class</th>
<th>Max. Demand (kW)</th>
<th>Average Unit Price in US Cts (unity p.f.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bangladesh</td>
<td>Bhutan</td>
</tr>
<tr>
<td>Household</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>30</td>
<td>4.71</td>
</tr>
<tr>
<td>Medium</td>
<td>90</td>
<td>5.33</td>
</tr>
<tr>
<td>Large</td>
<td>180</td>
<td>6.11</td>
</tr>
<tr>
<td>Commercial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>1,000</td>
<td>4</td>
</tr>
<tr>
<td>Medium</td>
<td>58,000</td>
<td>232</td>
</tr>
<tr>
<td>Industrial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Large</td>
<td>1,050,000</td>
<td>4200</td>
</tr>
</tbody>
</table>
• Electricity consumption is sensitive to the significant increase in prices beyond lifeline block of consumption at 60 kWh/month.
• Customers using over 180 kWh/month are 2.3% of all households.
Efficient Electricity Use and Implications for Tariff Setting

• Many countries have introduced regulations on minimum energy performance standards and enforced through appliance labelling.

• Information on tariff-setting activities explicitly considering energy efficiency is not available.

• Regulatory commissions focus more on supply-side efficiency.
Policy and Regulatory Environment for Renewable Energy Development

• India, Nepal, Maldives, and Sri Lanka positively encourage renewable energy development through net-metering schemes.

• Examples of renewable energy opportunities for livelihood support
  
  • Andhra Pradesh – allows a group of persons to set up solar power projects up to 1 MW which is treated as collective generation
  
  • Sri Lanka – households can rent its roof space to a third party to develop solar PV facilities which provide an opportunity for low user households to earn an extra income while their electricity usage up to lifeline quantity would be fully paid for 7 years.

• Community-owned renewable energy facilities
  
  • Sri Lanka – a block of 25 MW out of 375 MW was proposed (but not implemented) to be designated as a “community wind block” in Mannar Wind Park
  
  • Rural, low-income communities should be empowered to move to commercial development of renewable energy
  
  • It is unlikely that community projects will benefit communities as an additional income source without government or utility intervention
Application of Tariffs and Charges Beyond Lifeline Tariffs: 1

• Project Review – Gender-Inclusive Access in Sri Lanka
  • Component B of the Project *Improving Gender Inclusive Access to Clean and Renewable Energy in Bhutan, Nepal, and Sri Lanka*

  • Subcomponents: providing a free electricity connection to more than 3,000 households; capacity building of 750 people including 200 women on energy-based livelihoods; awareness raising of 10,000 newly electrified households about safe and efficient use of electricity and energy-related livelihood opportunities

  • 82% of households were the beneficiaries of government’s poverty alleviation program “Samurdhi”
  • 98% had their monthly income below the national mean.
  • Nearly ¼ of the beneficiaries were women-headed households.
Application of Tariffs and Charges Beyond Lifeline Tariffs: 2

• Project Outcomes
  • Social benefits
    • Better and brighter lighting
    • Convenience for women in household chores
    • Free of harmful emissions
    • More entertainment for family
    • Increased sense of security
  
  • Economic benefits
    • Reduction of costs on kerosene
    • More convenient environment for women’s livelihood activities

• Lack of access to investment capital, markets, and technology; limited knowledge and capacity; and household obligations are the main barriers to initiate economic activities
Application of Tariffs and Charges Beyond Lifeline Tariffs: 3

• Project Review – Gender-Inclusive Access in Sri Lanka
  • Component B of the Project *Improving Gender Inclusive Access to Clean and Renewable Energy in Bhutan, Nepal, and Sri Lanka*

  • Study showed that the provision of access to electricity alone does not trigger electricity use for economic opportunities by poor and vulnerable women. Continued interventions and support for productive economic activities is needed.

  • Changes in policies to trigger interventions to increase access to, and affordability of, electricity and its associated technologies are required.
Lessons for Developing Member Countries on Socially Inclusive Tariffs

• Improved analysis and information on lifeline tariffs
• Improved definition and performance of lifeline tariffs
• Improvement of targeting lower-income households and female-headed households
• Improved analysis of benefits of electricity to women and socially disadvantaged groups
• Connection subsidies needed as much as consumption subsidies
  • Connection and wiring to be included as a standard cost in distribution network expansion investments?
• Electricity for livelihood development- what more to be done
THANK YOU