Supporting rural women in the clean energy transition with inclusive policymaking
Solar irrigation
Irrigation should be a key focus areas in clean transition

- In developing countries, agriculture provides more than 40% employment\(^1\)

- Irrigation is key to enhance productivity in these countries\(^2\)

- In India, irrigation has significant impact in the energy landscape

  
  ![Diagram showing irrigation area and production]

  - 53% Irrigated\(^3\)
  - 47% Unirrigated\(^3\)

  - > 30% of the national electricity consumption\(^3\)

  - 4% diesel, 11% kerosene national consumption\(^4\)

- Most vulnerable to climate change
Solar irrigation can enhance rural women livelihood

‘Feminization’ of agriculture labour emphasize the need for gender inclusion in irrigation policies

- In developing countries, access to irrigation has important gender dimension
  - 46% Agriculture sector share in female employment¹

- In India, 63%¹ of agriculture employment is fulfilled by women – rapid feminization due to male migration to cities

India saw a massive growth of solar pump primarily driven by govt. subsidy support⁵

Is this increase proportionally benefitting women?
But lack of gender-sensitive policies inhibits its potential

Structural and procedural barriers limit women’s access to solar pumps

1. Women are significantly disadvantaged in terms of land rights
2. The inequality is starker with increasing land size
3. Cost becomes a significant barrier for the disadvantaged
4. In instances of joint managing of agricultural activities, women often does not have equal decision-making power.
5. Gender-blind policies often posed information and network barriers for women to access the schemes.

<table>
<thead>
<tr>
<th>Individual ownership model</th>
<th>48%</th>
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<tbody>
<tr>
<td>Minimum land criteria</td>
<td></td>
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<tr>
<td>No targeting</td>
<td></td>
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<tr>
<td>Limited access to institutional credit</td>
<td></td>
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<tr>
<td>Poor gender consideration in IEC</td>
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<tr>
<td>Unequal access to government services</td>
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Comprehensive guidebook on solar irrigation policies

Developed with extensive stakeholder consultations including union and state government

- Coordination
- Financing
- Targeting
- Infrastructure
- Monitoring and Evaluation
## Inclusion requires multi-pronged approach

### Scheme design
- Prioritize/quota for women applicants
- Relaxing land ownership criteria
- Targeting

### Alternative business models
- Group-ownership models – leverage women self-help networks
- Prioritize small solar pumps
- Promote ‘water-as-a-service’ for women farmers
- **Secondary use of solar pumps**

### Financing support
- Convergence with women livelihood promotion schemes
- Credit enhancement measures including credit guarantee fund

### Gender-responsive services
- Leverage social support networks for women to facilitate access to govt services
- Awareness campaign targeted at women
Secondary use of solar pumps is an emerging model

In India

- Average solar pump use less than 150 days a year
- Lower asset utilization ➔ Higher payback period
- Various unmet energy needs, many of them complementary to irrigation. E.g.: food processing
- Women dominate many of these activities
- Even non-remunerative energy needs can be met (e.g.: lighting, charging)

Can surplus energy from solar pumps (during non-irrigation times) support women’s energy needs?

Pilot projects in
- South Asia
- Sub-Saharan Africa
Support for LPG is critical to shift from biomass fuels

- LPG subsidies have been vital in shifting households away from traditional biomass fuels that release dangerous amounts of indoor air pollution.

- Developing countries rely heavily on LPG to achieve clean cooking, at high and unpredictable costs. National expenditure on LPG subsidy in:
  - India - USD 6.7 billion in FY2021
  - Indonesia, USD 3.8 billion in 2019

- Price support is vital for low-income households, especially now when household incomes have been impacted by the cost of living and high energy prices, and households are falling back into poverty.
LPG Subsidies in India have positive gendered impacts

Women using subsidized LPG experienced time savings, reduced drudgery and health benefits

- LPG usage saves women, on average, an hour per day due to reduced cooking and cleaning time
- LPG usage in combination with other fuels also reduces the drudgery of collecting and preparing biomass, typically undertaken by women and young girls
- Compared to biomass, LPG’s ‘smokeless’ cooking did not create eye and lung diseases
- LPG usage correlates with women spending more time on other activities like leisure, spending time with children, watching TV or reading the newspaper
- LPG usage also empowered men to cook - more males were likely to cook if LPG is available
- Other spill over benefits: identity documentation and bank accounts for women
However, exclusive reliance on LPG creates risks

**Financial Risks**
- In FY 2019, India’s LPG subsidies amounted to USD 7.74 billion and have been decreasing; in FY21, has reduced to USD 4.4 billion

**Price Volatility for Households**
- LPG subsidies were withdrawn in May 2020 when oil prices were low and re-introduced in September 2022 under pressure from rising crude oil prices
- Suspension of consumption subsidies and the re-introduction with a considerable decline in value, combined with income shocks from Covid-19 is expected to push households towards firewood creating health impacts.

**Targeting Attempts have had limited impacts**
- Targeting attempts in LPG subsidies so far have controlled government expenditure on LPG subsidies:
  - Income-based targeting: subsidy only for households earning annually less than INR 10 lakh
  - Voluntary opt-out: Give it up campaign
  - Volumetric targeting: annual limit of 12 subsidised cylinders
  - Gender-based targeting through PMUY scheme
Targeting LPG subsidies has had limited impacts

Because LPG subsidies are poorly targeted, and benefits have not reached the poorest

- Among rural households:
  - The richest two quintiles received 53% of benefits
  - The poorest two quintiles received 28%

- In terms of annual cylinders
  - The richest quintile consumes 4 cylinders
  - The poorest only 1.6 cylinders

![Chart showing share (%) of total LPG subsidies received by different rural expenditure quintiles]
LPG Affordability continues to be a constraint

Poorest households have the lowest LPG cylinder consumption

- Since 2019, average annual cylinder consumption has increased marginally, but LPG consumption is still low in rural households
- IISD research tested different targeting approaches were tested to increase the share of subsidy benefits received by poor households but they did not improve distribution
  - Reducing annual limits of subsidized cylinders from 12 to 9 reduces subsidy expenditure
  - Targeting only Ujjwala consumers (or giving them higher subsidy) also did not improve subsidy distribution
- Main bottleneck in improving subsidy distribution appears to be the low consumption of subsidized LPG cylinders among poor households and the high consumption among better-off households.
- Sudden removal and re-introduction of LPG subsidy has exposed poor households to price shocks further impacting LPG affordability and regressing households to biomass use
What is the future of clean cooking in emerging economies?

Emerging economies need policies to unlock non-fossil cooking technologies in line with 1.5C pathways

• By 2050, induction and biogas (including bioLPG) are projected to make up the majority of future cooking needs
• Yet there are currently no major support policies for these technologies in India or Indonesia - while over USD 10 billion per year is spent promoting LPG

Next Steps

IISD, supported by IDRC, is initiating research on supporting governments of emerging economies to incubate policies that stimulate non-fossil cooking technologies in an inclusive way that

• Identify risks of reliance on fossil cooking to achieve energy access
• Identify major barriers to uptake for emerging non-fossil technologies, including induction and modern bioenergy
• Support India and Indonesia with roadmaps for transition to non-fossil cooking in an inclusive way that promotes the roles of women, youth and marginalized groups in value chains
Thank You!

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References

2. Food and Agriculture Organization of the United Nations. FAOSTAT Statistical Database. [Rome]: FAO, 2022
### Primary Source of Energy for Cooking (% of HHs)

<table>
<thead>
<tr>
<th>Primary Sources of Cooking</th>
<th>Rural</th>
<th>Urban</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firewood, chips and crop residue</td>
<td>46.7</td>
<td>6.5</td>
<td>33.8</td>
</tr>
<tr>
<td>LPG</td>
<td>49.4</td>
<td>89</td>
<td>62</td>
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<tr>
<td>Other Sources*</td>
<td>3.7</td>
<td>2.8</td>
<td>3.5</td>
</tr>
<tr>
<td>No cooking arrangement</td>
<td>0.2</td>
<td>1.7</td>
<td>0.7</td>
</tr>
</tbody>
</table>

*Other sources include natural gas, dung cake, kerosene, coke, coal, gobar gas, other biogas, charcoal, electricity (incl. generated by solar/ wind power generators), solar cooker, others*