Measurements of Energy Use In Households: Examining What it Means to "Leave No-One Behind"

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Pathways to Clean Cooking 2050: Leaving No-one Behind
Household and Settings
Wexford, Ireland
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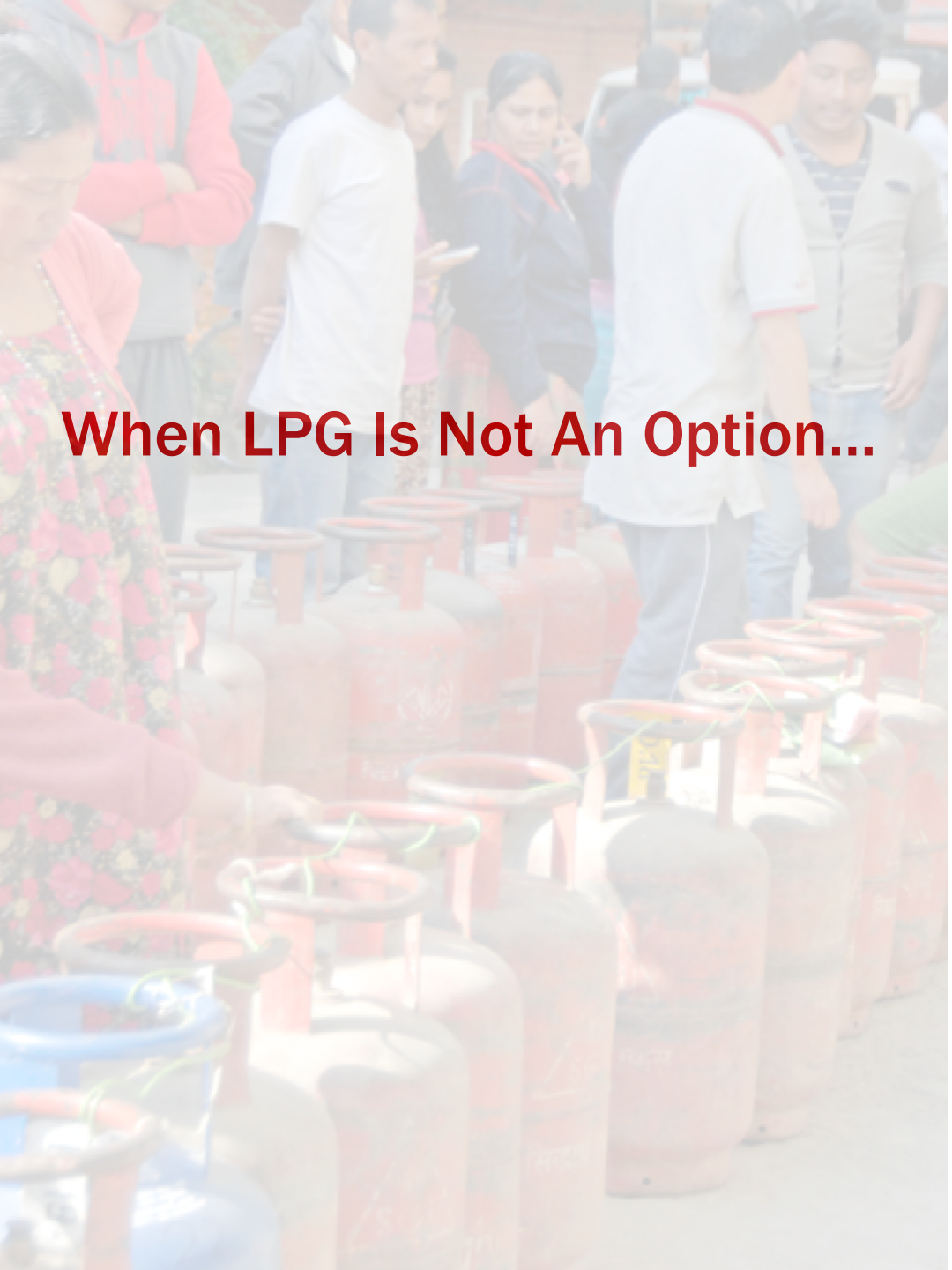


When LPG Is Not An Option...

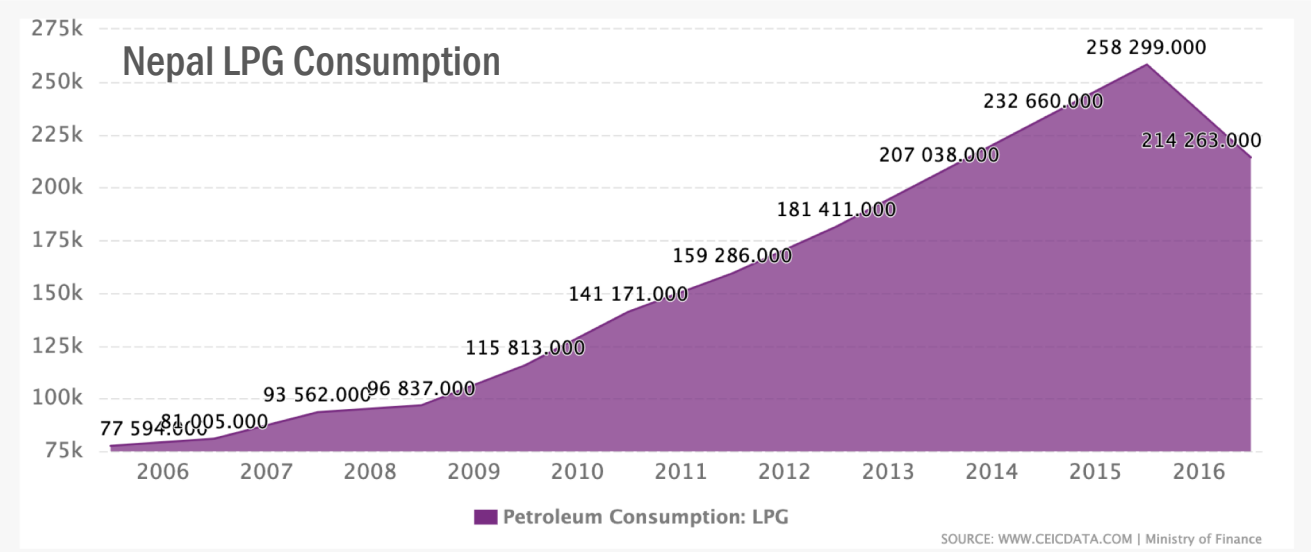
Nepal

2015 Fuel Blockade: A Harsh Wake-Up Call

2015 Fuel Blockade

Political conflict leads to a two month blockade of fossil fuels.
Economic losses push nearly a million people below the poverty line.[1]
Households increase use of biomass, dung, electricity to meet cooking and heating needs.

Revealed the risks of an energy future so heavily dependent on imported energy sources. Need for alternatives.



Clean Cooking Strategies that Reduce Dependency on LPG

Nepal Ministry of Environment Biomass Energy Strategy (2017)

Reduce reliance on LPG and kerosene through initiatives that promote use of improved biomass, biogas, electricity meeting household energy demand. Electricity being a long-term goal.

Clean Cooking Nepal (CCN) Project

Deploy strategies that increase access to **Biogas, Electric Cooking Appliances, "improved" Biomass stoves to replace LPG**

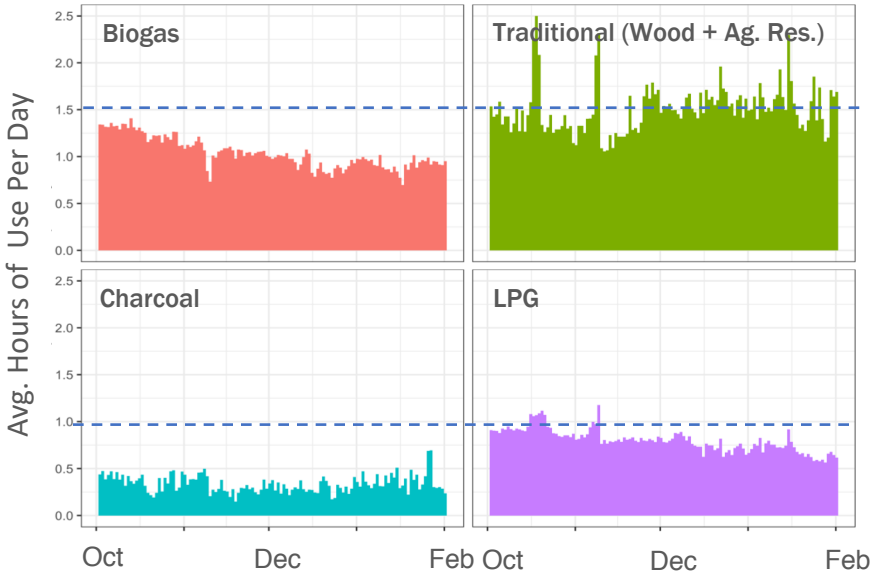
Track changes in:

- Total Energy Consumption
- Fuel-Specific Consumption & Stove Use
- Energy End-Uses
- Air Quality & Exposure (not discussed)
- Health Outcomes (not discussed)

Location:
Panchkhal and Mandandeupur municipalities

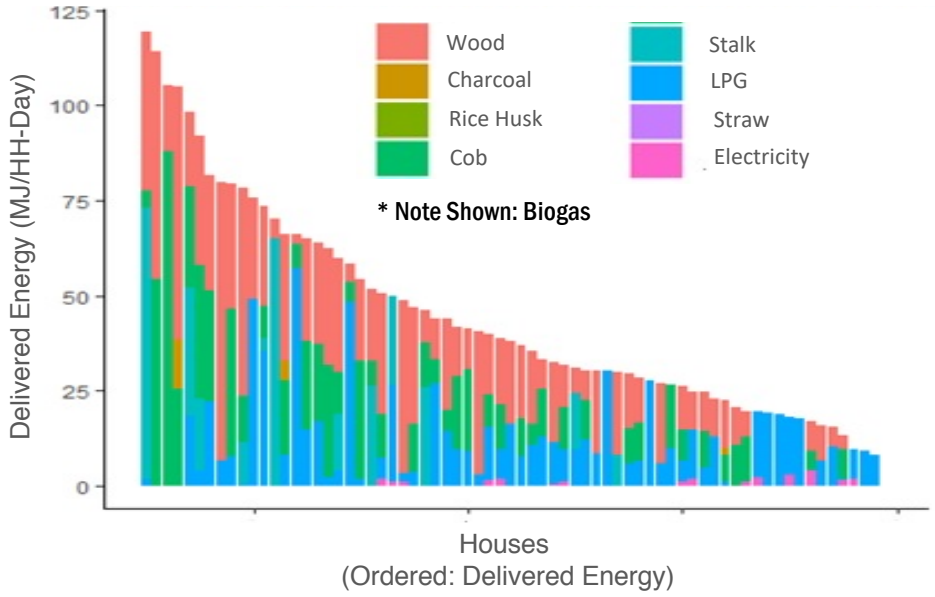
"Mapping" Relationships Between Stoves, Energy Consumption, and End-Uses

Stove Use Characteristics



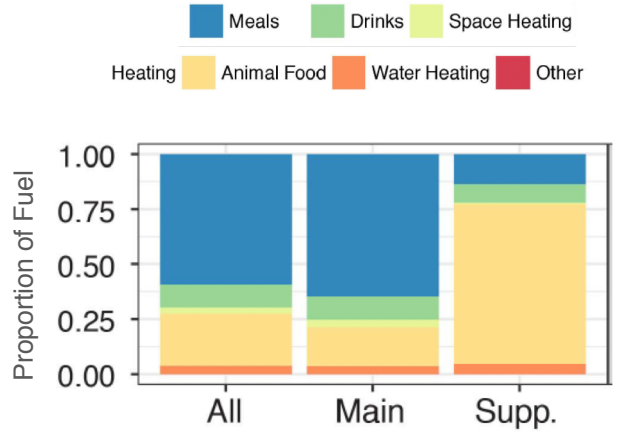
Note: Electricity Not Shown
N = 650 HH

Fuel & Energy Consumption



Note: Biogas not shown, Oct-Nov 2018
N = 75hh

Services & End Uses



Note: Example figure, data not based on same study site

Sustained use of clean cooking technology is also dependent on reliable energy supply.

Household acceptance is just one piece of a program aimed at shifting homes towards electric appliances. Accompanying infrastructure (i.e. grid) must keep up with rapidly increasing demand, spurred in part by improvements to grid supply.

Additional Activities:

- Monitoring household and appliance loads profiles, power factors
- Voltage stability
- Mapping grid and transformers
- Examining uptake of non-stove electric appliances
- Implementing strategies to increase biogas supply

Leaving No-One Behind
Stories From Other Household Energy Services

Who We Potentially Leave Behind When We Neglect Other Energy Services (Kenya)

Populations in Sub-Saharan Africa among the greatest at risk of being “left behind"

Access to electricity is also among lowest globally, often leading to dependency on fuel-based lighting.

Q: Can introducing solar lamps displace kerosene and reduce exposure?

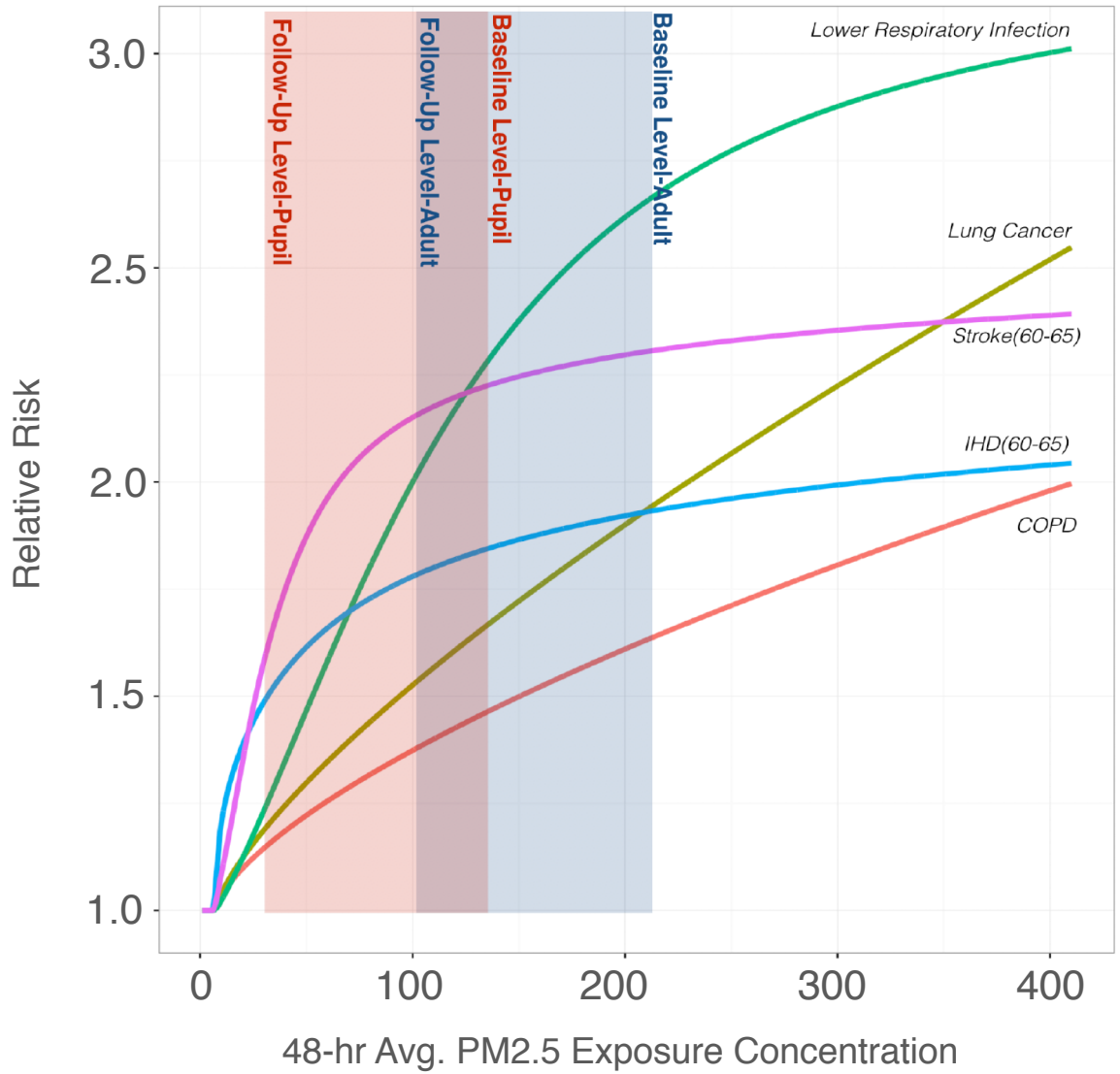
Results:

Smoke from kerosene lamps was the primary source of PM exposure for kids (non cooks) and contributed significantly to the primary cook’s exposure.

Significant reductions* were achieved through transitions to solar lighting systems, with no measurable change to cooking practices.

* Evaluation period 6 months, not ”long-term”

Exposure Before & After Solar Lighting Deployment Overlaid onto Exposure Response Functions (IERs)



Lam, Muhwezi, Isabirye et al. *2017*

Key Takeaways:

1. Services then stoves
2. Reliability is just as much a part of access
3. Be mindful of co-existing energy issues, and the opportunities and lessons they provide for leaving no-one behind

Thank You!

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