

Asia Clean Energy Forum :

Improved Cooking Solutions

Challenges with Universal Thermal Energy Access

18th June 2014

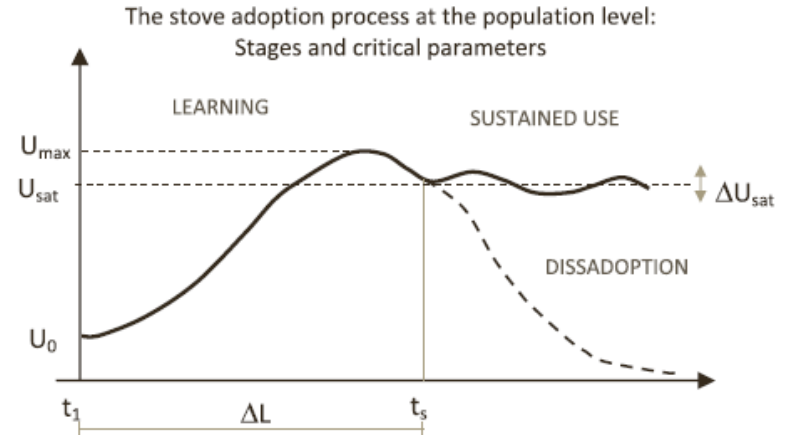
Asian Development Bank, Manila

Dr Binu Parthan, SEA

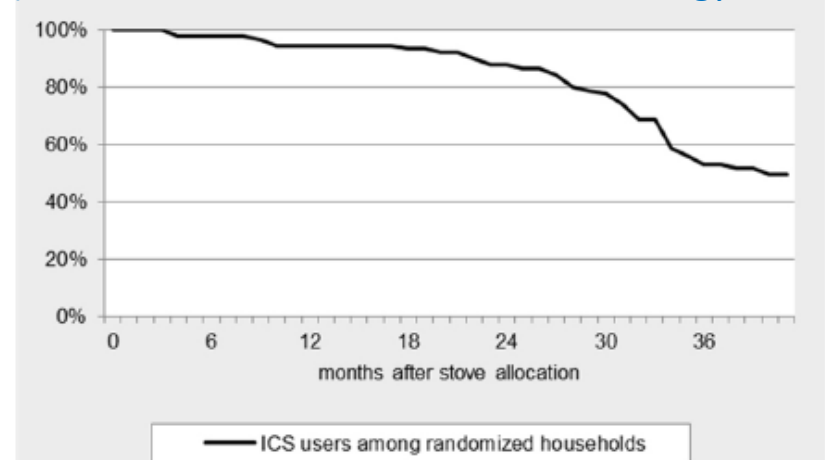
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Challenges

- Safe Clean Cooking Access – GTF 2015 2.9b 125m Vs 138m;
- Sustained use Vs distribution and delivery;
- Overwhelming focus on cooking – space heating/cooling, sanitation, productive use largely ignored.
- Limited innovation – financing, business models, policy & regulation



(Source: Ruiz-Mercado et al, 2011, Energy Policy)



(Source: Bensch and Peters, 2015, Health Economics)

Objectives

- 5 partners – UK, SAf, Can, India.
- Develop a thermal energy service model - STEPs;
- Implement the model;
- Research Publications – Peer Reviewed Journals;
- Draw lessons; Replicate; influence global public policy;
- Research – literature, field study, global survey – 70+
- 2013-17, Mid-way;



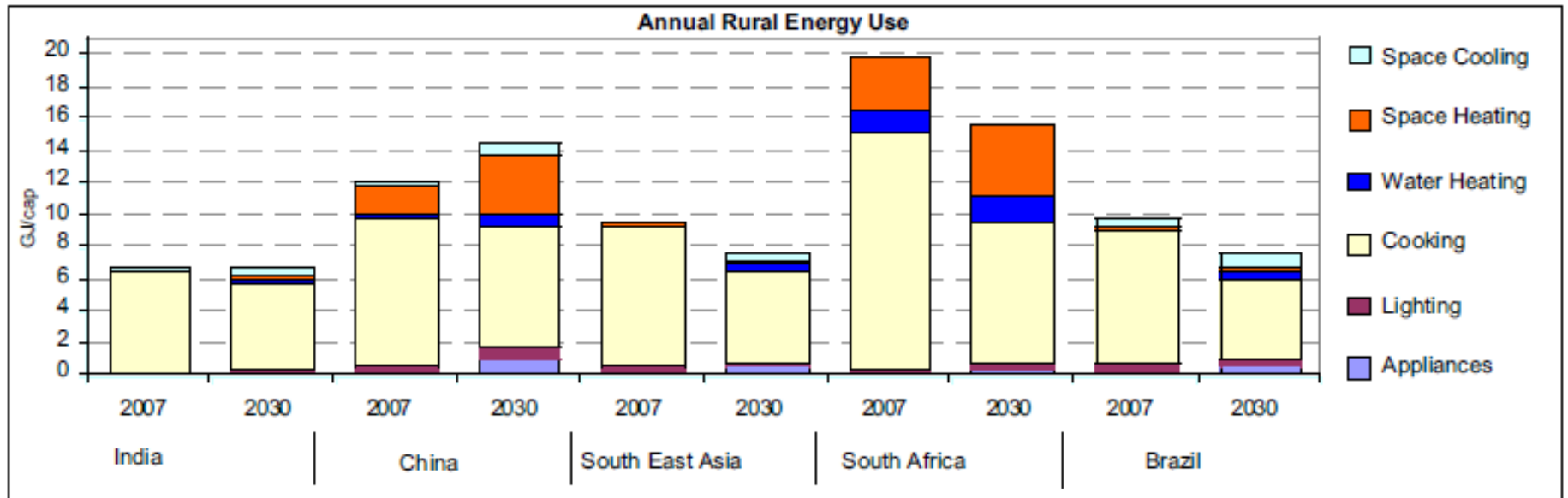
Initial Findings

- Thermal energy needs other than cooking significant – colder regions – significant expenditure – increases – annual/seasonal;
- Examples of thermal energy service – CDM 262 projects -, UNDP – Lesotho, India, REEEP- Caribbean;
- Govt/Private/NGO - China, India, Afghanistan; South Africa, Zambia, Rwanda;
- Service arrangements – fuel supply contracts, Progressive purchase, Barter, lease rentals



(Source: COAM)

Space and Water Heating - Significant and increasing



(Source: Diaoglou et al, 2011, Energy)

STEPS Model – Current Approach



- Institutional Arrangements –PPP, Public – Anchor customer; Integrated – electricity + thermal
- Technology – neutrality – Electric, LPG, ICS, solar thermal;

Business and Enterprise Model



- Ownership – Open- Private, NGO,
- Ownership of systems with enterprise;
- Investment/User Vs Revenue/User : Less Than 3 years
- Operation Costs = 25-35% revenue;
- Use of mobile phone technology - MNOs– financial transactions & control;
- Payment Systems – FFS; PAYG; Progressive Purchase; Fuel purchases; barter; lease-rentals
- Robust Distribution network, high levels of sales/collection agent incentives;

Financing

- Initial investments/customer lower Vs electricity;
- Enterprise financing rather than end-use financing;
- User contribution – refundable – 25-35% of system cost;
- Debt and equity – softer – below market terms – carbon finance – interest subsidy – sustainable?
- Securitisation more appropriate – scalable – soft terms;



Policy & Regulation

- Area based thermal (and electricity) energy service concessions;
- Public services mandated to purchase thermal energy service;
- No capital subsidies;
- Direct cash transfers – interest/service subsidies;
- Regulatory framework for transfer of cross-subsidies – urban to rural



Outlook



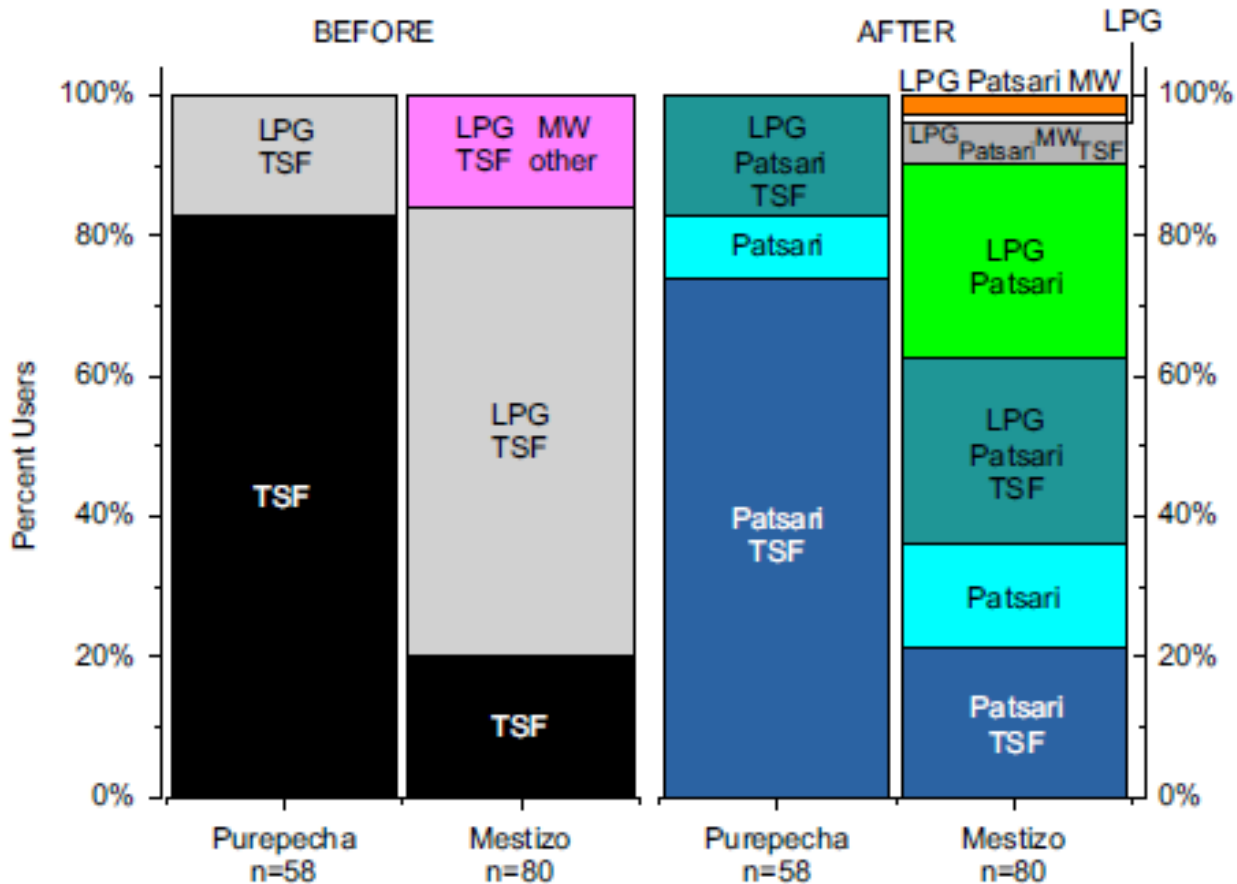
- Need to move to a service arrangement – sustained use;
- Less technology – more enterprises, financing, policy and regulation;
- STEPs – South Africa; Kenya, Asian government;
- Need more efforts – significant challenge 2.9 b

Thank You

Disclaimer: This is an output from a project co-funded by UK aid from the UK Department for International Development (DFID), the Engineering & Physical Science Research Council (EPSRC) and the Department for Energy & Climate Change (DECC), for the benefit of developing countries. The views expressed are not necessarily those of DFID, EPSRC or DECC, or any institution partner of the project.

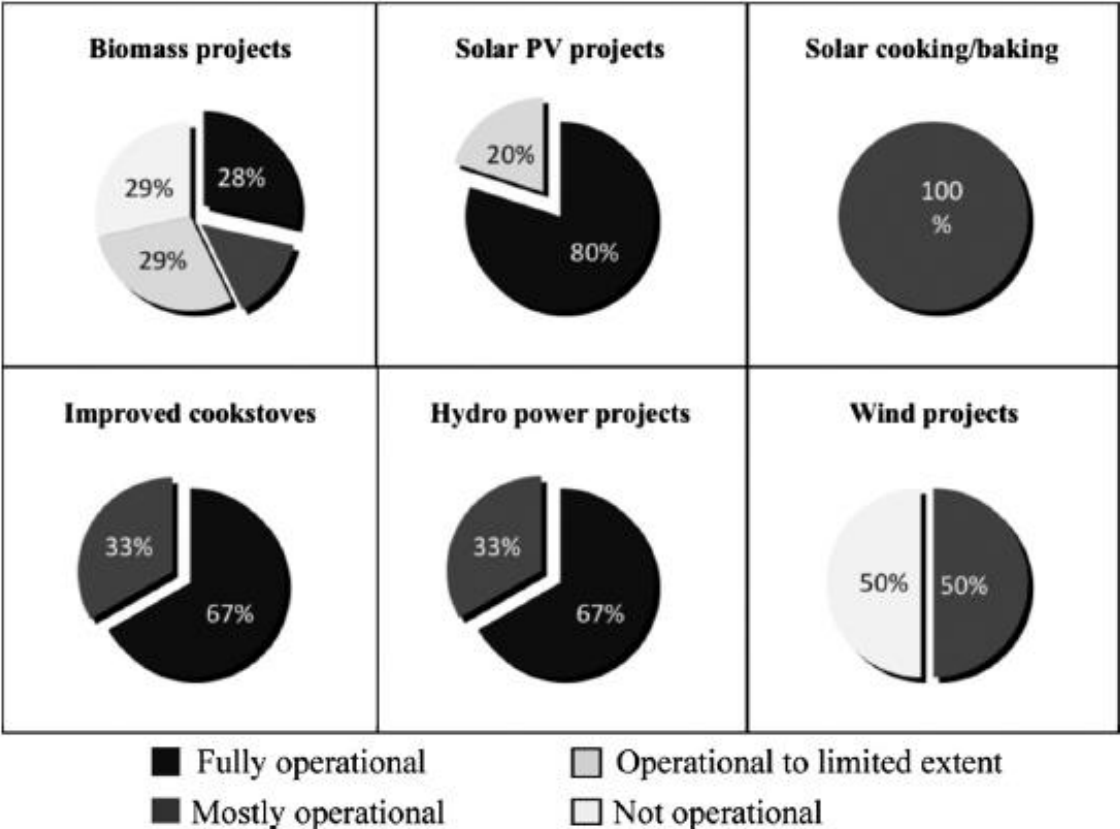


Fuel Stacking after Cook stove Adoption



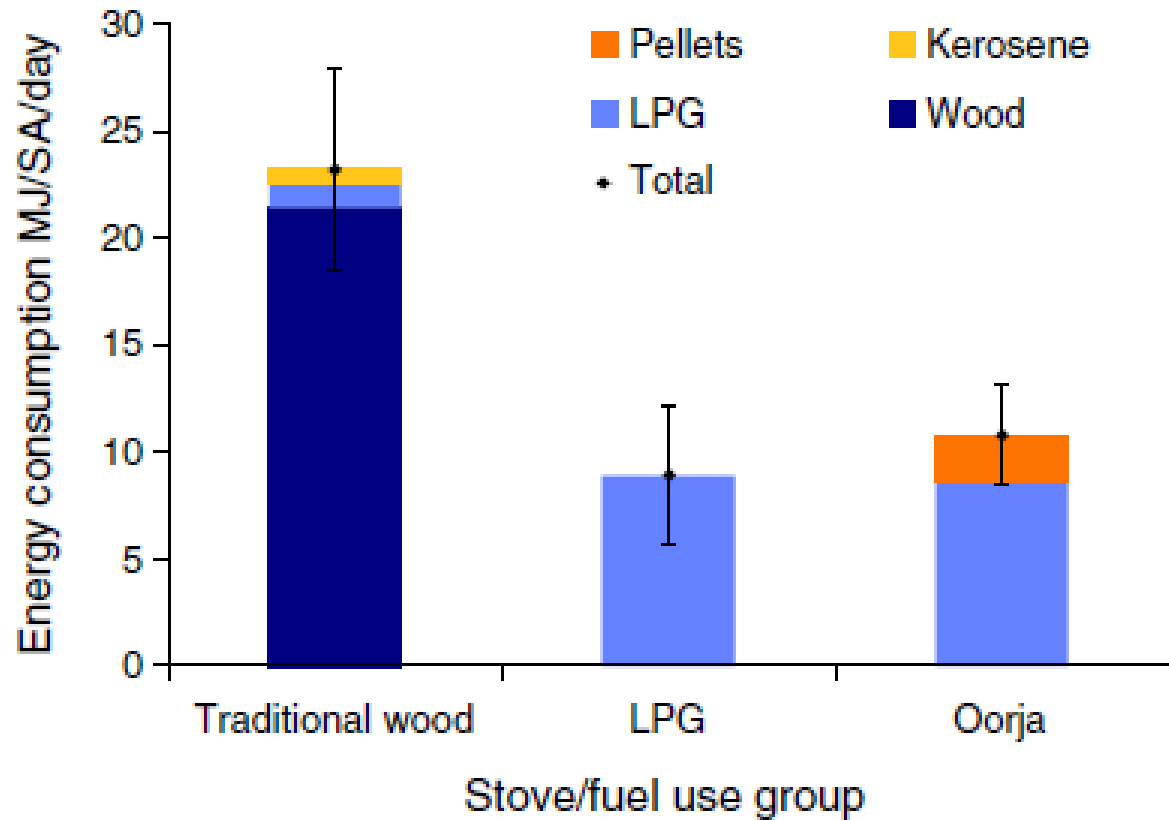
(Source: Ruiz-Mercado et al, 2011, Energy Policy)

Performance of Small Scale Renewables Over Time



(Source: Terrapon-Pfaff et al, 2014, Applied Energy)

Energy Efficiency in Cooking - India



(Source: Johnson et al, 2013, ESD)