ASIA-PACIFIC
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Instructions to Abstract Authors

2018 Key Dates

Submission of Abstracts due:	**Monday, 16 July 2018**
Notification of abstract selection to authors:	**Monday, 13 August 2018**
Papers due for peer review:	**Monday, 15 October 2018**
Feedback from reviewers to authors:	**Monday, 12 November 2018**
Final paper submission due from authors:	**Monday, 26 November 2018**

Your contribution will not be formally accepted and scheduled, until you have registered your attendance at the conference.

Please indicate by ticking which stream/s best fits your abstract

	STREAMS Topics listed are a guideline only. Submissions in related areas are welcome
☐	**Photovoltaic Devices** *Silicon solar cells* *Inorganic, organic, dye sensitized and perovskites* *Tandem and other solar cells* *Characterisation and quality control* *Modules and manufacturing*
X ☐	**Deployment & Integration** *Renewables integration, policy and regulation* *Forecasting and Resource assessment* *Minigrids and Community owned Renewables* *Field experience, performance, yield and reliability* *Distributed Energy Resources, EVs and Low emissions transport*
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☐	**Concentrating Solar Thermal** *Fundamentals and components* *Storage, systems and power cycles* *CSP integration, design and modelling* *CSP and high temperature processing*
☐	**Solar Fuels & Chemistry** *Storage* *Hybrids, complementary solutions and discrete applications* *Fuels and chemicals from electricity and heat* *Energy for heavy industry*
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Characterisation of Energy Services for Maximising Energy Access Outcomes with Renewable Energy

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Introduction

Access to affordable, reliable, sustainable and modern energy services is understood to be an essential requirement for meeting sustainable development goals. Given the importance of such energy services, the United Nations has set a target of Sustainable Energy for All (SE4All), to be delivered through appropriate deployment of main grid extensions, mini-grids and stand-alone solar home systems. Current practices for providing electrification mostly focus on the supply side with an emphasis on ensuring the reliability, affordability and security of electricity supply to meet energy user demand. However, the real measure of energy access is on the delivery of key energy services; lighting, communications, cooking. Importantly, energy users may have diverse energy service priorities and expectations. Furthermore, different services may have greater or lesser flexibility and inherent 'storage' – for example, lighting services versus mobile phone charging. Some services can also be potentially delivered by a range of end-use equipment – for example, Edison, LED lights. These varied characteristics provide opportunities to better optimise energy service provision given end-users varying cost, reliability and environmental objectives. This is particularly true when utilising variable and somewhat unpredictable renewable energy resources. This opportunity for more tailored energy service delivery forms the basis for the study presented in this paper.

Method

This paper is an exploration of a potential framework for energy services characterised based upon their relative flexibility, storability and consumer perceived value. The framework uses survey data from field work at a Mini Hydropower site in Nepal. Households were interviewed regarding their energy service priorities and preferences, and appliance types, ownership and operation. These insights are applied to a modelling study for Solar PV hybrid mini-grid project using the HOMER Pro software package and optimisation analysis.

Results:

The survey and modelling outcomes highlight that energy consumers in this rural part of Nepal focus on a limited number of energy service needs. A number of these services are flexible and hence offer an opportunity to optimise the use of solar PV. Also, there is an opportunity to improve the energy efficiency of the appliances that can reduce electricity consumption by about a third.

Discussion

The energy service characterisation framework presented in this paper highlights the opportunity for hybrid mini-grid system designers to improve energy service delivery by focusing on the relative value, and any inherent flexibility and inherent storage, of different energy service needs**.**

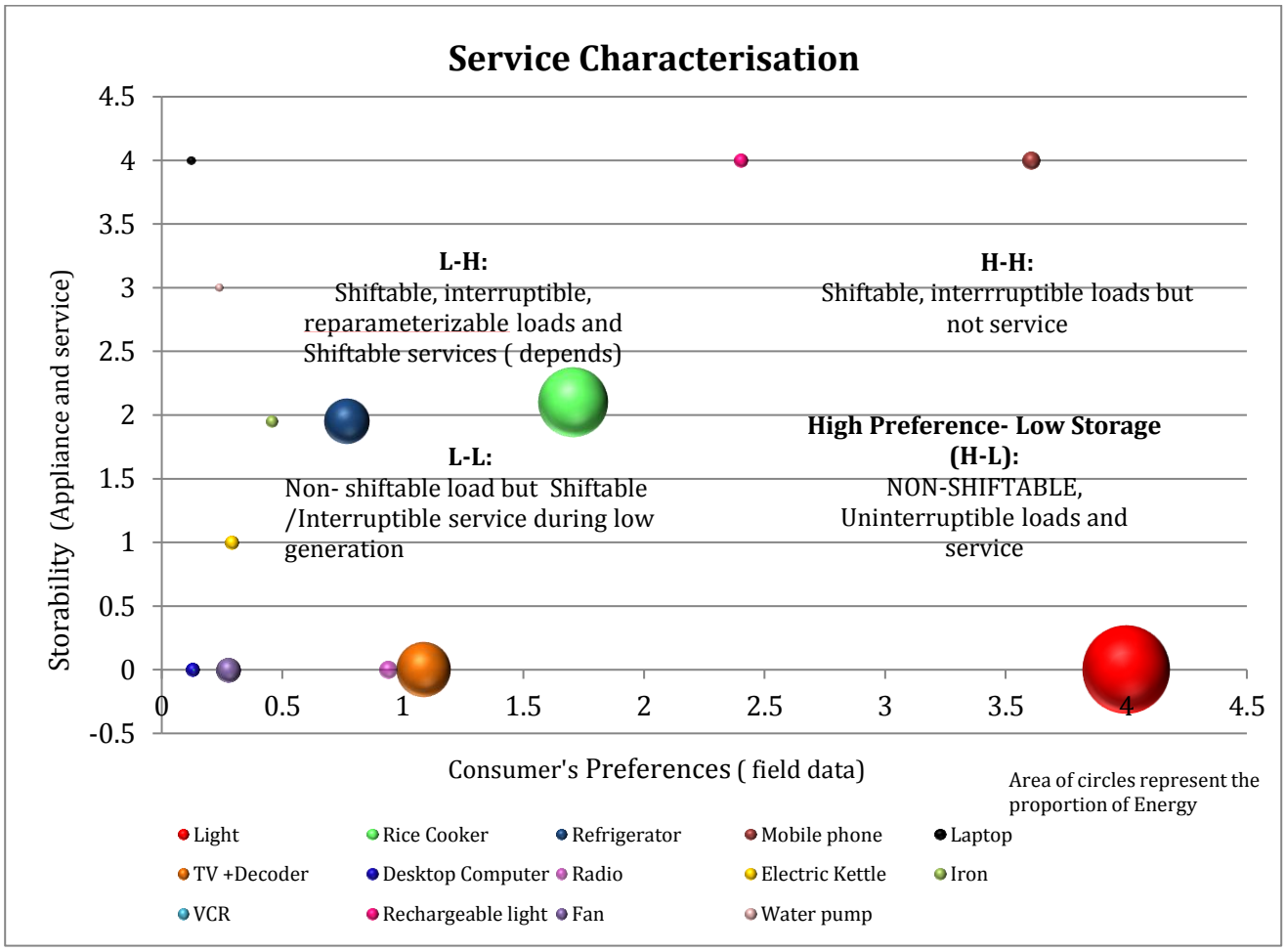

Fig 1: Characterisation of energy services based on available storage in appliance and service and consumer perceived value