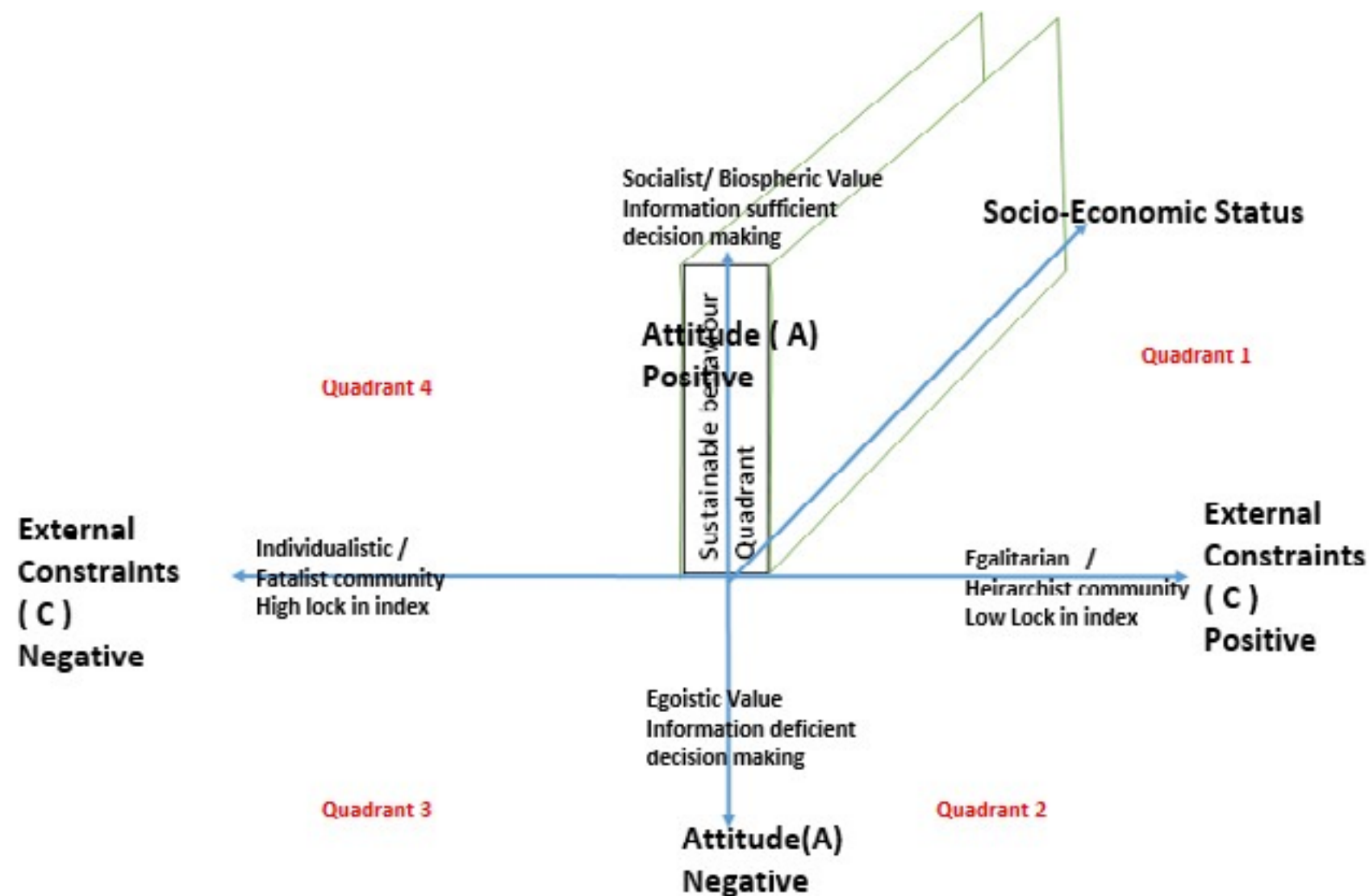# Modelling Sustainable Behaviour:

An Effort to Enhance Effectiveness of Community-led Conservation Initiatives for Electricity Consumption

RAVICHANDRAN K
(Batch 2014-16)

Fig: Sustainable Behaviour Model

Electricity is a critical energy source for any nation and its contribution to social wellbeing and economic development is well established. At the same time, electricity generation is a large contributor to Greenhouse Gas (GHG) emissions that cause climate change, and hence optimisation of production options is part of the global agenda to counter climate change. A 2015 report by the Ministry of Environment and Forests attributes 38 percent of India's GHG emissions to electricity generation. Further, while electricity is positioned as a tool to alleviate poverty at the national level, one cannot ignore the issues of intra-country equity in consumption standards.

The focus of policy interventions to promote sustainable consumption of electricity is directed to high energy users, namely factories and commercial establishments, while ignoring households. Yet households are not an insignificant constituency with regard to electricity conservation. In Bengaluru, households account for 77 percent of the Bangalore Electricity Supply Company's (BESCOM) consumers and contribute to 22 percent of electricity sales as per Karnataka Electricity Regulatory Commission 2014 report. The behaviour dimension of energy use which affects the usage of appliances and its actual impact on efficiency programs is least understood globally. In India too there is limited empirical research done to understand how households use electricity and what factors motivate people to conserve or use energy efficiently.

The behaviour models are qualitative and spatially non-correlated. This limits the effectiveness of common communication efforts that seek to address and change individual behavioural attitudes. My project attempted to bridge this gap, by creating a questionnaire based model to spatially differentiate community behaviours and individual attitudes towards electricity conservation, thus opening

possibility of a more focused and relevant communication effort directed at individual users.

The question I started with was how to understand which consumer behaviour characteristics cultivate a lower electricity consumption pattern? How to model the types of path dependencies and their impact on sustainable behaviours relating to electricity consumption? Can such models lead to superior communication possibility for conservation initiatives?

My work resulted in a three-dimensional model which was followed by a limited testing cycle. The results and inference from this short study pointed out a range of indicators for sustainable behaviour and their variations, presenting the option of converting the score and trends of these indicators towards a more meaningful communication strategy for conservation initiatives.

Some of these analytical findings are included in a program called Vidyut Rakshaka (VR) (http://tide-india.org/vidyut-rakshaka) which is a TIDE-WRI (World Resources Institute) initiative, supported by Societe Generale. VR is targeted as an urban initiative as cities contribute to

the highest household consumption. I expect VR to provide further insights into electricity use behaviour, which can help in designing policy and program-based solutions that focus on messaging and the right type of incentives to shift human behaviour. In its first phase, the VR programme resulted in approximately 17 percent reduction in consumption in the study areas in Bengaluru. A VR app for mobile phones is under development and rollout of the programme to all parts of Bengaluru, Mysore and Chennai is planned for the year 2017. Efforts to conserve electricity by adoption of efficient appliances by residences like DELP (Domestic Efficient Lighting Program) involving supply of LED bulbs, have its own embedded energy footprint for manufacturing and distribution of new bulbs, along with impact due to disposal of released bulbs. In VR the conservation focus involves prompting users to change their appliance usage behaviour as a preferred conservatory effort. Thus the incremental energy footprint of the programme is very low, making it a sustainable conservation initiative.

The interesting question would be to see if VR or a similar programme can counter the predicted annual increase in electricity consumption resulting from increasing household incomes, while meeting the needs or aspirations of the household consumers in the lower socio-economic strata.