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Energy Conservation Behaviour of Individuals: A New Age Imperative for Sustainable Development

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Abstract

Role of human behaviour in mitigating climate change, controlling Green House Gas (GHG) emissions, reducing carbon footprint leading to sustainable development, is at the centre of all policy discussions across the globe, thereby tailoring human behaviour is considered imperative by contemporary scholarship. This study attempts to understand the psycho-social interaction of individuals that promote such a human action. Theory of Planned Behaviour (TPB) framework has been used to predict human behaviour assuming human behaviour for energy conservation is one of the pro-social low-cost behaviour. Value orientation of individuals, energy conservation beliefs, subjective norms, perceived behaviour control, and energy conservation attitude have been measured to gauge the behavioural intention, along with capturing the socio-economic realities pertaining to households and individuals therein. Awareness towards energy conservation efforts and social interaction are found to be key behaviour influencers, whereas energy conservation intent is found to be gender neutral. Study implies the underlying necessity to explore mediating and moderating models in order to decipher complex inter-play among key variables for predicting energy conservation behaviour intent.

Keywords: Energy Conservation Behaviour, Theory of Planned Behaviour, Sustainable Development

Introduction

After the world experienced oil supply shocks of 1970s, reducing dependency on crude oil for energy requirements became crucial. In addition, challenges posed by newer targets for reduction of Green House Gas (GHG) emissions have instigated the debate for achieving low carbon and energy efficient lifestyle worldwide, making energy conservation an imperative to promote sustainable development. To meet these new age challenges, contemporary scholarship has stressed upon inducing pro-social altruistic human behaviour wherein much attention is on promotion of lifestyle less dependent on electricity and fuel. Pacific Institute of Climatic Solutions (PICS, 2015) identifies four broad categories of motives that make individuals engage with energy conservation behaviour out of which building altruistic pro-social intent to perform some energy conservation routine behaviours, is one among most promising ones. American Council for an Energy Efficient Economy & European Environment Agency provide and encourage research focusing on human behaviour change for energy conservation as being one of the key strategy for sustainable human development. Behaviours such as turning - off lights and gadgets when not in use, taking a walk instead of a vehicle if feasible, or taking a bicycle instead of a car, carpooling/ sharing rides, observing earth hours etc., have emerged as key to human sustainability as they have potential to save large amount of energy.

Energy efficiency measures through behavior change has been given attention along with structural factors such as the impact of liberalization on the energy mix, energy tariff structures, and the *rebound effect* (More usage of energy efficient appliances actually leading to relatively more usage of energy than it otherwise would have happened). Behavior shift in energy use leading to lifestyle changes is one of the primary solutions to promote sustainability. (IPCC WG III AR 05, 2014) This establishes the growing importance of behavior change as a strategy to induce energy conservation which essentially includes human behavior in households. In India, eight-point agenda of National Acton Plan on Climate Change (NAPCC) by the Indian government also mentions the energy conservation

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in residential sector as being very significant, however negligible attention has been given to research on human behavioral change for obtaining energy conservation targets in India.

Therefore, household-centric energy behavior of individuals in Indian context becomes the focal point of this study with two specific objectives of a) understanding interactive role of the psycho-social and socio-economic situations of individuals in advancing pro-social low cost altruistic energy conservation behaviors and b) to explore the relationship of energy conservation intentions of individuals with their socio-economic realities in order to find key influencers of intents.

The literature on this issue outlines factors that explain the usage of household energy as TEDIC factors: technological developments (e.g. usage of energy-efficient appliances), economic growth (e.g. increase of household incomes), demographic factors (e.g. population growth), institutional factors (e.g. governmental policies) and cultural developments (e.g. emancipation, increasing mobility of women) (see Gatersleben & Vlek, 1998). In turn, these TEDIC factors shape individual (viz., micro-level) factors such as motivational factors (e.g. preferences, attitudes), abilities and opportunities (the MOA-model, see O'lander & Thogerson, 1995).

Several scholars have recommended focus on individual actions that, if performed in aggregate in public life, can have a sizeable effect on reducing greenhouse gas emissions (Dietz, Gardner, Gilligan, Stern, & Vandenbergh, 2009; Vandenbergh, Barkenbus & Gilligan, 2008). Many studies attempt to investigate the impact of education and awareness of global warming through identifying intention to perform behaviours that cause or mitigate the global warming (Barnes & Parks, 2012).

Reviews of Gardner & Stern, (2002) classify conservation behaviour into efficiency and curtailment behaviour. Abrahamse et al., (2005) and categorized as involving either antecedent strategies (i.e. commitment, goal setting, information, modeling focuses predominantly on curtailment behaviour and points out that efficiency behaviour are more output oriented in terms of conservation of energy. Berkhout, Muskens, & Veldhuijsen, (2000) calls for avoiding too much reliance on energy efficient appliances by pointing out the phenomenon of *rebound effect*. Therefore, proposed study focuses on curtailment behaviours those are pro-social in nature.

An individual can be stimulated to demonstrate larger pro-social behaviour like energy conservation behaviour. Mccalley & Midden (2002) Abhahamse & Steg (2009; 2011) examined the relative importance of socio-demographic and psychological variables for 189 Dutch households in relation to household energy use change and explored the relationships between household energy use and householders' intention to reduce their energy use using Theory of Planned Behaviour framework (Ajzen, 1985) and Norm Activation Model (Schwartz, 1977).

A causal model of energy conservation behaviour concludes psychological variables as better predictors of conservation behaviour than socioeconomic, demographic or dwelling unit variables. Macey (1991) More recently, Steg (2008) in her seminal work on hosehold based behavior change for energy conservation argued that behaviour change will be more effective if they target the most important causes of the behaviour in question. Social norms have been found to be strong predictors of energy conservation behaviour intention. (see Lingyun, Rui, Hualong, & Xiaohua, 2011), and there is evidence to suggest that stronger environmental responsibility on parts of individual leads to stringer energy saving intent among householders. 'Ownership of the house', 'educational level' and 'family structure' have vital impact on household energy conservation behaviour. (Wenshun, Xiaohua, & Hualong, 2011) Therefore, some of these variables become part of the proposed study.

Norm activation model (NAM) variables that focus on energy use in general, have potential to predict a range of different energy behaviours, including energy use at home. (Werff & Steg, 2015) Croucher, (2011) explains why despite knowing benefits of it, people usually refrain from performing the energy conservation behaviour. Langewin, Gurian & Wen, (2013) explore the key behavioural tendencies, energy knowledge gaps, and attitudes among low-income public housing residents in USA.

Studies based on theoretical frameworks of value belief norm (VBN), theory of reasoned action (TRA), theory of planned behaviour (TPB) and norm activation model (NAM) are virtually absent in third world countries pertaining to energy conservation of individuals in households. (PICS, 2015) To bridge this gap, this study therefore explores three specific questions:

1. What difference socioeconomic realities make on state of mind of the individuals pertaining to energy conservation?
2. What psycho-social and socio-economic realities of individuals' help them translate attitude into intent pertaining to energy conservation?
3. To what extent energy conservation awareness help build positive intent of individuals towards energy conservation behaviour for different socio-economic groups of households and individuals living therein?

Hypotheses

In order to ascertain how psycho-social difference in individual's situation makes impact on their state of mind pertaining to energy conservation, three different relationships are proposed in response to build insights pertaining to three different questions posed earlier. First, it is important to know how significant would be the difference in key psychometric measures if individuals belonging to different age, income, educational qualifications and socio-economic groups are compared. Therefore, we propose first hypothesis test as t-test. Second, it is required to ascertain what help build individual's attitude and intent, for which inter-dependency of psycho-social and socioeconomic measures is required to be tested. Hence our second hypothesis is test of independence. Finally, in order to ascertain degree to which energy conservation awareness of an individual among other psycho-social realities influences energy conservation intent of the individual, predictive capacity of awareness is tested, which is our third hypothesis. Multiple regression analysis is employed to test the third hypothesis. Thus, three hypotheses are framed as under:

H_a: There is no significant difference in PVs (Psychometric Variables) because of SEVs (Socio-economic variables).

H_b: The psychometric measures are independent of socio-economic measures pertaining to individuals and households they belong to.

H_c: Psycho-social and socioeconomic measures are strong predictors of behavioural intention (BI) of individuals.

Method

The method of purposive sampling was employed to carve out sample households of 550 (five hundred fifty). The study has been conducted in the city of Bhopal, Madhya Pradesh. All the data has been taken from energy-sufficient urban households (having government-approved electricity connection and having personal two-wheeler / car) of Bhopal city. Maximum Variation Sampling (MVS) technique was employed for some variables. For example, variable like 'house space' was allowed to have values not less than 650 square feet and not more than 5000 square feet, however on other variables homogenous sampling technique was employed. All the households happen to be urban area households with designated criterion of *energy concern* to meet. Typical Indian upper middle-class section living in fairly developing and large city from the hinterlands of the country represents the typical nature of Indian urban middle class. To select the sample of 550 respondents online sample size calculator was employed (Raosoft Inc., 2004).

Data Collection and Measurement

Data on key socio-economic variables pertaining to urban households and six psychometric variables in accordance to theory of planned behaviour framework were collected. Six key psychometric variables were measured on either a male or female head of household taken from one home. Each respondent was measured on environmental values, energy conservation beliefs (ECB), subjective norms (SN), energy conservation attitude (ECA), perceived behavioural control (PCB) and behavioural intent (BI). Thus, 550 respondents, from 550 different types of urban households belonging to different socio-economic status recorded their responses for six key psychometric variables (pertaining to individuals) and for selected socio-economic variables (pertaining to both individual and households). Socio-economic variables pertaining to individuals included age, gender, educational qualification and ownership status. Among socio-economic variables pertaining to household, income of household, average monthly power & fuel expenditure, house space were prominent ones. Along with it some information regarding people's expectation on power saving based on interaction with neighbourhood and awareness regarding energy conservation efforts were also taken from each respondent.

For measuring all of these, all the tools were prepared on 09 pointer likert scale. These were subjected to constraint validation using factor analysis. Four (04) items each based on altruistic, biospheric and egoistic values were

framed to make it a 12-item scale to measure value orientation of an individual (DeGroot & Steg, 2008). The reliability of the scale as per Cronbach's alpha measure is (α= 0.856) Energy *Conservation Beliefs (ECB)* is a set of assumptions that individual holds strong in the psyche about energy conservation (Stern, Dietz, & Guagnano, 1995). As suggested by DeGroot & Steg (2008) a scale to measure ECB was constructed. (α= 0.951) A scale based on the Norm Activation Model (NAM) [Schwartz, 1977; Schwartz & Howard, 1981] was constructed to measure Subjective Norms. Subjective norms scale measured the degree to which an individual confirms the normative expectations of people valued by the individual concerned. The scale had 10 items. (α= 0.941) Attitude concerns a person's belief regarding the consequences of undertaking a specific behaviour (Ajzen and Fishbein, 1980). Therefore, attitudes, whether favourable or unfavourable, are produced by behavioural beliefs (Ajzen, 2002). This scale had 15 items. (α= 0.955) *Perceived Behavioural Control (PBC)* refers to people's perceptions of their ability to perform a given behaviour (Ajzen 1991). 10 items leading to measure this were framed. All the 10 items were independent of each other and focused on *turn-off* (*Turning off lights / equipment after the usage)* and *fuel avoidance (Avoiding usage of fuel-based vehicles as & when feasible)* as conservation behaviour. (α= 0.930) In *Behaviour Intent Scale*, 10 items were framed. Scale was developed for this study by adopting items of other scales designed for European or American environments. (α= 0.938) Items were framed to indicate individual's willingness to perform the behaviour that saves power and fuel.

Results

Table 1: Socio-Economic Measures

Variable	*N*	*Min*	*Max*	*Mean*	*SD*
Age (In Years)	550	15	84	38.64	14.709
Household Size (No. of members living in the household)	550	1	7	3.80	1.088
Power Expenditure Average (Monthly, In Rupees)	550	625	10427	2164.46	1307.567
Fuel Expenditure Average (Monthly, In Rupees)	550	100	6500	2082.93	1049.779
Monthly Income of Household (In Rupees)	550	15658	854769	75486.77	51542.000
House Space (In Square Ft.)	550	250	5000	1215.99	331.678

In the sample nobody has been taken beyond the age of 84, no family is included having more than 07 members, and living in house larger than 5000 Sq. feet of build-up area. All of this along with average of monthly power bills, fuel bills, and monthly income of household together indicate that our sample is typical urban Indian middle class.

Table 2: Psychometric Measures

Variables	*N*	*Minimum Obtained*	*Maximum Obtained*	*Mean*	*Standard Deviation*	*Min score on scale*	*Max score on scale*
VoI	550	17	108	57.37	18.175	12	108
ECB	550	27	143	89.08	26.907	16	144
SN	550	12	89	52.97	19.223	10	90
ECA	550	23	135	83.71	27.094	15	135
PCB	550	17	90	54.93	18.930	10	90
BI	550	15	90	50.21	19.288	10	90

Energy Conservation Attitude (ECA) and Energy Conservation Belief (ECB) show about the same amount of dispersion, thereby indicating people differ in beliefs and attitudes more than other psychometric measures, however in general family heads are concerned about energy conservation as mean values are on higher side. All other measures show about the same dispersion indicating consistency among rest of them.

Table 3: Comparison of Different Groups of Individuals

Grouping by Age; cut point 40 Years	*t -value*	*Sig*
Value Orientation of Individual	6.620	.000*
Energy Conservation Beliefs	-6.55	.000*
Subjective Norms	4.65	.000*
Energy Conservation Attitude	1.37	.169
Perceived Behavioural Control	1.68	.093
Behavioural Intent	-.677	.418
Grouping by Average Power Expenditure; cut point Rs 2000/-		
Subjective Norms	-3.38	.001*
Grouping by Average Fuel Expenditure; Cut point Rs 2000/-		
Energy Conservation Attitude	-2.28	.02*
Perceived Behavioural Control	3.07	.002*
Grouping by Monthly Income; cut point Rs 75000 /-		
Value Orientation of Individual	3.07	.002*
Perceived Behavioural Control	3.16	.002*
Behavioural Intent	-2.35	.019*

*Significant at α=0.05

T-tests were conducted to test the first set of hypotheses. Results suggest that age has potential to create difference in value orientation of individuals, energy conservation beliefs and subjective norms of individuals pertaining to energy conservation. When individuals are divided into two groups on the basis of their age, the group having age lower than 40 years, was found to be less oriented towards energy conservation values, found to be stronger believer in energy conservation and demonstrated weaker subjective norms for conservation of energy. Individuals from households spending more than or equal to rupees two thousand monthly on an average towards electricity, demonstrate weaker subjective norms (indication of performance of energy conservation action as others expect it) as a group when compared to individuals coming from households those pay less than rupees two thousand monthly on an average. Individuals coming from households spending rupees two thousand and more towards fuel for vehicles, show weaker behavioural attitude but relatively stronger behavioural control, for energy conservation pro-social actions. Lastly, family heads of households having income more than or equal to rupees seventy-five thousand, is the group showing stronger value orientation, stronger perceived behavioural control, but relatively weaker intent to perform low cost, pro-social routine household-based energy conservation behaviours as compared to the group of individuals coming from households reportedly having monthly income less than rupees seventy-five thousand.

Table 4: Inter-Dependence between Psychometric and Socio-Economic Features

Row Variable	*Column Variable*	*Value of Chi-square (χ^2)*	*Sig.*
Educational Qualification	ECA _ Category	17.765	0.007*
Gender	ECA _ Category	2.83	0.243
Age Category	ECA _ Category	13.97	0.007*
Ownership status	ECA _ Category	16.54	0.002*
Primary Motive	ECA _ Category	21.26	0.006*
People's Expectations	ECA _ Category	22.67	0.000*
CFL/LED Shift	ECA _ Category	12.53	0.014*
CFL/LED Shift	BI _ Category	10.79	0.029*
House space	BI _ Category	24.70	0.000*
Gender	BI _ Category	3.12	0.210
Income of household	BI _ Category	11.76	0.019*
Age Category	BI _ Category	13.18	0.010*
Educational Qualification	BI_ Category	03.97	0.681
Ownership Status	BI_ Category	5.324	0.256

*Significant at α=0.05

Chi-square Tests for Independence were employed to test second set of hypotheses. Prominent results are as follows. Educational qualification of individuals and energy conservation attitude (ECA) are not independent of each other. Gender has no association with ECA. ECA is not independent of age. Ownership status of the house and ECA are strongly associated. Neighbourhood expectations to conserve energy have strong association with energy conservation behaviour of individuals. There is evidence to suggest that house-space where individual lives, has rather strong association with one's intent to conserve energy. In another interesting finding, gender of the respondent again doesn't seem to have any association (0.210>0.05) with behavioural intent (BI) to conserve energy based on the χ^2 statistic (2, 3.123). Income of the household (4, 11.764) one lives in, shows evidence for association with one's behavioural intent to perform energy conserving behaviour (0.019<0.05). Age is having chi-square (4, 13.186) with behavioural intention of the individuals. (0.010<0.05), suggesting again an association between age category one belongs to and having a certain degree of conservation intent. Educational Qualification (6, 3.967) along with gender does not have association with behavioural intent to conserve energy (0.061>0.05). Ownership status of the house (4, 5.324) also hasn't found any association with intention to conserve energy (0.256>0.05). To run the chi-square tests, required variables were re-coded into category variables. Individuals were also categorised on the basis of their motives (whether altruistic or selfish) to conserve energy and whether they have already made a shift to using LCD/CFL like energy saving equipment, as usage of any energy efficient equipment vindicates their concern for energy conservation. It was found that motives of conserving energy have association with attitude as well as intent for saving. Also, using CFL/ LED also has association with having attitude and due intention for performing energy conservation action.

Table 5: Predicting Behavioural Intent

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*	*Change Statistics*				
					R Square Change	*F Change*	*df1*	*df2*	*Sig. F Change*
1	.377[a]	.142	.141	17.879	.142	90.883	1	548	.000
2	.430[b]	.185	.182	17.442	.043	28.846	1	547	.000
3	.470[c]	.220	.216	17.076	.035	24.698	1	546	.000
4	.484[d]	.234	.229	16.939	.014	9.840	1	545	.002
5	.495[e]	.245	.238	16.840	.010	7.476	1	544	.006

a. Predictors: (Constant), Energy Conservation Attitude

b. Predictors: (Constant), Energy Conservation Attitude, Subjective Norm

c. Predictors: (Constant), Energy Conservation Attitude, Subjective Norm, Energy Conservation Beliefs

d. Predictors: (Constant), Energy Conservation Attitude, Subjective Norm, Energy Conservation Beliefs, Aware of EC Efforts

e. Predictors: (Constant), Energy Conservation Attitude, Subjective Norm, Energy Conservation Beliefs, Aware of EC Efforts, Perceived Behavioural Control

f. Dependent Variable: Behavioural Intent

Regression Analysis tested the third hypothesis. Different models having different combinations of SEVs and PVs as independent variables were tested for their robustness to predict the outcome variable of the interest 'behavioural intent' (BI). As soon as variables were entered into model, most of the socio-economic variables are kept away by the model and the model takes only psycho-social variables to predict the 'behavioural intent' including 'awareness of energy conservation efforts'. It can be seen that these predictors together explain 24.5% (around a quarter of total; see Table 05: Model 05; Model Summary) variance in the dependent variable.

This analysis almost rules out any possibility of behavioural intent of individuals being predicted by any of socio-economic variables (SEVs). If we exclude individual's awareness of energy conservation from the list of predictors, model loses its predictive capacity by

one full percent and total variance explained remains at 23.5%. This drop is more than any other single PV dropping out from the list of predictors, thereby suggesting awareness of energy conservation efforts as key variable to predict intention of individuals.

Discussion

This analysis highlights certain points. First, behaviour intention is almost independent of any socio-economic reality of the individuals. Second, the low amount of variance explained indicates inherent intricacies unaddressed. Week correlations among variables in the hypothetical framework appear to be strong reason for this. Therefore, the existing hypothetical framework should have new exogenous variables or there is mediation and/or moderation between the relationship of behaviour intent and other PVs. Third, gender doesn't seem to influence intent to perform energy conservation behaviour. Results of t-test (see table 03), chi-square test showed no significant difference because of gender, and independence from gender respectively. Chi-square (χ^2) value (2, 2.83) isn't significant (0.243>0.05) at 0.05 level, showing independence of gender from energy conservation attitude, (2, 3.123) again showing no association (0.210>0.05) with behavioural intent (BI) to conserve energy. In regression analysis also gender again goes out of model in the initial steps, conforms absolute lack of influence of it in our study, however, many studies have contrary findings as well. For example, Datar (2011) talks about need of framework for gender equality in all sustainable development efforts and Parikh (1995) highlights a range of gender issues intertwined with energy policy. Pachauri & Rao (2013) asked whether right questions are being raised as far as gender role is being considered and prior to that Pandey & Chaubal (2011) has asked questions of women's plight and gender inequality in their seminal work pertaining to rural India's household energy related matters. Meta-analytic review by Ryan (2014) suggests there is whole body of scholarship revolving around gender issues in energy research. Therefore, it was imperative to test the gender relationship in our study especially when study has the Indian context.

Income and Expenditure of households, educational qualifications of individuals are least likely to influence the demonstration of conservation behaviour towards energy by individuals in collective terms; however, some results show them to be effective in certain situations. In other words, proven potential to consume energy doesn't indicate either the intention or attitude to conserve energy in generic terms among urban households. These findings corroborate examination done by B. Yu et. al. (2011) where household attributes (Household income, household size, Household space/area, house-type), individual attributes (gender, age, occupational type, education) and usage of in-home appliances were considered. Lutzenhiser (1992 & 1993) also leads to similar conclusions highlighting role of cultural, social and behavioural aspects in promotion of individual energy conservation behaviour.

Age of 40 years, monthly fuel & power expenditure of households of INR 2000/-, Monthly income of INR 75,000/- are some critical points as they have the potential to influence the human psyche towards energy conservation. Over an individual's lifespan, the usage of energy is bound to change. Similar results obtained by Wei et al. (2007) while discussing the ownership of house and usage of vehicle, with respect to age, income & expenditure of household. Similar threshold points have been identified in these researches. Pachauri (2004) and Moll et al (2005) have identified household income and size as key drivers of energy consumption behaviour. Barr et al. (2005) has also confirmed the role of age, household income and expenditure, on energy conservation behaviour of individuals in Swedish context.

There is no evidence to suggest that human attitude for energy conservation has any systemic relationship with either ecological or social views of primary earners of households. Martinsson et al. (2011) provides a detailed overview on attitudes (specifically environmental attitudes) on energy behavior in households and establishes a relationship between environmental value system and energy conservation among individuals of Swedish households. In this matter, our study does not testify the findings of studies on the similar issues establishing strong links between environmental value system and energy usage behavior in European context. (Abrahamse & Steg 2009; Brandon & Lewis, 1999) There is scant evidence that establishes 'turn-off' behavior as one of the significant dimensions of energy conservation behavior. Warner et al. (2012) have also suggested turning-off lights as a vital act for conservation behavior through an experiment in University of Utah campus in USA.

The Study Identifies Some Directions for Future Research

The study has several limitations paving the way for future research. Data used in the study is collected from one Indian city which deprives the study of any cross-cultural insights and reinforces factors of nativity as most of the respondents are likely to think alike as political environment, and native climate remains the same. (Dwyer et al. 2015; Oceja & Berenguer 2009) At the same time, norms are defined by native culture, and norms being major component to predict energy conservation intent, findings of this study are limited to native culture and place. Hence, individuals coming from diverse cultural backgrounds is one very evident requirement for future research.

Some of the variables were measured for household as a whole and others were measured for individual's habits, behaviours and conditions which constrained the analysis in this study. Survey has methodological limitations. Variables like subjective norms are quite generalized and there could have been more bifurcations and variations within. Similarly, instead of measuring value orientation on single scale, separate scales for measuring altruistic, egoistic and biospheric values allow deeper understanding of human psyche. (Schwartz, 1973) Further studies may address these issues.

Non-availability of standardized measures on chosen variables in context of energy conservation behaviour in Indian socio-cultural context calls for studies attempting to develop standardize measures of psychometric measures used in this study. Rather than just relying on fundamental tenet of theory of planned behaviour, more indigenous frameworks are required to be adopted for future studies. As Pachauri (2008) suggests such studies have been explorative in nature being newer and fresher attempts in India, moving on descriptive and explanatory studies are called for.

Theoretical research into energy aspects as suggested by Miller, Richter, & Leary, (2015) continues to hold importance in Indian context. Depending upon the culture context, there exist a gap between intention to perform a behaviour and performing that behaviour, e.g. in US, a man or woman is more likely to perform a behaviour once intent is formed because of less hurdles and more comfortable lifestyles, however that might not be true for a developing country as people have their own challenges and reasons for not performing the behaviour even if the intent is formed. (Ajzen, 1991) This variability that hinders or helps people execute their intent needs to be studied in different socio-cultural environments.

Lastly, based on the exploration of second and third objective of this study future research is required to focus on mediating and / or moderating relationships among key psychometric and behavioural variables including all those mentioned in this study, as the path of translation of attitude to intent is yet not clear. Some other exogenous variables may also be included to establish the path to formation of behavioural intent to energy conservation. Since, there is a weaker correlation between socio-economic and psycho-social measures; hence it confirms some effect of mediation at the least.

Conclusion

As suggested by Bureau of Energy Efficiency, behaviour of urban middle class in India is vital for promoting energy conservation behaviour in India. (BEE, 2016) Study presents the data from urban population of India belonging to medium income category, upon which sustainability and human growth is dependent to a large extent. Attitude and intentions of individuals in household setting towards energy conservation have been attempted to understand. Socio-economic realities of households and individuals as well as psycho-social realities of individuals have no direct influence over behaviour intentions to perform energy conservation behaviour. Therefore, mediation analysis with identified mediators must be considered. Awareness regarding energy conservation and motives for doing it have vital connection for sustained conservation behaviour. Nonetheless, strong intentions sometimes do not translate into action, therefore situational factors that affect perceived behavioural control become very important and that is where role of cultural factors, socio-economic constraints have a role to play. Thus, similar studies based on Indian indigenous cultural frameworks have become mandatory. India is in a unique situation, where destitution needs to be combated at one level, yet lessons from developed economies have to be taken for not repeating the mistakes they committed. This calls for an efficacious governmental and institutional paradigm shift in efforts towards energy conservation leading to energy for all.

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