



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 Issue: VIII Month of publication: August 2019

DOI: <http://doi.org/10.22214/ijraset.2019.8079>

www.ijraset.com

Call:  08813907089

E-mail ID: ijraset@gmail.com

Comparative Study of Environmental and Climate Smart Attitude of Farmers Living in Rural and Urban Areas for Learning about the Adoption Practices

Bibhu Santosh Behera¹, Dr. S. Swain², Dr. K. S. S. Rakesh³, Prof (Dr.) Patrick Kalifungwa⁴, Prof Lucy Kapiteni⁵

¹International Research Scholar, LIUTEBM University, Lusaka, Zambia

²NRP, NMMU-NRLM, New Delhi, Research Supervisor (Guide)

³LIUTEBM University, Lusaka, Zambia (Research Thesis reviewer)

⁴Hon'ble Vice-Chancellor, LIUTEBM University, Lusaka, Zambia

⁵Dean, LIUTEBM University, Lusaka, Zambia

Abstract: *Climate Smart Extension Education is an Emerging Research in the globe. The Research has been started at Odisha, India by a Young Researcher Bibhu Santosh Behera of Odisha Livelihoods Mission, a Government Organization under the aegis of Department of Panchayatiraj and Drinking Water, Govt. of Odisha. As Odisha is the capital of Disaster, in order to mitigate the disaster by providing cushion to the community, planet, society and livelihoods, in the Year 2014, the Researcher Innovated and Coined the Term Climate Smart Extension Education as a man of Agriculture Extension Education from OUAT University Bhubaneswar. Here the researcher studied the Climate Smart Attitude along with Environmental attitude of Farmers Living in Rural and Urban Areas for Learning about Adoption Process. For Popularizing Climate Smart Extension Education, the researcher has presented his lecture, talk and researcher in various forums and appreciated by all by getting Young Scientist Award in the Theme of "Climate Smart Extension Education" by BRIATS Allahabad in 2014 and also treated as Father of Climate Smart Extension Education in the World. The Major Research Findings are reflected in this paper may help to the welfare of Farming Community. The whole research is for Doctoral research and this paper is for Awarding of Doctoral Degree as per UGC Norms and International University Norms.*

Keywords: *Climate Smart Attitude, Environmental, Rural, Urban, Adoption*

I. INTRODUCTION

A. Statement of the Problem

In the environmental education works, environmental interest and attitude have an important place in related literature. However, the paucity of the studies dealing with environmental interest is remarkable and the need for studies to be conducted at the high school level comes to the fore.

The present study is to evaluate the environmental attitudes and interest in relation to the independent variables of gender and grade type.

B. Objective of the Study

- 1) To study the environmental *and climate smart* attitude of rural people.
- 2) To study the environmental *and climate smart* attitude of urban people.
- 3) To finding the difference in environmental *and climate smart* attitude between rural and urban people.
- 4) To find out the difference in environmental *and climate smart* attitude between male and female.

C. Statement of Hypothesis

- 1) There exist no significant differences in environmental *and climate smart* attitude of people living in rural and urban area.
- 2) There exists no significant difference in the environmental *and climate smart* attitude of male and female.

D. Significance Of Study

Environment refers to sum total of all condition which surround a man at a given point of space and time. The environment is a term which refers all physically fortifiable things at a particular time. It is the interaction between the living and in a particular area to perform various important activities of life.

The environmental awareness changes the human attitude toward nature. It creates consciousness and a sense of responsibility towards environment in the society. Environment awareness is needed to that the people in general understand the complex nature of nature and the man made environment. So that they should be in position to actively and intelligently participate in solving the problem related to the subject. They not only need motivation and knowledge but even the skill to tackle problems and that will come from awareness and education polluted environment in dangers the human raise by threatening it survival on the planet- earth. It is education which can make the human being conscious and knowledgeable about various environment problems.

E. Operational Definition of The Key Term Used

Environmental Attitude: -In generally the term environmental attitude refers to the attitude of individual towards the environmental there the term environmental attitude refers to the score obtained by Taj Environmental attitude scale.

- 1) *Rural Area:* Here the rural people area refers to the people living in village.
- 2) *Urban Area:* Here the urban people area refers to the people living in town.

F. Review of Related Literature

This topic presents the details of the review of related literature. Environmental education is on of the most recent advanced and fast growing area of education research. It is observed that major work in the field of environmental education has been done since 1980 and an attempt has been made here to review the studies related to the present topic in a systematic way.

The studies reviewed are presented under the following headings: -

- 1) *Studies on Environmental Awareness in India:* Pai (1981) experimented a study in environmental studies taking a group of 152 college’s students to help them to acquire awareness, develop positive attitude, and develop skills necessary for solving environmental problems and taking preventive measures. The study revealed that there was a significant difference between the experimental group and the control group on knowledge scores an attitude scores and the experimental group gained more than the control group on environmental activities inventory, indicating effectiveness of the curriculum.
- 2) *Studies on Environmental Attitude and Attitude Towards Environmental Education in India:* Deopuria(1984) made a comparative study of teaching of science through environmental and traditional approach. The objectives were to compare the effectiveness of two different approaches in developing environmental awareness attitude towards environmental education and cognitive achievement in science among the peoples, the study revealed that the environmental approach group obtained higher achievement scores due to teaching of science through environmental approach. Rural and urban subjects do not differ significantly with regards to the relationship between environmental attitude and pro- environmental behaviour.

II. SAMPLE OF THE STUDY

The sample of the study has been selected from among the habitants of urban area. Out of the total list of population 80 samples were selected by adopting purposive sampling technique.

The details distribution of sample respondent under sub sample wise has been presented in table.

SL.No	variable	Sub-sample	No. of sample respondent
1	Gender	Male/ Female	40/40
2	Locale	Rural/ Urban	40/40

On the basis purposive sampling the sample respondent has obtained as descriptive table. From the above table the data of 80 rural and urban areas has been represented. Out of 80 sample 40 rural and 40 urban areas.

A. Instrument / Tools

To study the environmental attitude of rural and urban area peoples. The *BIBHU SANTOSH ENVIRONMENTAL AND CLIMATE SMART ATTITUDINAL SCALE* was developed by *Bibhu Santosh Behera* which has used here after scoring all try out forms; they were arranged in descending order. It consists of 61 items. Each item has four options like strongly agree, agree, disagree and strongly disagree. There is no correct or incorrect answer: and there are 31 favourable items and 30 unfavourable items. The distribution of items is given below in table.

Category	Sl.no of items
Favourable	2,4,7,10,11,13,14,15,21,23,25,57,60,61,29,30,31,32,37,40,43, 44,45,47,49,51,52,54
Unfavourable	1,3,5,6,8,9,10,12,16,17,18,19,22,24,26,27,28,33,34,35,36,38,39,48,50,53,55,58,56,59

Bibhu Santosh environmental and climatesmart attitude scale (BSEACSS) possesses high content validity because the items at the first stage for tryout of the scale were selected on unanimous agreements (80% to 100%) of experts in the field regarding its content adequacy.

B. Design and Procedure

The basic purpose of the study is to know the environmental attitude of rural and urban area in relation to gender and educational qualification was treated as a survey type of study. There are other methods like historical, experimental, causal comparative methods but those methods are consider in appropriate because of the following reasons.

Descriptive survey method was appropriate the study as the investigator not revealing the past rather the investigator was analysing environmental attitudinal score of the rural and urban area.

- 1) *Procedure of Data Collection:* The Research Scholar has done here investigation on the rural area at Sundarpada and urban area at CRPF Square near by Bhubaneswar. He has collected data from male and female members though interview schedule, which is prepared by the researcher. Among whom some are male and female where as some are rural and urban area people. He has made interaction with them in a face to face mode and take photos with them the data collection has done successful and finally he was giving vote of thanks to them.
- 2) *Scoring Procedure:* Each item alternative is assigned a weightage ranging from 4 (strongly agree) to 1 (Strongly disagree) for favourable items. In case of unfavourable item the scoring is reversed i.e, from 1 (strongly agree) to 4 (Strongly disagree)

C. Statistical Treatment

The collected data were analysed by adopting appropriate statistical techniques in order to test hypothesis and find result objective wise both descriptive and inferential statistics have been adopted. Descriptive statistics like: - Mean, standard deviation and inferential statistics like t-test was used.

D. Delimitation

- 1) The study was restricted to 80 peoples only.
- 2) The study was restricted to 40 urban and 40 rural peoples(40male and 40 female)
- 3) The study was confined to Puri district only.

III. ANALYSIS & INTERPRETATION

The present project has been selected and conducted with the intention of finding out the environmental attitudinal score. However valid, reliable and adequate the data may be, it does not serve any worth while purpose unless it is carefully edited systematically interpreted, scientifically analysed, rationally conclude.

Hence the row data should be analysed systematically to findout exact interpretation.

- 1) *Distribution of Environmental and Climate Smart Attitude Score:* In the following table indicates environmental score attitudinal of sample respondents

C.I	F	RURAL	URBAN
170-179	6	3	1
160-169	20	0	4
150-159	21	14	7
140-149	19	1	13
130-139	10	6	9
120-129	4	16	6

- 2) *Locale As a Variable on Environmental and Climate Smart Attitude Score:* Here the objectives of the study is to find out locale difference in the attitudinal score of rural and urban area for this purpose t-value was calculated which is presented the table no 2 & 3 Summary of the t-test showing the environmental and climate smart attitudinal score of rural and urban people in to locale)

Table 2

Category	No. of people	Mean	S.D	t	Significant
Rural female	20	22.68	12.28	3.14	Not significant
Rural Male	20	30.83	5.69		

Table 3

Category	No. of people	Mean	S.D	t	significant
Urban female	20	15.66	3.22	10.50	Not significant
Urban male	20	30.83	5.69		

- 3) *Estimation of Environmental and Climate Smart Attitude of Rural People:* Out of 40 sample respondents, 11 sample respondents belongs to higher environmental awareness category ,17 sample respondent belong to mediocre environmental awareness category and 12 sample respondent belongs to lower environmental awareness category.Out of 40 sample represent only 11 Sample have higher environmental awareness. Necessary action may be taken by the govt. in order to make the rural people aware about the environmental unless we cannot improve our society.
- 4) *Estimation of Environmental and Climate Smart Attitude Of Urban People:* Out of 40 sample respondent 11 sample respondent belongs to higher environmental awareness category 14 sample respondent belong to mediocre environmental awareness category and 15 sample respondent belongs to lower environmental awareness category the results were obtained through the Mean, standard deviation, t-test.Out of 40 sample represent only 11 sample respondent have higher environmental awareness. Necessary action may be taken by the govt. in order to make the urban people aware the environmental unless we cannot improve our society.

IV. SUMMARY AND CONCLUSION

Environmental factor may be biotic components (living organisms) and A biotic component (no living variables) biotic component are the living things that form an ecosystem, any living component that affects another organism is known as biotic factor.

A biotic component is non living compound and physical elements in the environment can be listed into 4 major aspects- lithosphere, hydrosphere, atmosphere, and biosphere. Environmental awareness and understanding among the people are at once conscious of environmental education. An approach that emphasizes upon local issue, rather than global once is often more effective in promoting public interest and understanding. This may account, in part for the success of non-formal community environmental education and local environmental communication programme in sensitizing people about the loss of natural resources & make them aware about environmental issues in both urban and rural areas. A number of environmental problems have just a local dimension both in rural and urban areas people should be made aware of the use of water, electricity, detergents, chemicals, plastic, steel, word etc. Above this level com the localities, villages and their common properties and small towns. People should be encouraged in tree plantation and maintenances, social frostery, environmental education extension programmes etc.

A. Findings of the Study

- 1) Only 24%slum dwellers have higher environmental and climate smart attitudinal score, 54% slum dwellers have mediocre environmental and climate smart attitude score and 22% slum dwellers have lower environmental attitudinal score.
- 2) There is no significance difference between male and female slum dweller related to their environmental and climate smart attitudinal score.

- 3) There is no significance difference between educated and uneducated slum dwellers in relation to their environmental and climate smart attitudinal score.

B. Recommendations and Educational Implication of the Study

The study indicates that of slum clearance should be enlarged to embrace slum improvement by providing them minimum amenities like suitable education, awareness programmes towards environment., housing and food facilities for their lively hood etc. slum dwellers are more prone to disease because of the sub human conditions, which prevail due to unawareness and neglect. In order to solve this, proper efforts to educate them in the direction of health and hygiene should be made. The slum dwellers should be seen not just as the beneficiaries but as the primary stakeholders. Public policies would thereby have to accept human beings as the focus point of development and reconsider their current thrust on the physical built environment.

Environmental pollutions to be a necessary of the human activity. Environmental awareness, perception and education play a significant role in the management of environmental for reducing pollutions. The level of amenability and responsiveness in safeguarding the environment from pollutants depends upon the extent to which the citizens understand and appreciate the value of environment for health and happiness. It is the respect essential to make the present slum tolerably liable by providing essential services on the one hand and by educating the slum dwellers for the various environmental ethics. Following recommendation have been recommended by the investigation such as:

- 1) The govt. should be prepared slum action plan for implementing slum up gradation programme at each slum level.
- 2) The govt. should be lunched rehabilitation programme of the providing effective development in the slum area.
- 3) Several literacy and education programmes of the central and state govt. are in operation in slum area to improve the educational status of the economically weaker section.
- 4) Provision of adequate training and skill up gradation for women in the slum area of tailoring, food processing, basket making, typing and computer education. Increase outlay on urban poverty alleviation programmes under five year plan.
- 5) Impart quality education to the children in slums through trained personnel and provision of physical infrastructure like building, equipment, books and useful materials. Need for adult education programme.
- 6) Educate or conduct awareness programme to both women and men to improve awareness towards environment.

C. Suggestion for Further Research

On the basis of this study following findings type of researches can be undertaken:

- 1) Further study can be under taken by covering wider area and more samples.
- 2) A comparative study can be conducted on environmental attitude among slum dwellers living in different area.
- 3) Standardized tool can be developed for measuring environmental attitude.
- 4) A study can be under taken by co- relating environmental attitude with hygiene condition amongst the slum dwellers.

REFERENCE CITED

- [1] Wheeler, T. & von Braun, J. Climate change impacts on global food security. *Science* 341, 508–513 (2013).
- [2] IPCC Summary for Policymakers Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects (eds Field, C. B. et al.) (Cambridge Univ. Press, 2014).
- [3] Porter, J. R. et al. in Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects (eds Field, C. B. et al.) 485–533 (IPCC, Cambridge Univ. Press, 2014).
- [4] Tubiello, F. N. et al. The FAOSTAT database of greenhouse gas emissions from agriculture. *Environ. Res. Lett.* 8, 015009 (2013).
- [5] Gitz, V. & Meybeck, A. Risks, Vulnerabilities and Resilience in a Context of Climate Change (FAO, 2012).
- [6] Challinor, A., Martre, P., Asseng, S., Thornton, P. & Ewert, F. Making the most of climate impact ensembles. *Nature Clim. Change* 4, 77–80 (2014).
- [7] McCarthy, N., Lipper, L. & Branca, G. Climate-Smart Agriculture: Smallholder Adoption and Implications for Climate Change Adaptation and Mitigation (Mitigation of Climate Change in Agriculture Series No. 4, FAO, 2011).
- [8] Financing Climate-smart Agriculture 375–406 (Climate-Smart Agriculture Sourcebook Module 14, FAO, 2013).
- [9] Report on the Sixth Replenishment of the GEF Trust Fund (Global Environment Facility Secretariat (GEF) Secretariat and World Bank, for Fifth GEF Assembly, 2014).
- [10] World Development Report: Risk and Opportunity: Managing Risk for Development (World Bank, 2014).
- [11] Commonwealth Department of Environment, National Waste Reporting 2013, (2013).
- [12] Institute for Sustainable Futures, National Food Waste Assessment, 2011.
- [13] K.L. Nelson, A. Murray, Sanitation for Unserved Populations: Technologies, Implementation Challenges, and Opportunities, *Annu. Rev. Environ. Resour.* 33 (2008) 119–151. doi:10.1146/annurev.enviro.33.022007.145142.
- [14] W. Steffen, K. Richardson, J. Rockstrom, S.E. Cornell, I. Fetzer, E.M. Bennett, et al., Planetary boundaries: Guiding human development on a changing planet, *Science* (80-.). 347 (2015) 1259855–doi:10.1126/science.1259855.
- [15] D. Cordell, J.-O. Drangert, S. White, The story of phosphorus: Global food security and food for thought, *Glob. Environ. Chang.* 19 (2009) 292–305. doi:10.1016/j.gloenvcha.2008.10.009.
- [16] Department of Environment, National Greenhouse Accounts Factors, 2015. www.environment.gov.au.

- [17] M. Kim, M.M.I. Chowdhury, G. Nakhla, M. Keleman, Characterization of typical household food wastes from disposers: Fractionation of constituents and implications for resource recovery at wastewater treatment, *Bioresour. Technol.* 183 (2015) 61–69. doi:10.1016/j.biortech.2015.02.034.
- [18] E. Tampio, T. Salo, J. Rintala, Agronomic characteristics of five different urban waste digestates, *J. Environ. Manage.* 169 (2016) 293–302. doi:10.1016/j.jenvman.2016.01.001.
- [19] M. Wilewska-Bien, L. Granhag, K. Andersson, The nutrient load from food waste generated on board ships in the Baltic Sea, *Mar. Pollut. Bull.* (2016). doi:10.1016/j.marpolbul.2016.03.002.
- [20] Will Brinton, Jr. On farm composting evaluation of manure blends and handling methods for quality composts. (1998) Woods End Research Laboratory. Report to USDA Tech Center, Chester PA
- [21] Lopez Real, J. and M. Baptista. 1996. A preliminary comparative study of three manure composting systems and their influence on process parameters and methane emissions. *Compost Science and Utilization* Vol. 4, No. 3: 71- 82.
- [22] Rynk, R. *On-Farm Composting Handbook*. NRAES Pub. 54, 1992
- [23] *Compost Engineering Principles and Practices*, Haug, Roger Tim, Ann Arbor Science Publishers, First Edition 1994.
- [24] Hill, D.E. 1978. *Leaf-mold for Soil Improvement in Home Gardens*. Connecticut
- [25] E.B. 1931. Synthetic compost for growing mushrooms. *U.S.D.A. Journal Agr. Research* 48, 971-980.
- [26] *Compost Facility Operating Guide*, The Composting Council, Alexandria, Virginia, 1994.
- [27] *On Farm Composting Handbook*, NRAES-54, Cooperative Extension Service, Ithaca, New York, 1992
- [28] Atlas, R.M. & Bartha, R. 1998. *Microbial ecology. Fundamentals and applications*. 4th Edition. Addison Wesley Longman. Menlo Park, California. 694 pp.
- [29] Bach, P.D., Nakasaki, K., Shoda, M. & Kubota, H. 1987. Thermal balance in composting operations. *Journal of Fermentation Technology* 65, 199-209.
- [30] F.C. 1993. Composting as a process based on the control of ecologically selective factors. In: Metting, F.B.J. (Eds). *Soil microbial ecology*. Marcel Dekker, New York, pp.515-544
- [31] Aboiyade, O. (1980), "Nigerian Public Enterprises as an Organizational Dilemma". Pp. 83-97 Colins, p (ed) Administration for Development Nigeria. Lagos: Africa Education Press.
- [32] Akpomivie, B.O. (2010) Self-Help as a Strategy for Rural Development in Nigeria: A Bottom-Up Approach
- [33] Arndt, H.W. (1981). *Economic Development; A Semantic History*. *Economic Development and Culture Change*, 29(3): 45 7-466.
- [34] Aspen Institute 1996 *Measuring Community Capacity Building: A Workbook-in- Progress for Rural Communities*. The Aspen Institute, Washington D.C..
- [35] Aziz, S. (1978). *Rural Development: Learning from China*. London: Macmillan Press.
- [36] Biggs, S. (1999) *Community Capacity Building in Queensland: The Queensland Government Service Delivery Project*. Unpublished paper. Office of Rural Communities, Brisbane, Queensland.
- [37] Behera, B.S., Mohapatra, B.P. (2016) "Rural Community Climate Friendly Models in Agriculture Sector of Odisha" (Journal of Extension Education, OUAT, PP-34-40, Vol-XIII, 2016, 1st Edition)
- [38] Swain, S.N., Behera, B.S., (2017) "Climate Smart Agriculture Extension Education Models in Odisha as a review" (Journal of Green College, Odisha, PP-21-35, Vol-1, 2017, 2nd Edition)
- [39] Baslé M. (2006). Strengths and weaknesses of European Union policy evaluation methods: ex-post evaluation of Objective 2, 1994–99. *Regional Studies*, Vol.40, n° 2, p. 225–235.
- [40] Bitsch V. (2000). Agricultural economics and qualitative research: incompatible paradigms? *Forum Qualitative Sozialforschung (On-line Journal)*, Vo.1, n° 1. Available at: <http://www.qualitative-research.net/fqs-texte/1-00/1-00bitsch-e.htm>.
- [41] Bryden J. (2000). Is there a "New Rural Policy"? Paper presented at European Rural Policy at the Crossroads, Arkleton Centre for Rural Development Research, University of Aberdeen.
- [42] Buckwell A.-E., Harvey D.-R., Thomson K.-J. and Parton K.-A. (1982). *The Costs of the Common Agricultural Policy*. London, Croom Helm.
- [43] Cavaye, Jim (2000) *Understanding Community Development*. www.communitydevelopment.com.au/DOC
- [44] Christenson, J.A & Robison, J.W (1989) *Definition of Self Help in Community Development*.
- [45] www.communityresourcecenters.org
- [46] Christenson, J.A. and Robison, J.W. (1989) *Community Development in Perspective*. Iowa State University Press, Ames Iowa.
- [47] Chukwuezi, B. (2000) *Issues in Community Development*; Nsukka, Mike Social Press
- [48] Commission of the European Communities (1999). *MEANS collection: evaluating socio-economic programmes*. Luxembourg, Office for Official Publications of the European Communities, 6 Volumes.
- [49] Commission of the European Communities (2001). *A framework for indicators for the economic and social dimensions of sustainable agriculture and rural development*. Agriculture Directorate General, Brussels, available at http://europa.eu.int/comm/agriculture/publi/reports/sustain/index_en.pdf.
- [50] Champion A. (1994). Population change and migration in Britain since 1981: evidence for continuing deconcentration, *Environment and Planning A*, Vol.26, n°10, p. 1501–1520. DOI : [10.1068/a261501](https://doi.org/10.1068/a261501)
- [51] Cloke p., Milbourne p., Thomas C. (1994). *Lifestyles in rural England*. Salisbury, Research Report, Rural Development Commission, Vol. 18.
- [52] Coffey A., Atkinson p. (1996). *Making Sense of Qualitative Data*. Thousand Oaks, CA: Sage.
- [53] Committee on Land Utilization in Rural Areas (1942). *London, Report of the Committee on Land Utilization in Rural Areas*. Cmd 6378, HMSO.
- [54] Cooksy L.-J., Caracelli V.-J. (2005). Quality, context, and use: issues in achieving the goals of metaevaluation. *American Journal of Evaluation*, Vol. 26, n°1, p. 31-42. DOI : [10.1177/1098214004273252](https://doi.org/10.1177/1098214004273252)
- [55] Dunham, A (1970), *The Community Organization*. New York; Gowell. Ekepe, C.P and Ekpe, S.C
- [56] Defra (2004a). *Social and economic change and diversity in rural England*. Defra Publications, London Birkbeck College, University of London, A report by the Rural Evidence Research Centre.
- [57] Defra (2004b). *Rural Strategy 2004*. London, Stationery Office.
- [58] Defra (2006). *Rural Development Programme for England 2007-2013*. London, Department for Environment, Food and Rural Affairs, Consultation.
- [59] Defra (2007). *Agriculture in the United Kingdom*. London, Department for Environment, Food and Rural Affairs.
- [60] DETR/MAFF (2000). *Our Countryside: the future. A fair deal for rural England*. London, Cm 4909, Stationery Office.
- [61] Dwyer J., Ward N., Lowe p., Baldock D. (2007). European rural development under the Common Agricultural Policy's "Second Pillar": Institutional conservatism and innovation. *Regional Studies*, Vol.41, n°7, p. 873-887.
- [62] Edwards M. (2004). *Civil Society*. Cambridge, Polity Press.
- [63] Fieldhouse E.-A., Tye R. (1996). Deprived people or deprived places? Exploring the ecological fallacy in studies of deprivation with the samples of Anonymised Records. *Environment and Planning A*, Vol.28, n°2, p. 237-259. DOI : [10.1068/a280237](https://doi.org/10.1068/a280237)



10.22214/IJRASET



45.98



IMPACT FACTOR:
7.129



IMPACT FACTOR:
7.429



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089  (24*7 Support on Whatsapp)