

# Communication Lapses in the Adoption of Improved Cook Stoves in Kenya

Caroline Biwott

Karatina University, NAIROBI, Kenya

DOI: <https://doi.org/10.51244/IJRSI.2023.101028>

Received: 30 September 2023; Revised: 14 October 2023; Accepted: 18 October 2023; Published: 18 November 2023

## ABSTRACT

The effective improved cook stoves have been designed to offer environmental, socio-economic and health benefits that facilitates the achievement of Sustainable Development Goals. However, there is low adoption of effective improved cook stoves among the rural populations in Kenya. This study therefore sought to analyse communication lapses in the adoption of improved cook stoves in Kenya. The Research Questions of the study is: What are the communication lapses in the adoption of the improved cook-stoves in Uasin Gishu County? The study was anchored on Constructivist Paradigm and Qualitative research approach was adopted for the study. The study is a case study of Uasin Gishu County in Kenya. Purposive sampling technique was used to select 20 respondents for the study and the Qualitative data was collected using interviews research instruments. Thematic data analysis was used to analyse data qualitatively. The collected data was presented in the form of narratives. From the study findings, the study concludes that communication lapses have led to the low adoption of improved cook-stoves. There is limited use of Participatory communication strategies and media channels have not been utilised adequately to sensitise the rural populations on the health, environmental and socio-economic benefits of improved cook-stoves. It is anticipated that the study will be significant in emphasising the importance of using effective communication strategies to educate, create awareness and campaign for the adoption of improved cook-stoves and thus lead to the achievement of Sustainable Development Goals.

**Key Words:** Communication, Cook-stoves, environmental, health, Sustainable Development Goals.

## INTRODUCTION AND BACKGROUND OF THE STUDY

This study is an investigation of communication lapses in the adoption of effective improved cook-stoves in Kenya. The development of improved stoves began in 1950s when there was concerned with reduction of smoke (Budds et al. 2001). However, improved stove programmes started receiving publicity in 1970 (World Bank, 2011) when there was the oil crisis (Kuhnhen, 2003). Household became dependent on biomass and therefore the impetus was on energy-efficiency stoves in order to curb deforestations. From 1980s, the belief that efficiency can guarantee adoption and dissemination of the stoves led to a wave of stoves programmes (Kuhnhen, 2003). During the 1980s and 1990s the cook-stoves were designed because there were worries about fuel scarcity which could lead to deforestation (World Bank, 2011). The concern in stoves was on energy conservation. In the 1990s the focus was on rural electrification and therefore there was no much development of stoves (World Bank, 2011). Beginning in the 1990s, the focus on cook-stoves research shifted on issues involving indoor air pollution (IAP) and its effects on health (World Bank, 2011). From the 2000s research on cook-stoves has been driven by focus on climate change as a result of greenhouse gases (GHG) from the biomass (ibid). The initial impetus on improved stoves has been on energy efficiency to address deforestation but the focus has shifted towards development concerns (Kuhnhen, 2003) like 'improving health, reducing greenhouse gas emissions, generating environmental benefits, and contributing to social and economic development.' (World Vision Australia, 2011 p.4).

The impetus in improving public health and environment focus on the design and dissemination of

improved stoves (Ezzati and Kammen, 2002). The Guatemalan improved stove *plancha* for example was found to have reductions in average pollution concentration (ibid). In Kenya improved cook stoves include the Kenya Ceramic *Jiko* w and the *maendeleo* and *rocket* fuel wood stoves (Ngigi, 2008). We also have *Jiko koa* and *Ecozoom* charcoal cook stoves brands commonly found in urban areas in Kenya. Most improved stoves are designed to use less fuel, with emphasis on more efficient combustion (Budds et. al 2001). Despite the improvement of cook stoves, there is low adoption of the efficient improved cook stoves in Kenya. This study therefore investigates communication lapses in the adoption of the efficient improved cook-stoves and the following is the statement of the problem.

### Statement of the Problem

There have been significant progress in designing cook-stoves that reduce emissions and increase efficiency (Nya, 2013). To this end, the improved cook-stoves have been designed. However, the rate of cook-stove technology adoption of improved cook-stoves is low (Ndegwa et al., 2011) and the factors that determine its adoption are not yet well understood (Lewis and Pattanayak, 2012). There is also no initiative to adopt new ideas (R.o.K, 2009) among the rural communities in Kenya. This has resulted to low usability and acceptance of the stoves by the end users. Pine et al. (2011) posits that the success of a stove program is measured by the usability of the stoves over time not number of stoves initially distributed. Due to the low adoption of cook-stove technology, the energy policy (2004), the Vision 2030 for Kenya and sector plan for Energy (2008) set the goal of increasing the national adoption rate of efficient wood stoves to 30 percent by 2020 (Ndegwa et.al, 2011). In addition, research indicates that there is low awareness among the Kenya communities on need for effective cook-stoves (Ngigi, 2008). Moreover, World Bank (2011) asserts that there is need for cook-stove awareness raising and publicity. This calls for the intervention of communication and this leads to the following Research Questions.

### Research Questions

What are the communication lapses in the adoption of the improved cook-stoves in Uasin Gishu County?

## LITERATURE REVIEW

The adoption of improved cook-stoves technologies is important in managing climate change, natural resources, supply of energy, reducing poverty and ensuring a health community all of which will help in the achievement of Sustainable Development Goals. The World Health Organization (WHO) estimates that about 2.4 billion people in the world depend on biomass fuels (wood, dung, or straw) to meet their energy needs (WHO, 2007). In Kenya more than 80% of the population use solid fuels and wood fuel consumption is over 67% of the total consumption (Africa Adaptation Programme (AAP Kenya, 2012).

The use of biomass fuels in traditional stoves contributes to the environment crisis which is now described as entering an alarming phase (Yuniato, 2012) and the Human behaviour has reflected a disregard for the environment (ibid). This has led to low adoption of improved cook-stoves technologies in Kenya that utilises biomass fuels efficiently. In this regard, the Energy Act (2006) provides the legal framework required for promotion of modern cooking energy (Ngigi, 2008) and one of the Energy Policy in Kenya was to increase the rate of adoption of improved cook-stoves from 4% to 30% by 2020 (Ngigi, 2008). In addition, the twelfth goal (12.8) of Sustainable Development Goals aims to ensure by 2030 people everywhere will have relevant information and awareness for sustainable development and lifestyles in harmony with nature. The thirteenth goal (13.3) asserts the need to improve education awareness raising and human and institutional capacity on climate change, mitigation, adaptation, impact reduction and early warning

The improved cook stoves has the advantage of addressing climate change by reducing greenhouse gases

and black carbon, environment conservation, sustainable use of biomass and reduced indoor air pollution (Reddy, 2012). Nya (2013) asserts that the use of clean cook-stove technologies to reduce climate change represents a major opportunity that has not been adequately explored. The black carbon emitted from the traditional cook-stoves accelerates global warming through excessive heat absorption (Reddy, 2012). Other Interventions to alleviate indoor air pollution include smoke hoods, cleaner fuels or modified kitchen or house design to increase ventilation, access to higher-grade fuels and educational activities (Budds et al., 2001).

A number of countries including China, India, Rwanda, Ethiopia and Kenya have had national programs to promote the use of improved cook-stoves. There are also many organizations including Non-Governmental Organizations (NGO) that support the use of improved stoves at homes and institutions like schools in Kenya. Although many stove programmes have been launched in developing countries, it has been characterised with insufficient monitoring and evaluation efforts (Kuhnhenh, 2003). There is therefore need to monitor and evaluate stove projects more rigorously, particularly with respect to health benefits and usage patterns over time (World Vision Australia, 2011) and environmental impacts. There is also need to analyse the relationship between stoves and their end users (Kuhnhenh, 2003).

The most important factors to communities adopting of new stove technologies are acceptability, access and availability, affordability and perception (Budds et al., 2001); convenience; a stove which cooks food faster, which is more efficient and burns less fuel, resulting in less time spent collecting wood and/or money spent buying it (Rouse, 2004).

Rouse (2004) explains that household interventions fail because of lack of participation of end user in the design and implementation stages; Costly technology that depends on expensive or unavailable resources or poor or no financing mechanisms and poorly designed technologies that do not meet the needs of the beneficiaries. This study therefore seeks to investigate communication lapses in the adoption of improved cook stoves.

## RESEARCH METHODOLOGY

The Constructivist paradigm underpins the study because it offered an in-depth understanding of cook-stove technology adoption. The study was concerned with how the people construct knowledge and perceive and interpret their use of cook-stoves. The study is a qualitative research. Qualitative research enabled the study understand meanings, interpretation of ideas, beliefs and values people have on the use of communication when adopting cook-stoves technologies (Whisker, 2008).

The study adopted a case study research design. The aim of case study research is to increase knowledge about contemporary communication events and processes in their context (Daymon & Holloway, 2011 p. 115). Purposive sampling technique was used to select 20 respondents for the study. The study area was the rural areas of Uasin Gishu County. The main data generation tools that was used in the study are semi-structured interviews. Semi-structured interview is a guided interview where some questions are predetermined and some are formulated during the interview (Mulwa, 2010). To establish a chain of evidence of the study, each respondent was interviewed twice at an interval period of three weeks. The 20 respondents selected where interviewed in their homestead which is a natural settings. As argued by Creswell (2014) qualitative data should be collected in a natural setting.

## RESEARCH FINDINGS

The study used interviews to collect data. The respondents in the study said they rejected the improved cook-stove although it utilises considerable very little firewood because it is very slow; it is suitable for small

families and it has no oven to keep the food warm. The respondent said they want a cook stove that can cook faster and can cook food enough for a large family. The respondents also said that the cook stove did not meet their social and cultural issues. They said that their staple food is *Ugali*, which need to be kept warm in an oven but was lacking in the improved cook stove.

When the respondents were interviewed to ascertain if they were aware of the negative effects of indoor air pollution (IAP). They said no and one respondent said that firewood is not harmful because it has been used for many generations. Her grandparents used firewood and lived for many years without any health complications.

In addition, the respondents said they were not aware of the negative impacts of firewood use on the environment. To them firewood is cheap and easily available. Therefore they do not see the need to abandon their traditional cook stove in favour of a cook stove that is more efficient and conserves the environment.

When interviewed if the respondents got the opportunity to give their opinion to the cook stove designers on the specification of the type of cook-stove they want, they said no. There was no instance of dialogue and participatory communication between cook-stove designers and the beneficiaries, who are the end users of the cook-stove. The cook stove was therefore not designed according to their needs, social or culture issues.

When interviewed to confirm if any media campaign was used to sensitise them on the need to adopt the improved cook stoves, they said there has been no such campaigns. Media campaigns has not been used to sensitise the population on the effects of firewood use on health, environment and climate change and the need for improved cook stoves. *Shamba Shape Up* TV program aired by Citizen Television in Kenya only informed them on how they can set up simple biogas system and also make briquettes but the program has not highlighted the improved cook stove. The respondents also said there are no discussion on improved cook-stoves in group and public meetings by community leaders and also there are no advertisement used to sensitise them on the need to adopt improved cook-stoves. There is limited publicity on improved cook stoves.

## DISCUSSIONS OF THE RESEARCH FINDINGS

The study established there are communication lapses in the adoption of the improved cook-stoves in Uasin Gishu County. There was limited use of Participatory Communication, Publicity, advertising and the use of the media in sensitising the rural population on the importance of adopting improved cook-stoves. This is evident in the low adoption of improved cook stoves.

The study established that the stove designers did not consider the social and cultural issues of the recipient community. One features that was missing in the efficient cook stove is the oven which is mostly used to keep *Ugali* warm. The cook stove designers did not consider the fact that *Ugali* is the staple food for the local community in Uasin Gishu County and therefore it has to keep warm in an oven. The cook stove was also slow and could did not consider the large families characterised in the rural communities. Rouse (2004) asserts that successful energy interventions is linked to the livelihood and lifestyle of the communities; considers cultural and social issues and involves low cost technology which is possible through participatory communication. Mulwa (2010) reiterates that people became masters of their own destiny within the framework of their cultural and socio-economic realities (p.97).

The stove designers did not consider the needs of the beneficiaries which could have been known through participatory communication as asserted by Rouse (2004). Participatory communication is an approach based on dialogue which allows the sharing of information, perception, feelings and opinions among various stakeholders. This facilitates the empowerment of people especially the most vulnerable and marginalized (Tufte and Mefalopulus, 2009). In participatory communication information is disseminating to meet a need

rather than creating a need for the information one is disseminating (Servaes & Malikhao, 2008). In case of the adoption of effective improved cook stoves, the stove implementers should rather respond than dictate or choose what the local people want. The emphasis of participatory model is on information exchange rather than on information dissemination in the diffusion model (ibid).

The study established that there was limited use of Participatory Communication in the implementation of cook-stoves in Uasin Gishu County in Kenya yet successful Household energy interventions are those that encouraged the participatory communication between the stove implementers and with the end user (Rouse, 2004)

The limited use of Participatory Communication is supported by Mefalopulos (2008) who argues that genuine two-way communications between the elite and the local communities who are the beneficiaries have been missing in many development programs. To this end, Richards et al. (2004) asserts that “there is a continuing gap between the rhetoric and reality of participation” (p.15). This means genuine participatory communication has not been applied in many development contexts (Melekote and Steeves 2001) like in the cook-stoves projects.

The study also established that the cook-stove designers and implementers did not put into considerations Participatory Communication key constructs which include: Dialogue, Empowerment, Conscientization and Involvement of the people. One of the key principle of participatory communication is a free and open dialogue (Tuftte and Mefalopulos 2009). Pruitt and Thomas (2007) define dialogue as a process where “participants come together in a safe space to understand each other’s viewpoint in order to develop new options to address a commonly identified problem. In dialogue, the intention is not to advocate but to inquire; not to argue but to explore; not to convince but to discover.” (p. 20). The dialogical pedagogy of Paulo Freire (1970, 1983, 1994) forms important participatory principles in development and the ideas of Freire of dialogic communication are accepted as a normative theory of participatory communication (Servaes, 2003).

The study established that there was limited dialogue between the cook-stove designers and the beneficiaries. The cook-stove designers did not give the cook-stove beneficiaries the opportunity to air their views, to make their opinions heard and participate in discussions on how the cook-stove should be designed. Dialogue between the stove designers could have ensured that the stoves were tailored to the needs of the beneficiaries. In addition, the designer’s objective of efficient cook-stoves with less emissions that reduced indoor pollutions could have been known by the beneficiaries.

Conscientization means creating awareness. The idea of conscientization was proposed by Paulo Freire. Freire (1994) believes that individuals have the capacity for conceptualising issues, for critical thinking, for making decisions, for planning and changing socially, economically and their living conditions. This implies that the communities are conscious about their situations and know they can change their situations (Mulwa, 2010).

The beneficiaries of the cook-stoves posit that they are not aware of the health implication of indoor pollutions caused by the traditional cook-stoves. There is also low awareness of the citizens on environment conservation as observed by Yuniato (2012) and lack of awareness on harmful effects of traditional cook-stoves as also opined by Ngigi (2008). The study established that the beneficiaries are not conscious of the risks of exposing themselves in indoor air pollution and therefore they are not able play an active role in adopting efficient cook-stoves.

The objective of Participatory communication is to empower the beneficiaries of development projects. However the study observed that the beneficiaries were not empowered. The beneficiaries did not demand to have the stoves tailored to their needs. They became passive recipient of the cook-stove project. In



addition, they were not empowered to openly communicate their views and demand their rights. Tufte and Mefalopulus (2009) asserts that it is inherent in participation to empower people to handle challenges and influence the direction of their own lives.

The study also established there was scanty information on indoor air pollution that could empower communities to play active roles in managing the environment. Mulwa (2010) asserts that empowerment implies equipping people with the correct information in which basis they plan to act for transformation.

The study established there was limited involvement of the beneficiaries of the cook-stove projects in the decision making and design of the cook stoves. Research indicates that many projects collapse or are incomplete largely due to low or non-participation of the local community in decision-making (Mulwa, 2010). Kibua and Mapesa (2008) and Odhiambo et.al (2005) concur there have been limited involvement of the local communities who are the beneficiaries in development programs in Kenya. The stove implementers installed improved stoves designed by experts with no involvement of the end users. Budds et al. (2001) asserts that many cook stoves initiatives have been designed according to the priorities of the implementers with little participation from end users. This makes communities to be engaged in passive participation (Mefalopulos, 2003) when adopting the cook stoves technology. This is in contrast with the principles of Participatory Communication where the communities are supposed to be the main agents of social change process rather than “passive beneficiaries” of decisions made by cook-stove experts (Waisbord, 2008). Literature explains that there is need for women’s active participation, who are the end users, for a cook-stove intervention to be adopted (Budds et al.,2001; Rouse, 2004). This is because it is important to listen to the women and consider their priorities while simultaneously achieving the objective of the improved cook-stove (Rouse, 2004).

Lack of involvement of beneficiaries has led to projects failure (Mefalopulos, 2008) as witnessed in the cook-stoves projects. Rouse (2004) explains that cook-stoves projects fail because of lack of participation of end user in the design and implementation stages. Servaes (2003) asserts that “the successes and failures of most projects are often determined by two crucial factors: communication and people’s involvement.” (p. 20) which was lacking in cook-stoves adoption. Odhiambo et al. (2005) asserts that effective participation of the people in development projects will also lead to sustainable development.

The respondents in the study said there are no media channels that were used to sensitise them on the need to adopt the cook-stove technologies. It is only *Shamba Shape Up* TV program aired by Citizen Television that has informed them on how they can set up simple biogas system and also make briquettes as alternative sources of cooking energy. Reddy (2012) explains that although there are silent death of millions due to indoor air pollution, the media see these deaths as not having enough news value. Reddy (2012) argues that given the number of people affected by indoor air pollution, it should be the responsibility of the media to understand the issue and spread awareness about it.

There are also no promotional campaigns to encourage the adoption of the improved cook-stoves. Advertising Campaigns were only done on *jiko koa* cook-stoves brands that mainly rely on charcoal and used by the urban communities. Community Leaders do not talk about the importance of improved cook-stoves in community meetings and there is limited discussion about the adoption of improved cook-stoves technologies at the group and public level.

## CONCLUSION

The study concludes that communication lapses has led to the low adoption of improved cook-stoves. The study espouses the need of engaging all stakeholders in the adoption of effective improved cook-stoves through effective communication strategies as well as utilizing multiple communication channels to campaign for the adoption of improved cook-stoves. This will promote the sustainability of the stove

projects and the achievement of Sustainable Development Goals.

## RECOMMENDATIONS

The cook-stove designers should collaborate with the beneficiaries through participatory communication to ensure they design cook stove that meet the needs of the beneficiaries.

Several media channels should be used to create awareness of the health, socio-economic and environmental impacts of the traditional cook stoves as well as campaign for the adoption of cook-stoves technology.

## REFERENCES

1. Africa Adaptation Program (AAP) Kenya (2012). Energy Conservation Using Improved Efficient Cooking Stoves in Schools. AAP Highlighter. Downloaded from aapkenya
2. Budds, J., Biran, A. & Rouse, J. (2001). What's Cooking: a review of the health impacts of indoor air pollution and technical interventions for its reduction. Downloaded from <http://www.lboro.ac.uk/well/Downloaded> from <http://climatechange.worldbank.org/content/cookstoves-report>.
3. Creswell, J. W. (2014). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. (4<sup>th</sup> ed). Thousand, Oaks, CA: Sage.
4. Daymon, C. & Holloway, I. (2011). Qualitative Research Methods in Public Relations and Marketing Communications. (2<sup>nd</sup>) New York and London: Routledge
5. Ezzati, M. & Kammen, (2002). The Health Impacts of Exposure to Indoor Air Pollution from Solid Fuels in Developing Countries: Knowledge, Gaps and Data Needs. Environmental Health Perspectives. Volume 110 Number 11, November. pp 1057-1068.
6. Freire, P. (1970) 'Cultural Action and Conscientization', Harvard Educational Review, p. 40, 3.
7. Freire, P. (1983). Pedagogy of the Oppressed. New York: Continuum.
8. Freire, P. (1994). Pedagogy of Hope. New York, Continuum.
9. Kibua N. Thomas and Mapesa, M Benson. (2008). 'Management and Utilization of Constituency Development Funds in Kenya.' In Thomas N. Kibua and Germano Mwangi (eds) Decentralization and Devolution in Kenya: New Approaches. Nairobi: University of Nairobi Press pp 329-361
10. Kuhnhen, K. (2003). Environmental and socio-economic Impact of improved Stoves -The Case of the Tsofso Stove in Northern Namibia. Research Downloaded from [www.kuhnhenkai.pdf/](http://www.kuhnhenkai.pdf/)
11. Lewis, J.J., Pattanayak, S.K. (2012). Who Adopts Improved Fuels and Cookstoves? A Systematic Review. Environ Health Perspect.
12. Mefalopulos, P. (2003). "Theory and Practice of Participatory Communication. The Case of the FAO Project 'Communication for Development in Southern Africa'," PhD dissertation, University of Texas at Austin.
13. Mefalopulos, P. (2008). Development Communication Sourcebook: Broadening the Boundaries of Washington: The World Bank Publications.
14. Melkote, S.R. and Steeves, H.L (2001). Communication for development in the third world: Theory and Practice for empowerment. (2<sup>nd</sup>) New Delhi: Sage
15. Mulwa F. W. (2010). Demystifying Participatory Community Development (Revised Edition) Nairobi: Pauline Publications Africa.
16. Ndegwa, G., Breuer, T., Hamhaber, J. (2011). Woodfuels in Kenya and
17. Rwanda: powering and driving the economy of the rural areas. Rural 21 Focus. Downloaded from [/www.woodfuel-in-kenya.pdf/](http://www.woodfuel-in-kenya.pdf/)
18. Ngigi, A. (2008). Kenya County Baseline Report and Work plan: The EAC Strategy on Scaling-up Access to Modern Energy Services. Downloaded from <http://www.kenya-county-report.pdf/>
19. NYA, J. J. (May, 2013). Promotion and Use of Improved Cook Stoves in the Conservation of

- Biomass Resources and Biomass Briquettes from Solid Wastes in the Gambia. *ISESCO Journal of Science and Technology*. Volume 9 NO. 15 (17-26)
20. Odhiambo, Morris; Mitullah, W. V. and Akivaga K. S. (2005). *Management of Resources by Local Authorities: The case of Local Authority Transfers in Kenya*. Nairobi: Claripress.
  21. Pine, K., et al., (2011). 'Adoption and use of improved biomass stoves in Rural Mexico' in *Energy for Sustainable Development*, vol. 15, pp176-183.
  22. Pruitt, B. and P. Thomas (2007). *Democratic Dialog-A Handbook for Practitioners*. Stockholm, Sweden: CIDA, IDEA, OAS, and UNDP.
  23. Reddy, S.B.N (2012). *Understanding Stoves: For Environment and Humanity*. Netherlands: MetaMeta Publishers.
  24. Republic of Kenya (2009) *Vihiga Distict Environment Action Plan 2009- 2013*. Downloaded from /www.vihiga.pdf/
  25. Richards, C., Blackstock, K. And Carter, C. (2004) *Practical Approaches to Participation*. Socio-Economic Research Group (SERG) Policy Brief. Downloaded from macaulay.ac.ke
  26. Rouse, J. (2004) *Indoor Air Pollution: Issues for Bangladesh*. Downloaded from bioenergylists.org/stovesdoc/Rouse/rouiap.doc
  27. Servaes, J. (2003). "By Way of Introduction." In J. Servaes (ed) *Approaches to Development: Studies on Communication for Development*, 1–22. Paris: UNESCO.
  28. Servaes, J. & Malikhao, P. (2008). "Development Communication Approaches in an International Perspective." In J. Servaes (ed) *Communication for Development and Social Change*, 158-179. Los Angeles: SAGE
  29. Tufte, T. & Mefalopulos, P. (2009) *Participatory Communication: A Practical Guide* World Bank Working Paper No. 170. Washington DC.
  30. Waisbord, S. (2008). *The Institutional challenges of Participatory Communication in International Aid*. *Social Identities*. Vol. 14 no. 4 July, 505-522. Taylor and Fransis downloaded from <http://www.informaworld.com>.
  31. Whisker, G. (2008). *The Postgraduate Research Handbook (2<sup>nd</sup>)* New York: Palgrave, Macmillan.
  32. World Bank (2011). *Household Cookstoves, Environment, Health, and Climate Change: a New Look at an Old Problem*. World Bank: Washington, DC.
  33. World Health Organization (2007). *Indoor air pollution from solid fuels and risk of low birth weight and stillbirth: report from a symposium held at the Annual Conference of the International Society for Environmental Epidemiology (ISEE), September 2005, Johannesburg*. Downloaded from [who.int/indoor/en/content/9789241505735\\_eng.pdf/](http://who.int/indoor/en/content/9789241505735_eng.pdf/)
  34. World Vision Australia (2011). *Fuel-Efficiency Cooking Stoves: A triple win for Child Health, Development and the Environment*. Downloaded from /www.wv\_fuel-efficientcookingstoves pdf./ Ref No. 6728
  35. Yuniato, B., (2012). *Building Citizen Awareness of Environmental Conservation* *International Journal Of Scientific & Technology Research* Volume 1, Issue 7, August 2012 ISSN 2277-8616 87.