

# Churches in Ghana and their Stewardship role to the Environment

Kwabena Abrokwa Gyimah<sup>1\*</sup> and Charles Owiredu<sup>1</sup>

<sup>1</sup>Yeshua Institute of Technology Accra - Ghana,  
\*E-mail: [kobbygyimah@hotmail.com](mailto:kobbygyimah@hotmail.com)

## Abstract:

*The environment is under a lot of deteriorating treats such as mining, building and construction and other forms of infrastructural developments. These activities are destroying the environment God created and the Christian church is not happy about it. The church thus over the years have been involved in some advocacy work for environmental care. Churches are currently involved in "Social Ministry" which focuses on social actions against institutions and organisations that have activities destroying the environment. These advocacies are normally against mining, oil and developmental companies whose activities pollute the environment. Even though advocacy work and education is good, the church can contribute directly to environmental care through the built environment. This research looked at the basic ways churches could care for the environment through their built*

*environment due to the adverse impact buildings can have on the environment. Qualitative data was gathered amid some selected churches in Ghana through interviews. Amongst the findings of this research are church buildings not been energy efficient, churches are not having structures for environmental care and non renewable energy use by churches. This showed that churches in Ghana are more passive to environmental care than being active. Basic recommendations such as natural lighting, natural ventilation, greenery around buildings and renewable energy use are recommended for churches in the research as an active means for environmental care.*

## Keywords:

Church; Stewardship; Energy Efficiency; Environmental Sustainability; Environmental Management Practices

## Introduction

Global warming is at the beacon call of mother earth due to various activities existing on the surface of the earth. Activities such as building and construction, mining and other forms of industrial work over the years have contributed to this issue. But man cannot live without these activities as they contribute to their basic needs in life. For instance building of houses which is a form of shelter is one of the basic needs of man but contributes greatly to environmental degradation. According to the US EPA, buildings and the transportation infrastructure that serves them, replace natural surfaces with impermeable materials, creating runoff that washes pollutants and sediments into surface waters. Urban runoff constitutes a major threat to water resources, as it has been identified as the fourth leading source of impairment in rivers, third in lakes, and second on estuaries. The energy used to heat and power our buildings leads to the consumption of large amounts of energy, mainly from burning fossil fuels - oil, natural gas and coal - which generate significant amounts of carbon dioxide (CO<sub>2</sub>), the most widespread greenhouse gas. (US EPA, 2009). Currently, buildings use around 40% of global energy, 25% of global water, 40% of global resources and they emit approximately 33% of GHG emissions. (UNEP).

The world at large has been fighting four main problems from various angles. These four main problems are climate change, availability and access to freshwater, loss of biodiversity and human population growth. Of all these problems, global warming which brings climate change stands out

when it comes to human induced causes. Due to the seriousness of global warming, a lot of institutions and even countries have come together to bring out reports and decisions that will help bring a solution. A typical example is the Intergovernmental Panel on Climate Change (IPCC) fourth assessment report in 2007, (Rushton and Hodson). But since global warming is mainly human induced, the church has a bigger role to play due to their ability to influence the lives of people. There is a big debate on the church and their mandate for environmental care and therefore various publications have been done on this. Some of these are Deane-Drummond (2008), Atkinson (2008), Hodson and Hodson, (2008) and Weaver (2009). All these publications show a link between Christianity and environmental stewardship even though some school of thought feels stewardship was not strong enough. This is because most Christian churches believe God created the world and gave Christians the responsibility to take care of it.

The King James Version of the Holy Bible gives a clear account on how God created the world from Genesis 1:1 – 31. The 28<sup>th</sup> verse of Genesis 1 focuses on Mans responsibility to the world. This state “And God blessed them, and God said unto them, be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea and over the fowl of the air, and over every living thing that moveth upon the earth”. This means that God commissioned all Christians to subdue and have dominion over the earth. The importance of this is buttressed by Rasmussen’s description of the seven “streams” of Christian approaches to human relations with the rest of creation.

Table 1. Description of the seven “streams” of Christian approaches to human relations with the rest of creation.

Stream	Description
Dominion	The domineering model; the typical “command and control” model that predominates contemporary society.
Stewardship	Benevolent management; for the good of the creation, as stewards for the true owner (God).
Partnership	Which decentres humans, placing them as part of nature, ala St. Francis of Assisi.
Sacramentalism	Signs of the divine presence; recognizing the immanence of God in all things (but not to the extent of pantheistically identifying the divine with the created order).
Eco-feminism	Whose chief contribution has been an analysis of power relations and domination of all forms including nature.
Prophetic-Teacher	An urgent moral calling and activism.
Evolutionary	Drawing on scientific insights coupled with natural theology, ala Thomas Berry.

Source: Rasmussen, 1991.

From the above table, it clearly shows that even though man should command and control, stewardship for the good of creation must also be adhered to. Christians must take care of creation as stewards for the true owner (God). In view of this, the question that might baffle a lot of Christians is how God wants His creation to be taken

care of? A research by Reverend Asamoah has established this fact. It enlightens Christians to the fact that when God finished creating the world, He said it was good and thus we should seek to achieve this good state at all times. This he said has been revealed to Christians through the bible and not the world and therefore Christians should play a bigger role in environmental care. This research focussed more on advocacy and education on environmentalism and over 80% of respondents agreed that the church can rise up and take its responsibility to care for nature. (Asamoah, 2013). But advocacy will not solve the situation if Christians do not practice what they preach. What then can be done to champion the course of environmentalism? A research by Haluza-DeLay presents opportunities for effective faith-based environmental learning and responsive action. These opportunities are in three sub categories of sub cultural, motivational, and public theology. (Haluza-DeLay, 2008). The motivational opportunity which involves action should be prioritised by churches. This research therefore seeks to assess the churches activity with regards to environmental management practices in their built environment and suggested possible ways of involvement.

The built environment is chosen for this research because that is the first point of environmental contact as a church and it contributes greatly to environmental nuisance. This is because most green lands are cleared to make way for buildings, the built environment contributes greatly to waste in every community and buildings tops the chart when it comes to energy related CO<sub>2</sub> emissions. Churches use buildings for almost all activities and with them exercising proper environmental

management practices; they will be adversely taking care of the environment. Environmental Management Practices (EMP) of the built environment such as proper waste management, good sanitation, soft landscape, energy efficiency and renewable energy use is the focus of the research. Two (2) of the above EMPs fall under Sustainable Energy for All (SE4ALL). SE4ALL is an initiative by the current UN Secretary General to promote sustainable energy in the world. It was launched in September 2011 and already 75 countries have signed up. This shows how important it is and therefore the church should channel more effort towards it. Common practices such as lights on during the day in churches, high energy consumption equipments, air-conditioning, improper waste disposal, no soft landscaping and non renewable source of energy should be discouraged by churches.

## Methodology

### Research Design

This research was done using the survey research approach. Denscombe says, “the survey approach is a research strategy, not a research method”. (Denscombe, 1998). But this is very subjective as every approach can also be termed a method. Even though some school of thought is of the idea that survey research is the easiest method, a research output using this method can be of poor quality if care is not taken. It involves the sampling of individuals to make presumption to the wider population. (Kelley et al, 2003). In this regard, church leadership of various churches across Ghana were selected for data needed.

### Sampling

In conducting a research, it is not practical to interview every person who is in a population. It is cumbersome and not worth the money to conduct a research as such. A sample size needs to be taken to represent the larger population. (Bowling, 2002). Purposive sampling was used to sample out 20 different churches around the country based on the categories below:

- Orthodox churches over 10 years old (5 churches)
- Orthodox churches under 10 years old (5 churches)
- Charismatic churches over 10 years old (5 churches)
- Charismatic churches under 10 years old (5 churches)

Purposive sampling was adopted because it helped to zero in on people who are believed to have good grounds critical for the research. It also made the research focused, economical and informative in a way that conventional probability sampling cannot be.

### Data Collection

Data for this research was mainly primary data. Primary data involves the collection of data that does not already exist. Interviews, field survey and direct observation were used to gather most of the primary data required above. Key informants such as church leaders were interviewed using interview guides in collecting primary data. Interview guides were specifically designed for information on the question this research sought to answer. With EMPs of the built environment as the focus of this research, some key variables were identified and data collected on them.

Table 2. Variables and Data Requirement

Key Variable	Data Required
Structures for environmental care	Data on administrative and financial structures of the church on environmental care.
Green building practices	The availability of green design strategies and soft landscape.
Renewable Energy use	Information on their renewable energy use or plans to use.

Source: Authors' Construct, 2014

Interview guides were mainly used for data collection and therefore the use of qualitative methods of analysis. Content analysis was adopted as the tool for analyzing the issues coming out of the field work.

### Data Analysis

There are a lot of analytical approaches that can be used for qualitative research as outline by Bernard (2000). Some of these approaches are Hermeneutic/Interpretive analysis, Narrative/Performance analysis, Discourse analysis and Content analysis (Bernard, 2000). This research adopted content analysis for data collected. According to Gyimah (2014), "content analysis involves the processing (that is data classification and summarization) and presentation (in tables and charts). Secondary analysis on the other hand adopted a more discursive, implied and inferential processes that tried to attribute meaning to the responses. This gives a reader a clear and logical understanding of the existing situation rather than just the raw data. This is because content analysis gives the actual description for any reader.

Data goes through processing and it is summarized for better and clearer understanding". (Gyimah, 2014).

Due to the confidentiality of the churches involved in this research, coding was used for their names. The importance of coding in content analysis is emphasised by Hseih and Shannon (2005). They argued that content analysis approaches can be different based on the coding schemes, origins and trustworthiness. Coding is derived from text data in conventional content analysis. (Hseih and Shannon, 2005). For Orthodox Churches, the code OC is used and CC for Charismatic Church. Therefore an Orthodox Church one (1) over ten (10) years is coded OC1-O10 and CC2-U10 is for charismatic church two (2) under ten (10) years.

## Results and Discussion

### Structures for environmental care

After interviewing the church leaders, all agreed 100% to the fact that the church has been mandated by God to take care of the environment. This confirms various findings in the introduction of this research. In view of this, about 12 out of the 20 churches sampled backed their argument with the Bible verse Genesis 1: 28a which states "God blessed them and said to them, "Be fruitful and increase in number; fill the earth and subdue it". 6 supported their argument with Genesis 2:15: "The LORD God took the man and put him in the Garden of Eden to work it and take care of it". The remaining 2 argued with Matthew 5:13-16 which talks about Christians being salt and light of this world.

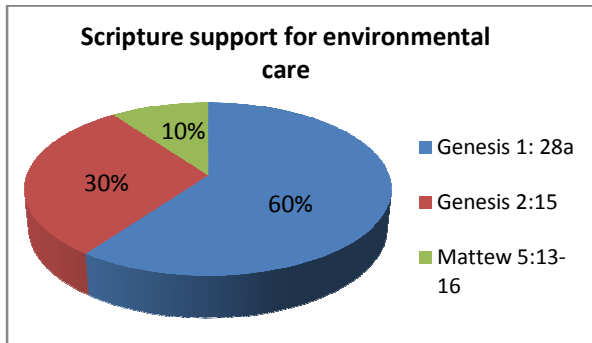


Fig.1 Scripture support percentages of churches on environmental care.

Albeit it is clear that most of the churches backed their argument with Genesis 1:28a, Genesis 2:15 gives a more direct link to the environment. The New International Version clearly states that when God put Adam and Eve in the Garden of Eden, He asked them to work it and take care of it. And therefore as we work it to sustain ourselves, we need to take good care of it as well. Fascinatingly, the interviews further revealed that none of these churches had a committee or organisation responsible for this mandate they all agreed to.

**Green building practices**

This research focussed on three basic green building practices namely ventilation, lighting and greenery around buildings.

*Ventilation*

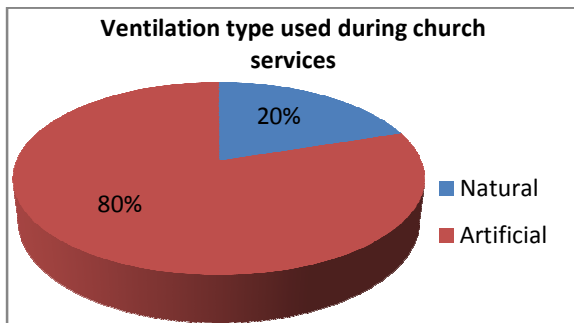


Fig.2 Ventilation type used during church services

The chart above gives an indication that majority of the churches employ artificial ventilation for thermal comfort in buildings during church services. With over 70% of churches using artificial ventilation, energy efficiency is debunked. Churches are thus contributing greatly to energy related CO<sub>2</sub> emissions through the use of artificial ventilation. A closer look at the types of artificial ventilation was looked at.

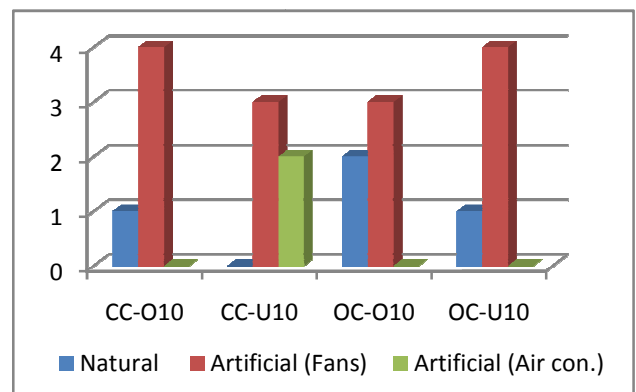


Fig.3 Church groupings and ventilation used

Fig.3 confirms fig.2 with the use of more artificial ventilation than natural. However the use of fans which is an artificial source of ventilation is prominent in all groupings. Natural ventilation is best achieved by Orthodox Churches over 10 years (OC-O10). This can be attributed to good designing of these churches. The Charismatic Churches under 10 years (CC-U10) are the worst performing of all. Apart from the churches using artificial fans for ventilation, some are involved in the use of air-conditioning in buildings for thermal comfort. Air-conditioners are known to be high energy consuming appliances and therefore this is poorer than the use of fans.

*Lighting*

This section of the research looked at the lighting sources churches use during morning or afternoon meetings. With the time range of 10:00am to 4:00pm: with the sun mostly available throughout the year. Even though all churches were using energy saving bulbs, natural lighting during this period can make churches more energy efficient. The use of energy saving bulbs is not their own initiative but through the legislation by the Energy Commission of Ghana.

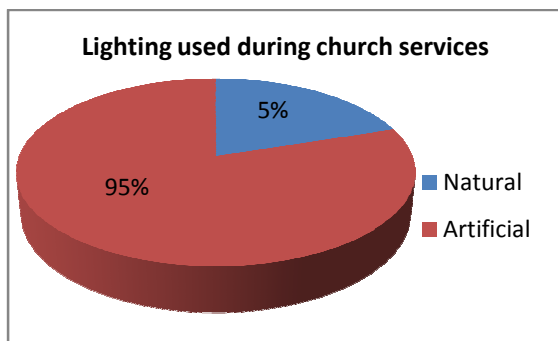


Fig. 4 Lighting type used during church services.

95% of churches have their lights on during church services and this proves that churches are not energy efficient and therefore not environmentally friendly. Averagely, a church hall has about 10 bulbs of 20 Watts each. This will give a total of 200Watts and this multiplied by an average service of 3hrs will be 600 Watts hours of energy for lighting alone per church. This amount of energy can be saved by every church in Ghana and help sustain energy and environment.

*Greenery*

Greenery in terms of trees and grassing around the church is the focus for this section. One of the world's largest pollutants of the environment is CO<sub>2</sub>.

Fortunately for us God created trees, grass and other plants to absorb CO<sub>2</sub> in the atmosphere. Through mans activities which include building of churches, we destroy all these. There is thus the need to incorporate greenery in the built environment to increase the assimilative capacity of the earth as we build.

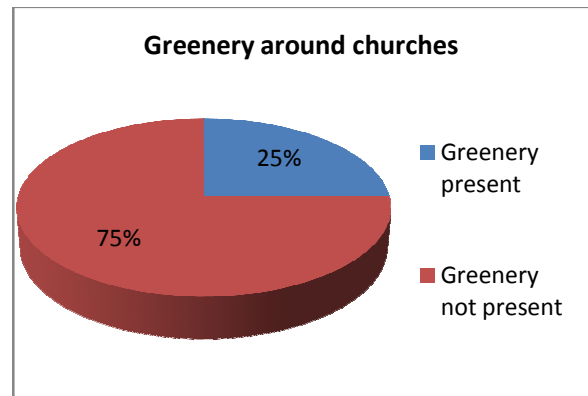


Fig. 4 Greenery around churches

Churches in Ghana are not doing very well when it comes to greenery as shown in fig.4. Only 25% of churches interviewed have some greenery around their church. Even though further analysis can be done to know how well these are being catered for.

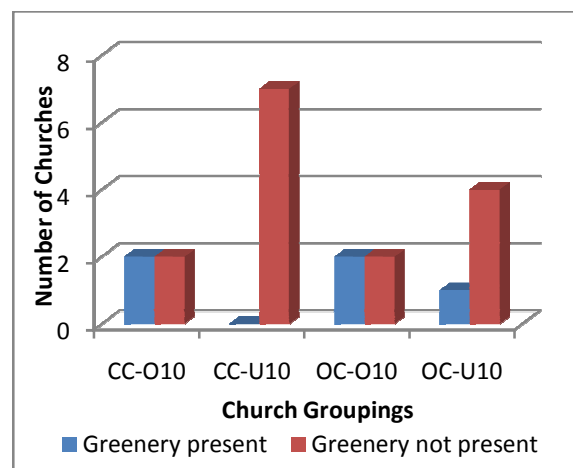


Fig. 5 Greenery and church groupings

Fig. 5 reveals that Charismatic Churches less than ten years old (CC-U10) are the worst performing group among the churches with less greenery. However, the interview revealed that these churches are not within their own premise and find it difficult to modify the space around them. This is not an excuse because when well catered for and it is aesthetically pleasing, all will appreciate it including owners.

### Renewable Energy

Renewable energy use is very important because it helps reduce energy related CO<sub>2</sub> emissions. Churches involved in renewable energy use will reduce the pressure on the national grid. The interview with all churches revealed that none of them was using any form of renewable energy even though they all had knowledge of it. About 80% of the churches claimed they had plans to use renewable energy sources.

## Recommendations and Conclusion

### Recommendations

The Christian church in Ghana agrees strongly to the fact that they have a mandate and key role to play in caring for the environment. However their approach over the years has been more aligned to passive participation rather than active participation for environmental care. This section therefore outlines the possible solutions to this lapse.

#### *Structures for environmental care*

Every church has organisations and committees that manages or takes care of the various activities in the church. The establishment of an environmental committee or organisation is recommended

for every church. Committees will be functionless if budgetary allocation is not given to them. This means to show commitment to environmental care, the church should have some budgetary allocation for it and this will make a committee function well when established. Environmental care is a mandate as agreed by all churches and therefore the church should put in structures for it to thrive.

#### *Green building practices*

##### 1. Ventilation

Ventilation is very important to achieve thermal comfort in buildings especially in a church where the body heat of occupants contribute to the heat generated in buildings. In Ghana, the macro climate falls within the tropical zone and this makes the need for cooling very essential. Natural ventilation is the best option for this cooling while caring for the environment. With a lot of people gathering within a space, there will be a lot of CO<sub>2</sub> concentrate emitted by occupants within the church. This will definitely affect the health of church members if not dealt with. It is therefore very important to remove this air and replace with fresh air. Even though mechanical ventilation can be used to achieve this, it is costly and not environmentally friendly. Passive design systems such as narrow or rectangular building design, stack effect ventilation and large window openings facing the wind direction. Further analysis can be done through the use of a Computational Fluid Dynamics at the planning and design stage to engineer an environmentally friendly and thermal comfortable church.



## 2. Lighting

Natural lighting should be encouraged in tropical regions where day lighting is mostly available. However, due to overheating in the afternoons, long eaves are designed to prevent the sun's ray incidence on wall surfaces. This adversely affects natural lighting into spaces. To solve this, it is recommended designing openings in the roof to allow natural lighting into spaces. The use of north light should be encouraged because it is more consistent than southerly light. Two natural wall openings for achieving this is through a skylight or sun light bottle.

## 3. Greenery

Greenery gives a good micro climate for human habitation. Plants absorb the CO<sub>2</sub> humans breathe out and give out oxygen which humans need. Thus without plants, there will be so much CO<sub>2</sub> concentrated in the environment and less oxygen for human use. Without greenery around a church, all the CO<sub>2</sub> emitted by the large congregation will contaminate the air quality around churches making it difficult to breathe quality air. This will also contribute to the atmospheric CO<sub>2</sub> emissions and thus propagate global warming. Even though human CO<sub>2</sub> emissions depends mainly on activity and lung capacity, the average for a resting adult is 200ml per breathe and 12 breathes per minute. Therefore for a three hour service, each congregation member will emit an average of 2,160ml of CO<sub>2</sub>. Knowing the congregation size, churches should endeavour to create greenery that would match up the emitted CO<sub>2</sub> for absorption.

## Renewable Energy

Renewable Energy is the sustainable and environmentally friendly source of energy in

this 21<sup>st</sup> century. Some of these energy sources are solar PV, wind energy and bio-energy. Amongst these, the most prominent and widely available option in Ghana is solar PV and biogas which is a sub of bio-energy. Most core church services are held on Sundays during the day and this makes solar PV a good option. The sun during the day can be easily tapped to generate electricity for use and some stored in batteries for use during evening services. The cost of batteries for solar PV energy storage are a bit expensive and therefore biogas generators can easily be used by churches as an alternative for PV batteries. This means churches should rather build digesters instead of septic tanks to generate their own biogas for use. This option of digester use also helps prevent gaseous emissions from septic tanks which have adverse effect on the environment.

## Conclusion

In the beginning God created the whole world as accounted for in Genesis chapter 1. But before He gave Man the mandate to subdue the world, He created Man in His own image. This means that God created Man with the same ability of love, care and knowledge for environmental care as He has. Not practicing environmental care can therefore be deemed as not reflecting God's image. The church which is the only institution representing God should thus not falter in this area. This research has enlightened the church on very basic ways they can care for the environment. These recommendations however are directional and further detailed research and analysis per church should be done for implementation. Committees or organisations as recommended should spearhead this course and reflect God's image on this earth.

## References

- [1]. Asamoah, M. K. (2013) Religious environmentalism: The church's environmental sustainability paradigm (the case of the church of Pentecost in Ghana). *European Journal of Business and Social Sciences*, 2(8), 59-76.
- [2]. Atkinson, D. (2008) *Renewing the Face of the Earth: a pastoral and theological response to climate change*. Canterbury: Canterbury Press.
- [3]. Bernard, H. R. (2000) *Social research methods: Qualitative and quantitative approaches*. Thousand Oaks. CA: Sage Publications.
- [4]. Bowling A. (2002) *Research Methods in Health. Investigating Health and Health Services*. Buckingham: Open University Press.
- [5]. Deane-Drummond, C. (2008) *Eco-Theology*. London: Darton, Longman & Todd (DLT)
- [6]. Denscombe M. (1998) *The Good Research Guide: For Small-scale Social Research Projects*. Buckingham: Open University Press.
- [7]. Gyimah, K. A. (2014) Solar Photovoltaic Installation Cost Reduction through Building Integrated Photovoltaics in Ghana. *Journal of Environmental and Natural Resource Management*, 1(2).
- [8]. Haluza-DeLay, R. (2008). Churches engaging the Environment: An Autoethnography of Obstacles and Opportunities. *Human Ecology Review*, 15(1), 71-81.
- [9]. Hsieh, H. F. and Shannon, S. E. (2005) Three approaches to qualitative content analysis, *Qualitative Health Research*, 15(9), 1277-88
- [10]. Hodson, M. J. and Hodson, M. R. (2008) *Cherishing the Earth: How to care for God's Creation*. Oxford: Monarch Books. p80ff.
- [11]. Kelley, K., Clarke, B., Browne, V. and Sitzia, J. (2003) Good practice in the conduct and reporting of survey research, *International Journal of Quality Health Care*, 15(3), 261-266.
- [12]. Rasmussen, L. (1991). Toward an Earth charter. *The Christian Century* 108(30), 964-967
- [13]. Rushton, E. A. C. and Hodson, M. J. Faith, environmental values and understanding: a case study involving Church of England Ordinands, The John Ray Initiative (JRI) Briefing Papers – Number 25
- [14]. UNEP – SBCI. Why Buildings. Available at <http://www.unep.org/sbcj/AboutSBCI/Background.asp>
- [15]. US EPA. (2012). How do buildings affect natural resources? Available at <http://www.epa.gov/greenbuilding/public/faqs.htm#5>
- [16]. Weaver, J. (2009) "Co-redeemers: A theological basis for creation care." *Perspectives in Religious Studies* 36, 199-216.

## About Authors

**Kwabena Abrokwa Gyimah** in 2005 was awarded a Bachelor of Science degree in Architecture from the Kwame Nkrumah University of Science and Technology in Kumasi, Ghana. After working for 6 years in the building

and construction industry, enrolled at the University of Nottingham in the UK on a Postgraduate degree in Renewable Energy and Architecture and graduated July 2013. He is currently an Environmental Designer and Consultant for Green Haus Consults and involved in energy efficient buildings, energy audits, environmental impact assessments of buildings, green building and landscape solutions. Due to his passion for research and academia as well, he currently lectures at the department of energy studies at Yeshua Institute of Technology, Ghana. His main areas of research interest are Building Physics and Science, Sustainable Built Environment and Renewable Energies. Mr. Gyimah is a member of US Green Building Council, Africa Network for Solar Energy, World Society for Sustainable Energy Technologies, Royal Institute of British Architects, and the Ghana Green Building Council.

**Charles Owiredu** in September 2011 became the president of Yeshua Institute of Technology. Prior to his presidency, Dr Owiredu served as Provost and Vice President for Academic Affairs of Regent University of Science and Technology (Regent Ghana) for seven years. He represented the Regent Ghana on the Conference of Heads of Private Universities Ghana (CHPUG) for three years. Dr Owiredu has played a significant role in the founding of four private universities, including Central University, Regent University of Science and Technology, Evangelical Presbyterian University and Yeshua Tech. From 1987 to 2001, Dr. Owiredu rose from the position of Academic Secretary of Central University to become the Special Assistant to the President. He has served as a member of the EP University Council since 2007, and has also acted as Chair of the Council on some occasions. He has lectured and published many books. Dr. Owiredu earned his MPhil degree the University of Cape Coast, Ghana and his PhD

degree from the University of Durham, England. While in England, he both worked in the Durham University and also served as assistant vicar for about three years in St. Georges, Church of England, Gateshead, under the leadership of Rev Underhill. He is a Langham scholar and member of several School Boards and Councils in Ghana. He also consults widely for many academic institutions. He is a renowned speaker and enthusiastically listened to at conferences, on radio and on TV in Ghana.