



# WEST AFRICA BUILT ENVIRONMENT RESEARCH (WABER) CONFERENCE

12-14 August 2013

British Council, Accra, Ghana

## PROCEEDINGS

Editors

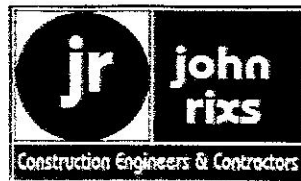
A/Prof Samuel Laryea

Dr Sena Afi Agyepong



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Proceedings of the West Africa Built Environment Research (WABER) Conference 2013

Accra, Ghana, 12-14 August 2013

**Editors**

A/Prof Samuel Laryea, University of the Witwatersrand, Johannesburg, South Africa  
Dr Sena A. Agyepong, Ashesi University College, Ghana

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**Declaration**

All papers in this publication have been through a review process involving initial screening of abstracts, review by at least two referees, reporting of comments to authors, modifications of papers by authors and re-evaluation of re-submitted papers to ensure quality of content.

## FOREWORD

A very warm welcome to everyone attending this WABER 2013 Conference. This year's conference is special for a number of reasons. First, it is our fifth anniversary conference. Time flies! Second, we have keynote speakers from very distinguished backgrounds. Third, we have a WABER Committee providing the academic leadership for development of the Conference. Fourth, we have participants coming from 12 different countries. Fifth, we are back in Ghana after our successful WABER 2012 conference in Abuja, Nigeria. Sixth, the person who has written the paper adjudged to be the best is winning a prize worth about £3000 (Pounds) plus an opportunity to disseminate their work and network with international researchers. This is the first time of instituting the WABER-ARCOM best paper prize and the winner will be travelling to the UK to participate in the ARCOM 2013 Conference on 2-4 September – all expenses are paid for by the Association of Researchers in Construction Management (ARCOM). These are exciting developments and I want to thank you for contributing to our success.

I thank everyone here for coming particularly those of you who keep coming from year to year since 2009. Thanks also to all authors who have successfully gone through the peer review process and had their papers accepted and published in this proceedings. The peer review process for this conference has become increasingly rigorous so please accept our congratulations if you have your paper published in this proceedings. We received a total of 232 abstracts, 172 full papers, and eventually accepted 102 papers for publication in this proceedings which represents approximately 60% of full papers submitted. This statistic provides an indication of significant participation in the WABER conference and underscores the need to congratulate successful authors. The paper publishing process would not have been possible without the usual support of our 45 scientific committee members, 12 theme leaders and 58 reviewers from various parts of the world. Thank you for supporting us. We will be building on the successes of the past 5 years to develop our African Journal for Built Environment Research and expand the WABER website to provide a range of resources and services to support your research development.

We owe a huge debt of gratitude to Doagonal Projects Africa (DPA) Pty Ltd for serving as a major sponsor for the WABER 2013 conference. The Managing Director, Mr Moses Honu, has been very instrumental in making the collaboration between WABER and DPA possible so I wish to thank him for his passion about research and the development of the built environment field in Africa. We are also developing partnerships with RICS and John Rixs Construction Engineers & Contractors whose respective logos are featured on the front cover of this publication.

This year we have outstanding keynote speakers in the persons of Prof Chimay Anumba, Dr Ron Watermeyer and Dr Roine Leiringer. I would like to thank them for accepting our invitation to come and interact with the delegates at this conference. I cannot close without expressing gratitude to Dr Sena Agyepong – our Regional Organising Director. Her dedication and strong commitment is what sustains us from year to year. Dr Emmanuel Essah has been instrumental in helping to organize the conference logistics and financial issues.

My final and special thanks is reserved for our delegates who attend the conference. I know the difficult conditions under which many of our colleagues operate. Many of you have travelled great distances to come here. A number of you have covered your expenses from your own pockets. I want to recognize your commitment towards research development and the sacrifices you have made in order to be here. Thank you for coming and I pray you benefit greatly from the conference and go on to experience significant career progression in the coming years.

Take every chance to interact and enjoy the conference and have a safe journey back home.

A/Prof Samuel Laryea  
School of Construction Economics and Management  
University of the Witwatersrand, Johannesburg, South Africa  
August 2013

## SCIENTIFIC COMMITTEE

Prof Chimay Anumba, Pennsylvania State University, USA  
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Dr Immaculata Nwokoro, University of Lagos, Nigeria  
Dr Sena Agyepong, Ashesi University College, Ghana  
A/Prof Samuel Laryea, University of the Witwatersrand, South Africa



## **THEME LEADERS**

We are grateful to the following academics for leading the refereeing process for papers relating to their research areas:

**Dr Emmanuel A. Essah**, University of Reading, UK – Building services, solar energy technologies, renewable energy, building physics, sustainable technologies

**Dr Haruna Moda Musa**, Manchester Metropolitan University – Sustainability in the built environment and construction materials

**Dr Noah K. Karley**, Heriot-Watt University, UK – Real Estate Development

**Dr Roine Leiringer**, University of Hong Kong, Hong Kong – Construction procurement, and organisational strategy and development

**Dr Scott Fernie**, Loughborough University, UK – Construction procurement, supply chain management, partnering and relationship management

**Dr Tyler James Frazier**, Technische Universität München, Germany – Building services, transportation and infrastructure development services

**Dr. Jian Zuo**, University of South Australia, Australia – Project management and project organisation

**Dr Yingbin Feng**, University of Western Sydney, Australia – Occupational Health and Safety, Human resources

**Stephen Ajadi**, Contemporary Initiative for Research in Design (CIRD), Nigeria – Architecture and planning

**Dr Nii Ankrah**, University of Wolverhampton, UK – HR, Culture and project organization

**Dr Aaron Anvuur**, Loughborough University, UK – Procurement and Supply Chains or Project Organisation and Management

**Dr Martin Morgan Tuuli**, Loughborough University, UK – Quantity surveying, financial management and construction economics

## REVIEW PANEL

The peer review process for an international conference of this nature requires the expertise and voluntary contribution of a number of academics from various countries. We are grateful to the following people who assisted by carrying out the review of abstracts and papers for the WABER 2013 conference in addition to the members of our Scientific Committee.

- 
- |  |   |
|--|---|
| <b>Dr. Folake Isaacs-Sodeye</b> , University College London, United Kingdom  | <b>Dr Sena Agyepong</b> , Ashesi University College, Accra, Ghana                               |
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| <b>Dr Bryan Loder</b> , Shanghai University of Finance and Economics and Shanghai Jiao Tong University, Shanghai China | <b>Prof George Ofori</b> , National University of Singapore, Singapore                          |
- 

THANK YOU FOR YOUR CONTRIBUTION

## **WABER COMMITTEE**

The West Africa Built Environment Research (WABER) Committee for 2012-14 comprises of the following persons:

### **Chairman**

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### **Regional Organising Director**

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### **Financial Director**

Dr Emmanuel Essah, University of Reading, UK

### **Newsletter Editor**

Dr Taibat Lawanson, University of Lagos, Nigeria

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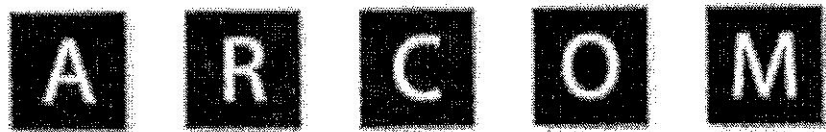
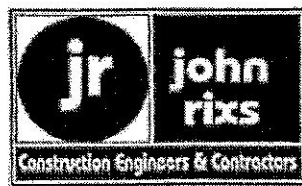
The main responsibility of the WABER Committee is to provide the infrastructure and academic leadership for developing the WABER conference.

Our sincere thanks to the following persons who provided the infrastructure and academic leadership for developing WABER over the past four years: Dr Sena Agyepong, Mr Samuel Asare-Konadu, Dr Emmanuel Essah, Dr Chris Harty, Professor Will Hughes, Dr Samuel Laryea, Dr Roine Leiringer and Professor George Ofori.

## SPONSORS AND PARTNERS

We wish to express our profound gratitude to the following sponsors and partners of the WABER Conference.

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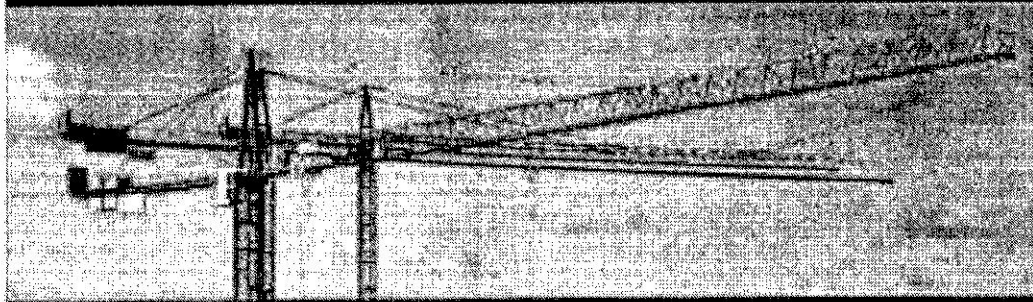
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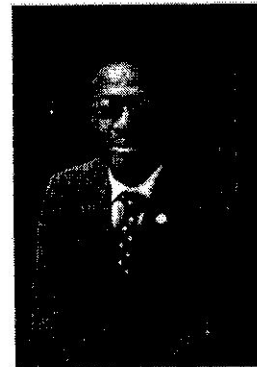
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A-Kon Consults Ltd is today one of the leading Chartered Quantity Surveying (QS) firms in Ghana and West Africa. Internationally, the firm is accredited by both the Royal Institution of Chartered Surveyors (RICS) and the Chartered Institute of Building (CIOB).

Our success in the past eleven years has been mainly driven by our commitment to delivering exceptional value – by using the most modern, sophisticated tools and techniques, providing dedicated focus to clients and executing with excellence. We are involved in virtually every facet of the construction industry. We conduct cost management, assessing life cycle costs at all project stages; project management, planning, organising, controlling and forecasting for projects; construction management, professional handling of new buildings and refurbishment, and consultancy services to support clients and projects.

*“Our firm is about delivery. It’s about the quality of work we do and the services we provide to satisfy our clients”*

*Mr Samuel Asare-Konadu, Founder and Managing Director, A-Kon Consults Ltd*



### Humble Beginnings

A-Kon Consults Ltd opened its doors for business on 21<sup>st</sup> October, 2002. After starting the company from his dining table, Samuel Asare-Konadu used all the capital he had to pay for the rent of a small 20 m<sup>2</sup> office space for \$2,200. The first five years was a slow but steady walk to building a brand presence and reputation in the industry. The company often took on unpaid jobs by small contractors until the first big contract for a residential apartments’ project in an exclusive suburb of Accra. Since then, we have experienced rapid, profitable growth and expansion in projects and services.

### Our Projects

Our portfolio of completed projects include the Accra Sports Stadium, Cargill cocoa processing factory, office buildings for Maersk Line, Ericsson, and several residential real estate projects. Currently, A-Kon Consults Ltd is partnering with Davis Langdon, the world’s leading quantity surveyors on the first green building in Ghana, the One Airport Square project, valued at \$45 million. This affirms our reputation as one the leading firms in Ghana with the capacity to deliver on innovative and environmentally sustainable designs for the built environment.

Our team has diverse skills and experience in design and project management, commercial property development, and engineering, in addition to our core competence

in quantity surveying to deliver on projects and our range of services offered. This expertise is reflected in the firm's technical excellence and dedicated pursuit of exceptional value to clients.

### **Corporate Social Responsibility**

Infrastructure is essential to a developing economy which in turn is based on the development of knowledge and skills in construction and engineering. A-Kon Consult thus focuses on education as its vehicle of social impact. The company supports programmes that seek to advance the training and continuous professional development of students, quantity surveyors and other stakeholders in the construction industry.

### **Our Future**

A-Kon Consults Ltd is proud to be celebrating 10 years and rises to the challenge of shaping a sustainable future due to technological changes and evolution of the industry, by innovating and executing on improved solutions for its clients.

### **Contact Us**

A warm welcome awaits you if you would like to contact us through any of the following coordinates:

**Location:** No. 4, Saflo Link Abelenkpe, Accra

**Telephone:** +233 (030) 276 7994/ (0) 54 958 349

**Fax:** +233 (030) 276 8134

**Email:** [info@a-konconsults.com](mailto:info@a-konconsults.com)

**Website:** [www.a-konconsults.com](http://www.a-konconsults.com)

We are delighted to be part of the 5<sup>th</sup> WABER Conference taking place in Accra, Ghana on 12-14 August 2013. As a firm we always strive to drive high standards, professionalism and development of the construction industry. A vibrant and well organised construction industry can create growth and opportunity for our people. A lot of those participating in this year's WABER Conference are future leaders of the construction industry either as academics, researchers or practitioners. You have ideas. We need your ideas and innovations to develop the industry and regional economy and take it forward to the next level. That is why we are happy to be part of this conference.



Samuel Asare-Konadu

Managing Director

B.Sc. (Hons), MRICS, MCIQB, MGhIS

**Email:** [sak@a-konconsults.com](mailto:sak@a-konconsults.com)

## PROGRAMME

**MONDAY**                    **12<sup>TH</sup> AUGUST 2013**

**07:30-09:00**                **REGISTRATION**

**09:00-09:45**                **OPENING SESSION (AUDITORIUM)**

09:00-09:10                Welcome address

09:10-09:20                Remarks by Managing Director of Diagonal Projects Africa (DPA) – Moses Honu

09:20-09:40                Address by Guest of Honour – Samia Yaba Nkrumah

09:40-09:45                WABER 2013 Group Photograph

**09:45-10:00**                **BREAK**

**10:00-10:40**                **KEYNOTE ADDRESS by PROFESSOR CHIMAY J. ANUMBA**

*FREng, PhD, DSc, Dr.h.c., CEng, FICE, FIStructE, FASCE, FCIQB*

*Department Head and Professor of Architectural Engineering, The Pennsylvania State University, USA*

**Title: Emerging trends in Building Information Modelling: Implications for projects in developing economies**

**11:00-13:00**                **PARALLEL SESSION (STREAM 1 - AUDITORIUM)**

**Chairperson: Dr Martin Tuuli, Loughborough University, UK**

11:00-11:10                A case for deepened construction supply chain management in South African state-owned enterprises - FA Ennuze, V Klaas and J Smallwood

11:10-11:20                Sustainable supply chain management in construction firms - Elizabeth Ojo, Charles Mbohwa and Esther T. Akinlabi

11:20-11:30                Discussion

11:30-11:40                A preliminary inquiry into the applicability of client-contractor partnering in the Ghanaian construction industry - Frederick Ababio Nuamah,

Patrick Manu, and Emmanuel Mann

11:40-11:50                Contractor-subcontractor working relationships: a review of transaction cost economics and resource-based theory - Augustine Blay-Armah,

Andy Ross and Raymond Abdulai



- 11:50-12:00 Discussion  
 12:00-12:10 A framework for assessing the effectiveness of competitive tendering process in public works procurement at pre-contract stage in Chad: a research proposal - Sazoulang Douh \*  
 12:10-12:20 Contextualising the methodology for developing a collaborative working framework for improving construction design service delivery in Ghana – N. K. Orgen, D.K. Alhazie, J. Ayarkwa and E Badu  
 12:20-12:30 Discussion  
 12:30-12:40 Expert system and econometric entropy-based model for residential building project cost adjudication - Lekan M.AMUSANI; AYO K.Charles and Timothy O.Mosaku  
 12:40-12:50 Awareness of artificial intelligence (AI) methods for cost estimating in the Nigerian construction INDUSTRY - Baba Shehu Waziri  
 12:50-13:00 Discussion

### **13:00-14:15 LUNCH AND NETWORKING BREAK**

### **15:00-17:30 PARALLEL SESSION (STREAM 1 - AUDITORIUM)**

#### **Chairperson: Dr Aaron M. Anvuur, Loughborough University, UK**

- 15:00-15:10 Governing construction project procurement to mitigate contractor's opportunism: A conceptual framework. - Olusola Ogunsehin,Deji Rufus Ogunsehin,Oluseyi Awodele  
 15:10-15:20 An appraisal of challenges facing competitive tendering implementation in public works procurement in chad republic - Sazoulang Douh, E. Badu, T. Adjei-Kumi, E. Adanyira  
 15:20-15:30 Discussion  
 15:30-15:40 Housing procurement in informal settlements: a case study of Ayobo, Lagos, Nigeria – Opoko Akumaya Pearl and Iben Eziyi Offa  
 15:50-16:00 Procurement for national transformation: adopting modern technology methods the alternative for adequate housing delivery in Nigeria - Zaki Yakubu M, Abdullahi Suraj, Musa-Haddady and Yakubu Gimson  
 16:00-16:10 Discussion  
 16:10-16:20 An evaluation of public private partnership (PPP) for housing delivery in Lagos state, Nigeria - Aiyetan. Ayodeji Olatunji and Abiola-Falemu, J. Ojo  
 16:20-16:30 A critical review of public private partnership practice in Nigeria - Afeez Olalekan Sanni,a and Maizon Hashim  
 16:30-16:40 Discussion  
 16:40-16:50 Whole life costing practice in procurement of public buildings in Nigeria: myth or reality? - Fatima M Bello, Ahmed Doko Ibrahim and Baba Adama Kolo  
 16:50-17:00 Bridging the finance gap in infrastructure procurement through build-operate-transfer (BOT) mechanism in Nigerian tertiary institutions - Gbadegehin, Job Taiwo and Oyewole.Mathew.O  
 17:00-17:10 Discussion

**17:10 CLOSE AND REFRESHMENTS**

**MONDAY 12<sup>TH</sup> AUGUST 2013**

**07:30-09:00 REGISTRATION**

**09:00-09:45 OPENING SESSION (AUDITORIUM)**

**09:45-10:00 BREAK**

**10:00-10:40 KEYNOTE ADDRESS by PROFESSOR CHIMAY J. ANUMBA**

*FREng, PhD, DSc, Dr.h.c., CEng, FICE, FIStructE, FASCE, FCIOR  
Department Head and Professor of Architectural Engineering, The Pennsylvania State University, USA*

**Title: Emerging trends in Building Information Modelling: Implications for projects in developing economies**

**11:00-13:00 PARALLEL SESSION (STREAM 2 - SEMINAR ROOM)**

**Chairperson: Dr Roine Leiringer, University of Hong Kong, Hong Kong**

Investigation into the costs of preliminaries and relationship between these costs and total cost of building projects - Inyang-Udoh, U. I.  
Assessment of the pricing of preliminaries items in the bill of quantities - Wasitu Adeniran Bello and Afecz Adetayo

Discussion

The 10% standard or lump sum - a statistical analysis of estimating construction contingency accuracy - Omoleye B.Ojuri  
Project cost risk and uncertainties: towards a conceptual cost contingency estimation model - Joseph Ignatius Teye Buerey, Emmanuel  
Abeere-Inga, Theophilus Adjei Kumi

Discussion

Challenges facing district assemblies' "in-house" administered construction contracts – Sarfo Mensah and Collins Ameyaw  
Reducing variability in concrete activity labour productivity to improve labour performance - John Ehbolinen Idlake, Bala Kabir and Shelu  
Ahmadu Bustani

Discussion

11:50-12:00  
12:00-12:10  
12:10-12:20  
12:20-12:30  
12:30-12:40  
An assessment of contractor's risks exposure within some standard forms of building contract in Nigeria - Biodun Nathaniel Obaju, Yakubu

12:40-12:50 Gimson Musa-Haddary and Baba Adama Kolo  
12:50-13:00 Post-contract construction disputes in the Ghana health sector: causes and effects - Sarfo Mensah and Collins Ameyaw  
Discussion

### **13:00-14:15 LUNCH AND NETWORKING BREAK**

### **14:15-14:55 KEYNOTE ADDRESS by DR RON WATERMEYER**

*DEng, CEng, PrEng, PrCM, PrCPM, FSAICE, FInstruce, FICE*

*Convenor of the International Standardisation Organisation's (ISO) Technical Committee TC 59 (Building and Construction) Working Group 2 for Construction Procurement (ISO 10845)*

**Title: Value for money in the delivery of public infrastructure**

### **15:00-17:30 PARALLEL SESSION (STREAM 2 - SEMINAR ROOM)**

#### **Chairperson: Professor Wellington D. Thwala, University of Johannesburg, South Africa**

15:00-15:10 Identification of Construction Delay Factors: Perception of Multinational and Indigenous Construction Firms in Nigeria - Abisuga Abiodun Olatunji and Salisu Harifz Adewale  
15:10-15:20 Delays to large construction projects in Ghana: a risk overview - Joseph Ignatius Teye Buerrey, Miezah, Augustine Kaku, THEOPHILUS Adjei Kumi  
15:20-15:30 Discussion  
15:30-15:40 Effects of management practices on the completion time of building projects in Ghana - Anita Asamoah-Duodu, Kwame Danso and Collins Ameyaw  
15:50-16:00 Effect of bid bond on construction project performance in Nigeria - Oke, A.L., Ogunsemi, D. R., Aje I. O. and Ogundimu, A.F.  
16:00-16:10 Discussion  
16:10-16:20 The problems and prospects of the Tagwai dam, Minna, Niger State, Nigeria - Musa Dahi  
16:20-16:30 Managing end-users' satisfaction during capital developments by adopting value engineering as project management tool - Ogbeifun, E., Pretorius, J.H. and Mbohwa, C.  
16:30-16:40 Discussion  
16:40-16:50 Exploring the benefits of e-tendering for infrastructure project procurement in Nigeria - Alhassan Dahiru, Sani Usman Kunya and Ahmed Isah Gummel  
16:50-17:00 Cost of tendering in Ghana- client's perspective - Collins Ameyaw, SARFO Mensah and Johnmark Asubonteng  
17:00-17:10 Discussion

## 17:10 CLOSE AND REFRESHMENTS

TUESDAY 13<sup>TH</sup> AUGUST 2013

### PARALLEL SESSION (STREAM 1 – AUDITORIUM)

**Chairperson: Dr Cynthia Adekun, Covenant University, Nigeria**

- 09:00-09:10 A paradigm shift in urban economic theories: the re-examination of land and housing values determinants - Ifechukwu, V.U
- 09:10-09:20 Improving land governance in Nigeria: the case of compulsory acquisition and compensation practice - Odeboye, Adegayo Ayodeji, Olaleye, Abel and Oladokun, Timothy Tunde
- 09:20-09:30 Discussion
- 09:30-09:40 Reconciling the provisions of the land use act and the Kwara State land charge law - Atilola Moses Idowu
- 09:40-09:50 Factors affecting the implementation of building regulations (L.L.1630) in GHANA - Simon Ofori Ameleye and Samuel Kwame Ansa
- 09:50-10:00 Discussion
- 10:10-10:20 Appraisal of the development control activities of Oriade local government planning authority, Osun State, Nigeria - Ogundahunsi, D. S.
- 10:20-10:30 Implication of housing development on wetland loss in Eti Osa local government area of Lagos State, Nigeria – Muraina Alimi Musibau and Iyanda Oladimeji
- 10:30-10:40 Discussion

### 10:40-11:00

### REFRESHMENTS AND NETWORKING BREAK

**Chairperson: Dr Gabriel Nani, KNUST, Kumasi, Ghana**

- 11:00-11:10 Amoebic urbanization: the Lagos-Ota nexus - Taofiki SALAU, Taibat LAWANSON AND Omoayena Yadda
- 11:10-11:20 Go-ahead element of domestic architecture: socio-economic and cultural characteristics of the residents in Benin - Ekhase Eghosa Noel
- 11:20-11:30 Discussion
- 11:30-11:40 Determining the unique features of mass housing projects (MHPs) - E. Adinyira, D. Ahadzie, T.E. Kwofie
- 11:40-11:50 Towards efficient provision of physical infrastructure in residential areas of Makurdi, Nigeria - Patience Adzande
- 11:50-12:00 Discussion
- 12:00-12:10 Poverty and socio-economic adaptation strategies in Lagos metropolis, Nigeria - Taibat Lawanson and Leke Oduwaye
- 12:10-12:20 Sharing, cooperation and conflicts: Multihabitation as an urban low income housing strategy in Accra - Irene Appeaning Addo
- 12:20-12:30 Discussion
- 12:30-12:40 Impact of road transportation on regional development of Igbomina Region Of Osun State, Nigeria – Adedotun S.B.
- 12:40-12:50 Post occupancy evaluation of public secondary schools facilities - Abisuga Abiodun Olatunji
- 12:50-13:00 Discussion

13:00-14:15

LUNCH AND NETWORKING BREAK

14:20-14:55

KEYNOTE ADDRESS by DR ROINE LEIRINGER (AUDITORIUM)

*Co-editor of Construction Management and Economics journal & Associate Professor in the Department of Real Estate and Construction at The University of Hong Kong*

Title: Research development

15:00-17:30

PARALLEL SESSION (STREAM 1 - AUDITORIUM)

Chairperson: Professor G.W.K. Intsiful, KNUST, Kumasi, Ghana

15:00-15:10

Perception of the financial sector towards real estate investment in Sub Saharan Africa: a case study Ghana - Enyonam Offeibea

15:10-15:20

Megbenu, Frederick Ababio Nuamah and Michael Mwinsoro Mtuomallah

15:20-15:30

A study of liquidity in residential property sales transaction in Lagos state Nigeria - Odebode Adedayo Ayodeji

15:30-15:40

Discussion

15:50-16:00

Effects of trends in annual rents on occupancy ratio in multi-storey commercial properties in Kaduna metropolis, Nigeria - A.A Yakub, S

16:00-16:10

Balarabe, A.O Salawu, S D Gimba

16:10-16:20

Effective sites and services scheme as a means of solving low-income housing need in Nigerian cities - Bello Nurudeen Akinsola, Oladokun

16:20-16:30

Timothy Tunde and Adegunle Tomisi Olusegun

16:30-16:40

Discussion

16:40-16:50

Correlates between construction company size and corporate performance: an exploratory study - George Cyril Tucker, ABIMBOLA O

16:50-17:00

Windapo, Keith S Carrell

16:30-16:40

Reversing the business failure rate among small and medium size construction firms in South Africa: a progressive study - L Wentzel, F A

16:40-16:50

Emuze and J J Smallwood

16:50-17:00

Discussion

17:00-17:10

The missing links between construction sector and development in Nigeria: a polycentric planning perspective - Samson Akinola, Moses

17:10-17:20

Ogunbiyi, Adesokan Adeleye and Ayodeji Ajayi

17:20-17:30

The inflation hedging potential of commercial property investments in Ibadan, Nigeria - Ogunba Olusegun Adebayo, Ohiyomi Olawale

17:00-17:10

Oluwatosin and Dugeri Terzungwe

17:10-17:20

Inflationary trends and the prices of some selected construction plants – D.O. Mac-Barango

17:20-17:30

Development of a design-related computer-based model for estimating building material quantities - Blondel Abatey, John Dadzie and

Godfred Fobiri

Discussion

17:30

**CLOSE AND REFRESHMENTS**

**TUESDAY**

**13<sup>TH</sup> AUGUST 2013**

**PARALLEL SESSION (STREAM 2 – SEMINAR ROOM)**

**Chairperson: Dr Emmanuel Essah, University of Reading, UK**

- 09:00-09:10 Building design practice and household energy use in urban centres in Nigeria; a case study of Bauchi town - Ibrahim Udale Hussaini
- 09:10-09:20 Redesigning buildings for efficient utilization of solar energy source in Kaura Namoda, Nigeria - Nghai Ezekiel Sulaman and Edwin Albert Umoh
- 09:20-09:30 Discussion
- 09:30-09:40 A case for improved indoor environmental quality (IEQ) in multi-use buildings - FA Emuze, H Marshili and B Botha
- 09:40-09:50 Operation green Lagos programme and its implication for sustainable development - Isidore C. Ezema
- 09:50-10:00 Discussion
- 10:10-10:20 Spatial analysis of fire disaster and emergency service location in Jos metropolis - Ozigis S. M, Gajere E. N, Emmanuel E. A and Hyelpambuwa Y
- 10:20-10:30 Geospatial analysis of pre and post 2012 flood disaster in Lokoja and environs, Nigeria – Achema E. Emmanuel, Ojigi M.Lazarus and Adeleke A.Jude
- 10:30-10:40 Discussion

**10:40-11:00**

**REFRESHMENTS AND NETWORKING BREAK**

**Chairperson: Dr Kulomri Adogbo, Ahmadu Bello University, Nigeria**

- 11:00-11:10 Barriers to sustainable construction in the Ghanaian construction industry: consultants perspectives - Susan D. Djokoto and John Dadzie
- 11:10-11:20 Sustainability and the built environment: a case study of the Hausa migrant settlement, Sabo, in Ille-Ife, Nigeria - Adisa Buki
- 11:20-11:30 Discussion
- 11:30-11:40 Identification and Characterisation of Wetlands for Sustainable Development in Ede Region, Southwestern Nigeria. - Gasu, M. B.
- 11:40-11:50 Sick buildings syndrome, health issues and life expectancy of residents in Nigerian cities - Ekhaese Eghosa Noel and Omolunhin Asotie Conrad
- 11:50-12:00 Discussion
- 12:00-12:10 Environmental justice, planning and oil and gas pipelines in the Niger Delta region of Nigeria – Friday A. Ogru and Abdulrahman A. Sahabo
- 12:10-12:20 Urban degreening, erosional impact and housing quality in Osun State, Nigeria: mitigating flooding through polycentric environmental planning - Samson Akinola, Samuel Adedotun, Dele Ogunдахunsi and Deborah Yakubu

12:20-12:30 Discussion  
12:30-12:40 Geospatial techniques in risk mapping of oil pipelines in Obio/Akpor areas of Rivers State, Nigeria - Onyechefuna Hilda U., Aderoju Olaide M., Emmanuel E. Achemu  
12:40-12:50 Application of Semi-Quantitative Risk Based Inspection Technique in Prioritizing Defects Severity of a Residential Building Systems - Dabo B. Hamad and Ali Garba Rishi  
12:50-13:00 Discussion

### **13:00-14:15 LUNCH AND NETWORKING BREAK**

### **14:20-14:55 KEYNOTE ADDRESS by DR ROINE LEIRINGER (AUDITORIUM)**

*Co-editor of Construction Management and Economics Journal & Associate Professor in the Department of Real Estate and Construction at The University of Hong Kong*

**Title: Research development**

### **15:00-17:30 PARALLEL SESSION (STREAM 1 - AUDITORIUM)**

#### **Chairperson: Dr Fidelis Emuze, Central University of Technology, Free State, South Africa**

15:00-15:10 Factors militating against private practice by graduates of architecture in the North-West geo-political zone of Nigeria – Musa Nuhu Madawaki  
15:10-15:20 Perceptions of final-year female undergraduates on their propensity to participate in construction practice - Kulomri Jipato Adogbo, Ahmed Doko Ibrahim and Yahaya Makarfi Ibrahim  
15:20-15:30 Discussion  
15:30-15:40 Key competencies of value managers in Lagos State, Nigeria - Ayodeji Emmanuel Oke and Deji Rufus Ogunsemi  
15:50-16:00 Knowledge management perceptions: the case of construction professionals in Nigeria - T. Zuofa and E. G. Ochieng  
16:00-16:10 Discussion  
16:10-16:20 Influence of organisational culture on construction workers' commitment in Lagos, Nigeria- Abiola-Falenu, Joseph Ojo  
16:20-16:30 Codes of practice: prerequisite for quality structural design and management of buildings in Nigeria - OLANITORI L.M.  
16:30-16:40 Discussion  
16:40-16:50 Health and Safety Performance in the Uganda Construction Industry - Moses Okwel, Henry M. Alinaitwe and Denis Kalumba  
16:50-17:00 Conceptual model for integrating health and safety into construction procurement in Ghana – Moses Honu, S. Laryea, John Smallwood  
17:00-17:10 The study of organisational quality policy practices of Nigerian building design firms in relation to number of employees - D. Kado and M. Abubakar  
17:10-17:20 An assessment of the key determinants of Building Science students' satisfaction when undertaking group work: a case study of the University of Johannesburg, South Africa - Clinton Aigbavboa and Wellington Thwala  
17:20-17:30 Discussion

**17:30 CLOSE AND REFRESHMENTS**

**WEDNESDAY 14<sup>TH</sup> AUGUST 2013**

**09:00-11:00 WORKSHOP ON RESEARCH GRANT PROPOSAL WRITING**

Facilitator: Professor Chimay J. Anumba

**11:00-11:30 REFRESHMENTS AND NETWORKING BREAK**

**11:30-13:00 PARALLEL SESSION (STREAM 1 – AUDITORIUM)**

**Chairman: Dr Taibat Lawanson, University of Lagos, Nigeria**

11:30-11:40 Cultural expression and sustainable design of resorts in Nigeria - Stephen Nwabunwanne Oluigbo

11:40-11:50 Analyses of the costs and benefits of sustainable tourism development—evidence from the leading tourism countries and cities of the world - Abdulrahman A. Sahabo and Friday A. Ogwu

11:50-12:00 Discussion

12:00-12:10 How domestic space embodies status: a comparative study of kitchens and culinary practice in Ile-Ife, Nigeria - Folake Ekdundayo Isaacs-Sodeye

12:10-12:20 The Orowa house: a typology of traditional Yoruba architecture in Ile-Ife, Nigeria - Cynthia O.Adeokun

12:20-12:30 Discussion

12:30-12:40 Metamorphing barriers: bowlderizing the Nigerian wall - Stephen Ajadi

12:40-12:50 Causes of materials waste on construction sites in Ghana - E Ofori-Yeboah

12:50-13:00 Discussion



**13:00-14:30 LUNCH AND NETWORKING BREAK**

**14:30-17:00 RESEARCH SKILLS WORKSHOP ON QUALITATIVE AND QUANTITATIVE DATA ANALYSIS TECHNIQUES (AUDITORIUM AND SEMINAR ROOM)**

**Facilitators: Dr Martin Tulli & Dr Aaron M. Anvuur**

17:00-17:15 Conference Summary - Dr Roine Leiringer (AUDITORIUM)

17:15-17:45 Presentation of certificates and prizes – Samuel Laryea and Sena Agyepong (AUDITORIUM)

**17:45 CLOSE AND REFRESHMENTS**

**WEDNESDAY 14<sup>TH</sup> AUGUST 2013**

**09:00-11:00 WORKSHOP ON RESEARCH GRANT PROPOSAL WRITING**

**Facilitator: Professor Chimay J. Anumba**

**11:00-11:30 REFRESHMENTS AND NETWORKING BREAK**

**11:30-13:00 PARALLEL SESSION (STREAM 2 – SEMINAR ROOM)**

**Chairperson: Dr Sena Agyepong, Ashesi University College, Ghana**

11:30-11:40 Is the quality of cement a contributing factor for building collapse in Ghana? - Humphrey Danso and Isaac Boateng

11:40-11:50 Suitability of bagasse ash as a filler material in hot mix asphalt (HMA) concrete - Abdulfatai Adinoyi Murana, Aminat Abubakar Ahmed and Faith Toyin Jegede

Discussion

11:50-12:00 AN evaluation of the properties of binary concrete containing metakaolin - Okoji O.G, GETSO A.I and Dahiru D

12:00-12:10 Strength evaluation of low density polyethylene as an admixture in hot mix asphalt concrete - Abdulfatai Adinoyi Murana, Abdulhammed Talle Rabiu and Umar Usman Umar

Discussion

12:20-12:30 Evaluation of the performance of broken waste tiles as aggregate in lightweight concrete - Otuozie, H.S., Ahmed, H.A., Alhassan A., Aliyu, N.S., Suleiman, M.A. and Yabefa, A.I.

12:30-12:40 Effects of Nigerian metakaolin (MK) on cement mortar and compressive strength of concrete - Abalaka, A.E., Mohammed I. and

12:40-12:50

12:50-13:00	Mohammed, B. M.
<del>13:00-13-10</del>	User`s perception to housing units provided in Abuja resettlement housing scheme, Nigeria – Ayuba. P
<b>13:00-14:30</b>	<b>LUNCH AND NETWORKING BREAK</b>
<b>14:30-17:00</b>	<b>RESEARCH SKILLS WORKSHOP ON QUALITATIVE AND QUANTITATIVE DATA ANALYSIS TECHNIQUES (AUDITORIUM AND SEMINAR ROOM)</b>
	<b>Facilitators: DR MARTIN TUULI &amp; DR AARON M. ANVVUR</b>
17:00-17:15	Conference summary – Dr Roine Leininger (AUDITORIUM)
17:15- 17:45	Presentation of certificates and prizes – Samuel Laryea and Sena Agyepong (AUDITORIUM)
<b>17:45</b>	<b>CLOSE AND REFRESHMENTS</b>

# CONTENTS

## SECTION 1: KEYNOTES

Emerging Trends in Building Information Modelling – Implications for Projects in Developing Economies – Chimay J. Anumba	1
Value for money in the delivery of public infrastructure - Ron Watermeyer	3

## SECTION 2: CONFERENCE PAPERS

A case for deepened construction supply chain management in South African state-owned enterprises - FA Emuze , V Klaas and J Smallwood	23
A case for improved indoor environmental quality (IEQ) in multi use buildings - FA Emuze , H Matshili and B Botha	31
A critical review of public private partnership practice in Nigeria - Afeez Olalekan Sanni,a and Maizon Hashim	41
A framework for assessing the effectiveness of competitive tendering process in public works procurement at pre-contract stage in Chad: a research proposal - Sazoulang Douh	49
A paradigm shift in urban economic theories: the re-examination of land and housing values determinants - Ilechukwu, V.U	59
A preliminary inquiry into the applicability of client-contractor partnering in the Ghanaian construction industry - Frederick Ababio Nuamah, Patrick Manu, and Emmanuel Manu	77
A study of liquidity in residential property sales transaction in Lagos state Nigeria - Odebode Adedayo Ayodeji	87
Amoebic urbanization: the Lagos-Ota nexus - Taofiki SALAU, Taibat LAWANSON AND Omdayena Yadau	99
An appraisal of buildability practice in the Nigerian construction industry - D. Dahiru, A.D. AbdulAzeez and E.O. Haruna	111
An appraisal of challenges facing competitive tendering implementation in public works procurement in chad republic - Sazoulang Douh, E. Badu, T. Adjei-Kumi, E. Adaniyira	123
An assessment of contractor's risks exposure within some standard forms of building contract in Nigeria - Biodun Nathaniel Obaju, Yakubu Gimson Musa-Haddary and Baba Adama Kolo	135
An assessment of the key determinants of Building Science students' satisfaction when undertaking group work: a case study of the University of Johannesburg, South Africa - Clinton Aigbavboa and Wellington Thwala	149
Assessment of the pricing of preliminaries items in the bill of quantities - Wasiu Adeniran Bello and Afeez Adetayo	161
An evaluation of public private partnership (PPP) for housing delivery in Lagos state, Nigeria - Aiyetan, Ayodeji Olatunji and Abiola-Falemu, J. Ojo	171
AN evaluation of the properties of binary concrete containing metakaolin - Okoli O.G, GETSO A.I and Dahiru D	183
Analyses of the costs and benefits of sustainable tourism development –evidence from the leading tourism countries and cities of the world - Abdulrahaman A. Sahabo and Friday A. Ogwu	193
Appraisal of the development control activities of Oriade local government planning authority, Osun State, Nigeria - Ogundahunsi, D. S.	203
AWARENESS of artificial intelligence (AI) methods for cost estimating in the Nigerian construction INDUSTRY - Baba Shehu Waziri	213
Barriers to sustainable construction in the Ghanaian construction industry: consultants perspectives - Susan D. Djokoto and John Dadzie	223
Bridging the finance gap in infrastructure procurement through build-operate-transfer (BOT) mechanism in Nigerian tertiary institutions - Gbadegesin, Job Taiwo and Oyewole.Mathew.O235	
Building design practice and household energy use in urban centres in Nigeria; a case study of Bauchi town - Ibrahim Udale Hussaini	251

Causes of materials waste on construction sites in Ghana - E Ofori-Yeboah	263
Challenges facing district assemblies' in-house administered construction contracts - Sarfo Mensah and Collins Ameyaw	273
Codes of practice: prerequisite for quality structural design and management of buildings in Nigeria - OLANITORI L.M.	283
Conceptual model for integrating health and safety into construction procurement in Ghana - Moses Honu, Samuel Laryea and John Smallwood	293
Contextualising the methodology for developing a collaborative working framework for improving construction design service delivery in Ghana	307
Contractor-subcontractor working relationships: a review of transaction cost economics and resource-based theory - Augustine Blay-Armah, Andy Ross and Raymond Abdulai	321
Correlates between construction company size and corporate performance: an exploratory study - George Cyril Tucker1, ABIMBOLA O Windapo,Keith S Cattell	333
COST of tendering in Ghana- client's perspective - Collins Ameyaw, SARFO Mensah and Johmark Asubonteng	347
CULTURAL expression and sustainable design of resorts in Nigeria - Stephen Nwabunwanne Oluigbo	357
Delays to large construction projects in Ghana: a risk overview - Joseph Ignatius Teye Buertey, Miezah, Augustine Kaku, THEOPHILUS Adjei Kumi	367
Determining the unique features of mass housing projects (MHPs) - E. Adinyira,D.Ahadzie,T.E.Kwofie	381
Development of a design-related computer-based model for estimating building material quantities - Blondel Abaitey, John Dadzie and Godfred Fobiri	391
Effect of bid bond on construction project performance in Nigeria - Oke, A.E., Ogunsemi,D. R.,Aje I.O. and Ogundimu,A.F.	407
Effects of Nigerian metakaolin (MK) on cement mortar and compressive strength of concrete - Abalaka, A.E., Mohammed I. and Mohammed, B.M.	419
Effective sites and services scheme as a means of solving low-income housing need in Nigerian cities - Bello Nurudeen Akinsola,Oladokun Timothy Tunde and Adegunle Tomisi Olusegun	429
Effects of curing conditions on compressive strength development of concrete containing optimum rice husk ash replacement - A.E.Abalaka and O.G.Okoli	447
Effects of management practices on the completion time of building projects in Ghana - Anita Asamoah-Duodu,Kwame Danso and Collins Ameyaw	455
Effects of trends in annual rents on occupancy ratio in multi-storey commercial properties in Kaduna metropolis, Nigeria - A.A Yakub,S Balarabe,A.O Salawu,S D Gimba	465
Environmental justice, planning and oil and gas pipelines in the Niger Delta region of Nigeria – Friday A.Ogwu and Abdulrahaman A.Sahabo	475
Evaluation of the performance of broken waste tiles as aggregate in lightweight concrete - Otuoze,H,S, Ahmed,H.A.,Alhassan A.,Aliyu,N.S.,Suleiman,M.A.and Yabefa,A.J.	485
EXPERT system and econometric entropy-based model for residential building project cost adjudication - Lekan M.AMUSAN; AYO K.Charles and Timothy O.Mosaku	493
Exploring the benefits of e-tendering for infrastructure project procurement in Nigeria - Alhassan Dahiru, Sani Usman Kunya and Ahmed Isah Gumel	511
Factors affecting the implementation of building regulations (L.I.1630) in GHANA - Simon Ofori Ametepey and Samuel Kwame Ansah	519
Factors militating against private practice by graduates of architecture in the North-West geo-political zone of nigeria – Musa Nuhu Madawaki	529
Geospatial analysis of pre and post 2012 flood disaster in Lokoja and environs, Nigeria – Achema E. Emmaneul, Ojigi M.Lazarus and Adeleke A.Jude	539
Geospatial techniques in risk mapping of oil pipelines in Obio/Akpor areas of Rivers State, Nigeria - Onyechefuna Hilda U., Aderoju Olaide M., Emmanuel E.Achema	551
Go-ahead element of domestic architecture: socio-economic and cultural characteristics of the residents in Benin - Ekhaese Eghosa Noel	563

Governing construction project procurement to mitigate contractor's opportunism: A conceptual framework. - Olusola Ogunsina,Deji Rufus Ogunsemi,Oluseyi Awodele	579
Health and safety performance in the Uganda construction industry - Moses Okwel, Henry M. Alinaitwe and Denis Kalumba	593
Housing procurement in informal settlements: a case study of Ayobo, Lagos, Nigeria – Opoko Akunnaya Pearl and Ibem Eziyi Offia	603
How domestic space embodies status: a comparative study of kitchens and culinary practice in Ile-Ife, Nigeria - Folake Ekundayo Isaacs-Sodeye	619
Identification of Construction Delay Factors: Perception of Multinational and Indigenous Construction Firms in Nigeria - Abisuga Abiodun Olatunji and Salisu Harfiz Adewale	637
Identification and Characterisation of Wetlands for Sustainable Development in Ede Region, Southwestern Nigeria. - Gasu, M. B.	647
Impacts of road transportation on regional development of Igbomina Region Of Osun State, Nigeria – Adedotun S.B.	659
Implication of housing development on wetland loss in Eti Osa local government area of Lagos State, Nigeria – Muraina Alimi Musibau and Iyanda Oladimeji	673
Improving land governance in Nigeria: the case of compulsory acquisition and compensation practice - Odebode,Adedayo Ayodeji, Olaleye, Abel and Oladokun, Timothy Tunde	695
Improving the structural characteristics of earth blocks as an input of affordable housing for low-income northern communities of Ghana - Kwadwo Adinkrah-Appiah, Evans Zoya Kpamma, Helena Nimo, Noble Obeng-Ankamah and Esmond Abugre Atindana	705
Inflationary trends and the prices of some selected construction plants – D.O. Mac-Barango	721
Influence of organisational culture on construction workers' commitment in Lagos, Nigeria- Abiola-Falemu, Joseph Ojo	733
Investigation into the costs of preliminaries and relationship between these costs and total cost of building projects - Inyang-Udoh, U. I.	751
Is the quality of cement a contributing factor for building collapse in Ghana? - Humphrey Danso and Isaac Boateng	765
Key competencies of value managers in Lagos State, Nigeria - Ayodeji Emmanuel Oke and Deji Rufus Ogunsemi	773
Knowledge management perceptions: the case of construction professionals in Nigeria - T.Zuofa and E.G.Ochieng	783
Managing end-users' satisfaction during capital developments by adopting value engineering as project management tool - Ogbeifun, E, Pretorius, J.H. and Mbohwa, C.	793
Metamorphing barriers: boulderizing the Nigerian wall - Stephen Ajadi	805
Operation green Lagos programme and its implication for sustainable development - Isidore C. Ezema	817
organisational quality policy practices of Nigerian building design firms in relation to number of employees - D. Kado and M. Abubakar	835
Perceptions of final-year female undergraduates on their propensity to participate in construction practice - Kulomri Jipato Adogbo, Ahmed Doko Ibrahim and Yahaya Makarfi Ibrahim	843
Perception of the financial sector towards real estate investment in Sub Saharan Africa: a case study Ghana - Enyonam Offeibebe Megbenu,Frederick Ababio Nuamah and Michael Mwinseoro Muomaalah	857
Post occupancy evaluation of public secondary schools facilities. - Abisuga Abiodun Olatunji	867
Post-contract construction disputes in the Ghana health sector: causes and effects - Sarfo Mensah and Collins Ameyaw	879
Poverty and socio-economic adaptation strategies in Lagos metropolis, Nigeria - Taibat Lawanson and Leke Oduwaye	887
Procurement for national transformation: adopting modern technology methods the alternative for adequate housing delivery in Nigeria	899
Project cost risk and uncertainties: towards a conceptual cost contingency estimation model - Joseph Ignatius Teye Buertey, Emmanuel Abeere-Inga, Theophilus Adjei Kumi	911

Reconciling the provisions of the land use act and the Kwara State land charge law- Atitola Moses Idowu	927
Redesigning buildings for efficient utilization of solar energy source in Kaura Namoda, Nigeria Ezekiel Suleman and Edwin Albert Umoh	941
Reducing variability in concrete activity labour productivity to improve labour performance- John Ebhohimen Idiake, Bala Kabir and Shehu Ahmadu Bustani	953
Reversing the business failure rate among small and medium size construction firms in south Africa:a Progressive study-L. Wentzel, F A Emuze and J J Smaliwood	967
Sharing cooperation and conflicts: Multihabitation as an urban low income housing strategy in Accra- Irene Appeaning Addo	967
Sick buildings syndrome, health issues and life expectancy of residents in Nigerian cities- Ekhaese Eghosa Noel and Omohinmin Asotie Conrad	993
Socio-economic characteristics and livelihood assets of wetlands users at Ede region, Southwestern Nigeria- Gasu, M. B.	1009
Spatial analysis of fire disaster and emergency service location in Jos metropolis- Ozigis S.M. Gajere E. N. Emmanuel E. A and Hyelpambuwa Y	1023
Strength evaluation of low density polyethylene as an admixture in hot mix asphalt concrete- Abdulfatai Adinoyi Murana, Abdulhameed Talle Rabiou and Umar Usman Umar	1033
Suitability of bagasse ash as a filter material in hot mix asphalt (HMA) concrete – Abdulfatai Adinoyi Murana, Aminat Abubakar Ahmed and Faith Toyin Jegede	1045
Sustainability and the built environment: a case study of the Hausa migrant settlement, Sabo, in Ile-fe, Nigeria – Adisa Buki	1061
Sustainable supply chain management in construction firms – Elizabeth Ojo, Charles Mbohwa and Esther T. Akinlabi	1077
The 10% standard or lump sum – a statistical analysis of estimating construction contingency accuracy -Omoleye B. Ojuri	1087
The inflation hedging potential of commercial property investments in Ibadan, Nigeria- Ogunba Olusegun Adebayo, Obiyomi Olawale Oluwatosin and Dugeri Terzungwe	1101
The missing links between construction sector and development in Nigeria: a polycentric planning Perspective- Samson Akinola, Moses Ogunbiyi, Adeleye and Ayodeji Ajayi	1113
The Orowa house: a typology of traditional Yoruba architecture in Ile-Ife, Nigeria – Cynthia O. Adeokun	1131
The problems and prospects of the Tagwai dam, Minna, Niger State, Nigeria- Musa Dalil	1147
Towards efficient provision of physical infrastructure in residential areas of Makurdi, Nigeria- Patience Adzande	1159
Urban degreening erosional impact and housing quality in Osun State, Nigeria: mitigating flooding through polycentric environmental planning- Samson Akinola, Samuel Adedotun, Dele ogundahunsi and Deborah Yakubu	1173
whole life costing practice in procurement of public buildings in Nigeria: myth or reality? – Fatima M Bello, Ahmed Doko Ibrahim and Baba Adama Kolo	1191
Users' perspection to housing units provided in Abuja resettlement housing scheme, Nigeria	1202

<b>INDEX OF AUTHORS</b>	<b>1211</b>
<b>INDEX OF KEYWORDS</b>	<b>1213</b>

## **USERS' PERCEPTION TO HOUSING UNITS PROVIDED IN ABUJA RESETTLEMENT HOUSING SCHEME, NIGERIA**

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The decision by the then Head of State, General Murtala Ramat Mohammed to relocate Nigeria's capital from Lagos to Abuja brought about the relocation of the original inhabitants of the area. Gbagyi people are among the inhabitants of Abuja who were also affected by the relocation. The Federal Government of Nigeria decided to provide resettlement housing schemes for the inhabitants located at Ushafa, Kubwa, Apo, Dei-Dei areas of FCT. The recent housing schemes yet to be occupied are the Galuwyi/Shere resettlement schemes. The resettlement housing schemes in Ushafa, Kubwa, Apo and Dei-Dei were rejected by the occupants who were mostly Gbagyi inhabitants. This was largely due to the fact that the resettlement schemes failed to achieve its cardinal objectives of providing culturally suitable housing and sustainable alternative means of livelihood for the resettled communities, which were substantially Gbagyi people. The inhabitants of the FCT were not consulted before the policy of resettlement was evolved. They were only advised to discontinue any major development until such a time a definite resettlement policy was evolved and steps taken to implement it.

### **INTRODUCTION**

Resettlement is a project involving the planned and controlled transfer of population from one area to another. Nigeria and indeed Africa is witnessing massive resettlement since 1960s (Olawepo, 2008). Major causes of these displacements include among others socio-political upheavals like wars, civil unrest, religious and ethnic crises, natural disasters such as droughts famines, floods and from planned resettlement scheme for agriculture, urban resettlement. Dams' projects like kainji Dam in Nigeria, Akosombo in Ghana, Kousou Dam in Cote d'Ivoire, Kriba Dam in Zambia, are also responsible for the large movement of people (Cernea, 1993; Ayeni, Roder & Ayanda, 1994; Olawepo, 2008).

Many studies have been conducted World Wide regarding displaced people and their adaptation to their new environment (Salami, 2014; World Bank, 2015; UN-HABITAT, 2006). Most of the reports indicate a negative response to relocation.

According to Bonnefoy (2007), housing is the ability to live in an adequate shelter and as being more than just a roof over one's head based on the following four dimensions:

- i. The dwelling as the physical shelter;
- ii. The neighbourhood/community as the social climate surrounding the dwelling;
- iii. The external dimensions of the immediate housing environment and;
- iv. The community with all its neighbours.

It embraces all social services and utilities that go into making a community or neighbourhood a liveable environment.

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The Federal Government of Nigeria (FRN, 2006) also described housing as the process of providing functional shelter in a proper setting in a neighbourhood supported by sustainable maintenance of the built environment for the day-to-day living and activities of individuals and families within the community.

Resettling people and providing resettlement housing units for the inhabitants most times, does not only measure success of housing programmes; but the suitability of the living environment to the needs of the people to be resettled is essential for resettlement housing to be judged successful. This is always the desire on the part of those to be resettled for houses that are very similar in terms of size and function to those they are used to. In the design of resettlement housing, professionals involved in the resettlement process such as architects, planners and government agencies have not always involved the occupants of the houses which have always resulted in the absence, neglect and non-inclusion of the relevant factors and preferences of the housing types.

### **TYPES OF RESETTLEMENT**

Two types of resettlement abound; with intention to improve the life of the people to be resettled. These are compulsory (forceful) and voluntary resettlement.

**VOLUNTARY RESETTLEMENT:** In this type of resettlement, the individual is left with initiation and subsequent movement and resettlement with or without government involvement. This type of resettlement is spontaneous.

**INVOLUNTARY RESETTLEMENT:** This is always as a result of government action which must be obeyed. This type of resettlement arises as a result of urban renewal, provision of irrigation facilities in most cases, spread of epidemic disease national insecurity, and environmental alteration as a result of engineering projects. As the name implies, it is planned resettlement scheme which is initiated

### **STUDY AREA**

#### **3.1 The Study Area**

The study area of this research is Abuja the Federal Capital Territory which is located at longitudes 6.7<sup>0</sup> E to 7.6<sup>0</sup>E and latitudes 8.3<sup>0</sup> N to 9.2<sup>0</sup>N. It is bounded in the north by Kaduna State, bordered by Niger State in the west, to the southwest by Kogi State and Nasarawa State in the east (Abuja Master Plan, 1979). The history of the area that constitutes the present Federal Capital Territory (FCT) of Nigeria dates back to the period when the territory was created in 1976. The area is made up of various ethnic groups comprising of Gbagyi, Koro, Gade, Gwandara, Ganagana, Nupe and Ebira. Federal Capital Territory covers a land area of 800km<sup>2</sup>. According to 2006 census, the Federal Capital Territory was put at 1,405,201 persons as shown in table 3.1.

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**Table 3.1 Federal Capital Territory Area Council 2006 Population Census Figures**

Area Councils	Population
Abaji	58,444
Abuja Municipal	778,567
Bwari	227,216
Gwagwalada	157,770
Kwali	85,837
Kuje	97367
<b>Total</b>	<b>1405201</b>

Source: Federal Republic of Nigeria Official Gazette (2007)

**Research Methodology**

The study employed the case study and descriptive research methods through a post occupancy evaluation approach. This gives view of users' opinion of the subject matter under investigation. According to Adedeji & Fadamiro (2012), Post Occupancy Evaluation (POE) has generally been accepted as method of obtaining opinion of users in the built environment especially where it relates to perception studies. Zimmerman and Martin (2001), also posit that, it tests users' impact on building with respect to health and safety, security, indoor environment quality and functions of the building. Observation schedule was used as research instrument to gather the required data. A total of four resettlement housing schemes in Federal Capital Territory, Abuja were studied as shown in table 1.2. A random interview was also conducted with some of the occupants to seek their opinion on the resettlement schemes provided for them.

**Table 1.2 Resettlements studied**

S/No	Name of Resettlement
1	Kubwa
2	Apo
3	Dei-Dei
4	Ushafa

Source: Author's fieldwork, 2011

**Table 4.1 Primary Data Types and Sources**

Data	Type	Sources
Number of Resettlement Schemes	Quantitative	Field measurement
Number of Housing Units	Quantitative	Field measurement
Housing Satisfaction	Qualitative	Questionnaire
Necessity Attached to the Housing Units	Qualitative	Questionnaire
User's Participation in the Provision of Resettlement Housing	Qualitative	Questionnaire

Source: Author's field work, 2012

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#### 4.1.2 Secondary Data

The secondary data used for this research was also extracted from Federal Capital Development Authority (FCDA) and Ministry for Federal Capital Territory (MFCT). Table 4.2 describes the data types and sources. The literature on resettlement housing scheme around the world was equally reviewed to establish relevant gaps in provision of resettlement housing scheme in Federal Capital Territory, Abuja. Table 4.2 also shows the data type and sources for the secondary data obtained for the research. In the table, five of the data type and sources are qualitative, while the remaining one is quantitative. The quantitative data type comprise of questionnaire with the source from literature. The location of resettlement schemes had its source from the oral interview. Maps were also gotten from literature. Literature for the research work and categorization of housing units in the resettlement scheme had their sources also from literature and oral interview respectively. On the other hand, the sample population estimate which is quantitative had its sources from interview.

**Table 4.2 Secondary Data Types and Sources**

<b>Data</b>	<b>Type</b>	<b>Sources</b>
Questionnaire sample	Qualitative	Literature
Location of resettlement schemes	Qualitative	Oral interview
Maps	Qualitative	Literature
Literature for the Research work	Qualitative	Literature
Categorization of housing units in resettlement	Qualitative	Oral interview
Sample population estimate	Quantitative	Oral interview

Source: Author's field work, 2012

## DISCUSSION OF THE RESULT

Likert scale was also used to determine the relationship between the occupants of the resettlement scheme and the level of necessity attached to the housing unit in the resettlement schemes.

The inhabitants' variables considered are as follows:

- i. Occupation
- ii. Religion
- iii. Gender
- iv. Number of Wives
- v. Number of Children
- vi. Resettlement occupant
- vii. Mode of acquisition
- viii. What type of housing is the resettlement scheme?

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The other variables used for Likert scale distribution are:

- i. Provision of courtyard in the resettlement housing scheme
- ii. provision of farm land close to resettlement
- iii. provision of entrance porch (dugwe)
- iv. provision of kitchen within the building
- v. provision of toilets within the building
- vi. provision of dining within the building

For the purpose of this analysis, the following weights are assigned to the opinion:

Strongly agree	1
Agree	2
Disagree	3
Strongly Disagree	4

**Table 5.5a Frequency distribution on necessity attached to the housing units provided in the resettlement housing**

Provided space	Strongly Agree (X 1)	Agree (X 2)	Disagree (X 3)	Strongly Disagree (X 4)	Total
Courtyard	216	133	64	21	434
Farmland	146	134	72	83	435
Dugwe (porch)	233	121	53	26	433
Kitchen	307	86	20	24	437
Toilet	308	87	21	17	433
Dining	302	88	24	20	434

Source: Author's Field work, 2012

After this, the mean values are also calculated. This is also gotten by dividing the sum by the number of respondents for each item in user perception. The mean value arrived at is what is then used for interpretation of opinions commonly expressed by the respondents, Since Likert scale range between 1 and 4.

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**Table 5.5b Sum of respondents' responses on necessity attached to the Housing units provided in the resettlement housing**

Provided space	Strongly Agree (X 1)	Agree (X 2)	Disagree (X 3)	Strongly Disagree (X 4)	Total
Courtyard	216	266	192	84	758
Farmland	146	268	216	332	962
Dugwe (porch)	233	242	159	104	738
Kitchen	307	172	60	96	635
Toilet	308	174	63	68	613
Dining	302	176	72	80	630

Source: Author's Field work, 2012

The following scale is then used for Likert scale interpretation:

1	-	1.49	Strongly agree
1.50	-	2.49	Agree
2.50	-	3.49	Disagree
		> 4	Strongly disagree

**Table 5.5c Respondents' opinion on necessity attached to the housing units provided in the resettlement housing**

Provided space	Total	Mean	Interpretation (Consensus opinion) *
Courtyard	758	1.75	Agree
Farmland	962	2.21	Agree
Dugwe (porch)	738	1.70	Agree
Kitchen	635	1.45	Strongly Agree
Toilet	613	1.42	Strongly Agree
Dining	630	1.45	Strongly Agree

Source: Author's Field work, 2012

From the table, it can be observed that the respondents' consensus opinion is either Agree or Strongly Agree

### 5.6.1 Provision of Courtyard

Table 5.5c analyses necessity attached to the housing units provided in the resettlement housing schemes. For courtyard provision in the resettlement, the respondents' opinion is that courtyard should be provided due to its importance in the socio-cultural characteristics of the inhabitant.

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### **5.6.2. Provision of Farmland**

As indicated in table 5.5c, respondents agree that farm lands should be provided in the resettlement scheme. Gbagyi people have strong attachment to farming; traditionally, any member of the Gbagyi culture who did not practice farming even on a small scale, or as a subsidiary occupation was seen as one who has mind to engage in activities that are not compatible with the traditional cultural values. Being natural farmers, they had always believed in what the earth could produce; what nature had in stock for them.

### **5.6.3 Provision of Dugwe**

Table 5.5c also gives consent of individuals on the necessity for the provision of Dugwe. In Gbagyi traditional housing, the 'Dugwe' serves as a place where the compound head receives his visitors and where they sometimes sit to drink native wine. The Dugwe also serves as a resting place for the family members most especially during the raining season where in most cases they roast groundnuts, maize and millet while taking shelter from rain.

### **5.6.4 Provision of Kitchen**

For kitchen provision in the resettlement scheme, the analysis in table 5.5c indicates that the respondents strongly agree that kitchen should be provided in the resettlement schemes. Kitchen in Gbagyi traditional housing symbolises dignity; it is mostly used for cooking purposes during the rainy season. Water pot and other cooking utensils are also kept there with a lot of ornamental decorations.

### **5.6.5. Provision of Dining**

Table 5.5c also analyses dining provision in the resettlement scheme. The analysis reveals that the respondents strongly agree that provision of dining should be made in the resettlement schemes. Although, dining is not part of Gbagyi traditional housing, however, with the advent of civilization and modernation, the inhabitants are of the opinion that dining should be included in the planning of resettlement housing schemes.

## **CONCLUSION**

A very critical success factor in such resettlement housing scheme is hinged on the degree to which the socio-cultural and cultural heritage elements of the affected people is retained and/or replicated in the new site; and the effectiveness and sustainability of the alternative means of livelihood/economic empowerment.

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## RECOMMENDATIONS

- a) A detailed documentation of the predominant economic activities of all segments (male and female) of the community should be carried out in consultation with them;
- b) Drafts of the proposals for Resettlement Housing Scheme and Alternative Livelihood Plan should be presented to the community to obtain their understanding comments;
- c) The design of the Resettlement Housing Scheme should as much as practicable, be predicated on the extensive utilisation of local and environmentally friendly building materials; renewable energy such as solar and wind energy; rain water harvesting; development of Biogas plants for liquid waste treatment to generate methane gas that can be used for cooking; and effective solid waste management to produce compost and to promote organic agriculture (for fruit and vegetable production as against grains and yams); and
- d) To make the development of the resettlement housing scheme labour intensive and to allow for sweat equity in order to reduce cost of development and enhance affordability.
- e) At the inception, the planners must identify; sensitise all stakeholders (community to be affected); and make them part of the data collection and validation process. The stakeholders include the community leaders (administrative, religious and cultural) and civil society organisations operating in the community;

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