Covenant University,
OTA, NIGERIA

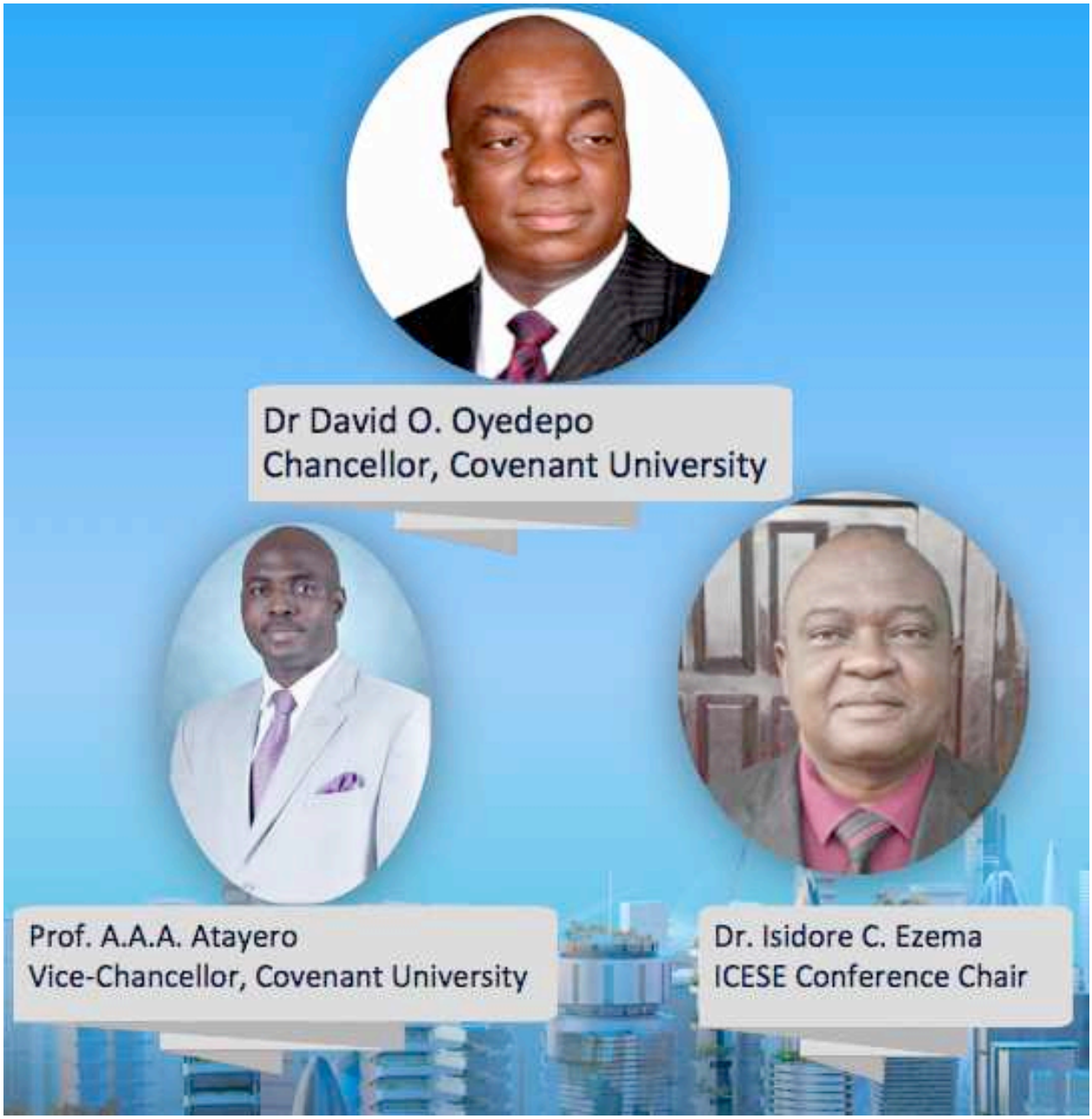
Presents

International Conference on Energy and Sustainable Environment

ICESE 2020

Book of Abstracts

28-30 July 2020


Dr David O. Oyedepo
Chancellor, Covenant University
Prof. A.A.A. Atayero
Vice-Chancellor, Covenant University
Dr. Isidore C. Ezema
ICESE Conference Chair

ACKNOWLEDGEMENTS

Dr. David O. Oyedepo, Chancellor, Covenant University, Ota, Nigeria

Prof. A.A.A. Atayero, Vice – Chancellor, Covenant University, Ota, Nigeria

Members of the Management of Covenant University, Ota, Nigeria

Covenant University Centre for Research, Innovation and Discovery (CUCRID), Covenant University, Ota, Nigeria

Institute of Physics, London, United Kingdom

Energy, Meteorology & Environment Group (EMEG), Covenant University, Ota, Nigeria

Centre for Economic Policy and Development Research (CEDPeR), Covenant University

Renewable Energy Research Cluster (RERC), Covenant University, Ota, Nigeria

Built Environment Research Cluster (BERC), Covenant University, Ota, Nigeria

WELCOME TO ICESE 2020

I give all glory to God for the second edition of the International Conference on Energy and Sustainable Environment – ICESE 2020. As usual, the conference is being hosted by Covenant University, a rising star in the academic landscape of Africa and the world at large. This edition is unique in many ways given the COVID-19 pandemic that is confronting the whole world at the moment. As a wholly virtual conference, ICESE 2020 has responded innovatively to the requirements of maintaining physical distance and avoiding large group gatherings as a containment measure against the pandemic. There is no doubt that the COVID-19 pandemic has impacted on our lives and on the environment. On behalf of the Chancellor of Covenant University, Dr. David O. Oyedepo and the indefatigable Vice-Chancellor, Professor A.A.A. Atayero, I welcome all participants to the conference.

The second edition of the conference continues as a fruit of collaboration by research clusters in Covenant University. The clusters are: Energy, Meteorology and Environment Group (EMEG), the Centre for Economic Policy and Development Research (CEPDeR), Renewable Energy Research Cluster (RERC) and the Built Environment Research Cluster (BERC). The contents of the Book of Abstracts for the conference have been enriched by including some vital information on the collaborating research clusters. It also contains vital information on Covenant University, the faith-based institution driving innovation in higher education in Nigeria and globally. This function of the university is powered by Covenant University Centre for Research, Innovation and Discovery (CUCRID).

The world energy and environment outlook has continued to elicit interest among researchers and policy makers. Energy access is still low especially in African countries. There is general agreement that the world is not moving fast enough towards the energy access goal set by Agenda 2030 on sustainable development. Energy is central to the achievement of most of the goals set out under the Sustainable Development Goals (SDGs) of the United Nations. Also, the environment is daily subjected to avoidable pressure and climate change manifestations are becoming more apparent to all. In Nigeria, the energy supply situation is still characterized by poor access, high emissions, poor infrastructure and inefficiency across all levels. The resort to renewables appears to be the most promising in terms of availability and environmental impact. However, uptake is still low due mainly to cost implications and poor enabling policies. At the environmental level, flooding has increased not only in the coastal areas as over 40% of the

states are susceptible to flash floods. Also, desertification which affects more than 50% of the entire land area of Nigeria especially in the Northern region is on the increase. The Niger Delta remains an environmental calamity given the spate of oil spills and other oil related environmental challenges. In the Southeast, gully erosion has rendered many people homeless and permanently dislocated them from their source of livelihood. Most urban areas are grappling with the challenges of adequate housing and effective solid waste management among others. The above scenario underscores the importance of a conference such as the ICESE 2020.

Hence, the International Conference on Energy and Sustainable Environment (ICESE 2020) has attracted presentations from researchers, practitioners and policy makers in the areas of the environment and climate change, energy and energy management, and the built environment. Very well researched and informed presentations that addressed the issues raised above have been submitted to the conference. I look forward to very rewarding interactions and follow-ups which the virtual conference will engender.

I commend the Local Organising Committee for a job well done and for the seamless transition to the virtual presentation format. On behalf of the LOC, I welcome all participants to this conference which promises to be very educative and informative with the potential to bring about innovative solutions to the energy and environmental challenges that confront all.

Dr. Isidore C. Ezema

Chair, LOC

Keynote Speakers

Adeola Adenikinju

ADEOLA ADENIKINJU is a Professor of Economics, University of Ibadan, Nigeria Professor Adenikinju holds a PhD Degree in Economics from the University of Ibadan, Nigeria. He is currently a Professor of Economics in the same Department. He is also a Research Professor at the Centre for Econometrics and Allied Research, as well as Senior Research Fellow, Macroeconomic Study Group, University of Ibadan. He is a Life Member, and former Business Manager of the Nigerian Economic Society; President, Nigerian Association for Energy Economics, 2011 -2013. He served as the Editor of Journal of Economic Management and he is presently on the Board of Editors of the Energy Journal. Prof. Adenikinju served as a Special Assistant to the Presidential Adviser on Energy Matters, between 2005 and 2007, and Senior Special Assistant to the President, Office of the Chief Economic Adviser to the President between 2010 and 2011. He is the Director, Centre for Petroleum, Energy Economics and Law (CPEEL), a MacArthur Foundation Regional Centre of Excellence at the University of Ibadan. He was recently appointed by President Mohammed Buhari GCFR as a member of the apex monetary policy body of the Central Bank of Nigeria, the Monetary Policy Committee, for a period of 4 years. He is a Fellow of the Nigerian Association for Energy Economics (FNAEE) and Fellow, Energy Institute (FEI).

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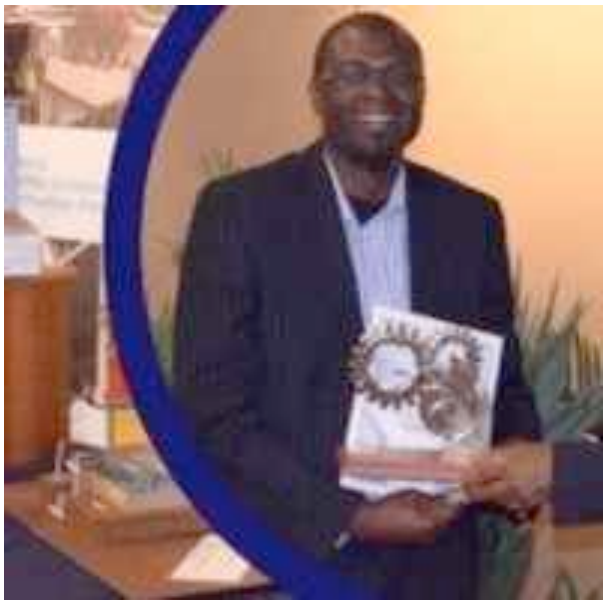
Fidelis A. Emuze



Fidelis Emuze is ***Professor*** in the ***Department of Built Environment*** with particular interest in Lean and Sustainability at the ***Central University of Technology, Free State***, ***South Africa***. Fidelis was previously a Post-Doctoral Research Associate in the NMMU-cidb Centre of Excellence at the Built Environment Research Centre (BERC), Nelson Mandela University (NMU), South Africa. He is a Research Associate in Construction Management at NMU and the ***Coordinator of CIB TG59 – People in Construction***. His qualifications include a National Diploma in Civil Engineering, a Higher National Diploma in Civil Engineering, a Postgraduate Diploma in Higher Education (Academic Development) and an MSc in the Built Environment with specialization in Construction Management and PhD in Construction Management. His responsibilities in the University include research, supervision of research, publishing, academic community service, professional association, delivering lectures and administration. He is very active in the academic community and has published extensively in learned journals. He has also won awards and recognition as reviewer to high profile international journals in the built environment. Fidelis has taught and assessed undergraduate and postgraduate courses in Construction Management and Research Methodology. Fidelis has also led the design and development of new construction qualifications in Higher Education. He has also completed a Postgraduate Diploma in Higher Education with distinction at Rhodes University.

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COVENANT UNIVERSITY OTA

Covenant University (CU) is a private Christian university in Ota, Ogun State, Nigeria. The university is a part of the Liberation Commission that God gave to the Presiding Bishop of the Living Faith Church Bishop David Oyedepo some years ago. The appropriate forms and intent to establish a private university was submitted to the National Universities Commission (NUC) in March 2000 and by July 15th 2001, the verification team of the National Universities Commission came for the inspection of facilities and programmes. On 12th February 2002, the Federal Government officially presented the certificate, which granted Covenant University the license to operate as a private University in Nigeria.

Covenant University is a growing, dynamic vision-birthed, vision driven University, founded on a Christian mission ethos and committed to pioneering excellence at the cutting edge of learning. The university is driven by the compelling vision of raising a new generation of Leaders for the African Continent on the platform of a Holistic, Human Development and integrated learning curriculum, in order to raise Total Men who will go out to develop their world. The Core-Values of Spirituality, Possibility Mentality, Capacity Building, Integrity, Responsibility, Diligence and Sacrifice are what define the university's commitment to excellence.

The mandate of the University is to revolutionize the educational landscape of Africa. It is indeed a rescue mission in education, driven on the platform of Christian ethos and life transforming values. The integration of the fundamental requirements stipulated by academic and professional quality assurance bodies, a global-outlook and impact driven learning emphasis, provides a powerful synergy for empowerment in enabling the inculcation of intellectual and creative abilities via a platform of a solid commitment to self-discovery.

Our aim is to build a world-class university that will be a pride of Africa as well as take its place among the Ivy League Universities on the global platform. The university has the vision of becoming one of the top ten ranked institutions in the world by the year 2022 (Vision 10-2022). Currently, According to Times Higher Education (THE), Covenant University is currently ranked 401-500th in the World University Ranking and 101-150th in the Young University Ranking.

CENTRE FOR RESEARCH, INNOVATION AND DISCOVERY (CUCRID)

The Covenant University Centre for Research, Innovation and Discovery (CUCRID) is poised to drive the University Vision of being one of the top 10 Universities in the world by 2022 from the research, innovation and discovery platform. The Centre's administrative and operational structure is solid. The head of the Centre is a Director who also doubles as the Chairman of an 11-member Central Research Committee that includes legal personnel. The Research Committee's mandate includes policy formulation and review, review and recommendation of conference and research proposals, monitoring and evaluation of research clusters activities, and assessment of the research output of the university vis-à-vis the level of funding.

The research committee also evaluates research findings submitted for patent and copyright applications before filing with the respective organs. The research committee recommends to the Vice Chancellor contemporary researches that are of both societal and industrial relevance. The Committee, in addition, makes available to faculty external research grant opportunities and offer faculty assistance in proposal development. It is also the responsibility of the committee to project the image of the University from the research platform and secure partnership from research institutions, industry and governmental agencies. The University, on the recommendation by CUCRID, is to evolve related research clusters into Centres of Excellence.

The Centre for Research, Innovation and Discovery, in addition to the Research Committee, also has three sub-divisions: the Intellectual Property and Technology Transfer Office (IPTTO), the Commercialization Unit, and the Research Park Unit. The IPTTO facilitates the process of patenting of filed applications, while the Commercialization Unit drives the process of product commercialization. The University has a policy on research and commercialization that governs the operation of this Unit. The Research Park is to develop a framework for products incubation and create an outdoor research community for thought provoking discovery.

The University, as part of its policy on interdisciplinary research for effective utilization of research findings, has established 21 research clusters that receive annual funding for research activities. These include: African Development Issues, Bioinformatics, Biotechnology, Built Environment, Civil Environmental & Industrialization, Communication Embedded Systems & Electrical Power Engineering, Corrosion and Materials Science & Engineering, Culture, Society & Conflict Management, CU Public Health & Wellbeing, Discourse, Media & Society, E-Government & E-Business, Environmental Sustainability Issues, Informal Sector, Petroleum Reservoir Production & Engineering, Product Development, Reverse Engineering, Software Engineering, Modelling & Intelligent System, Urban Environmental Issues & Natural Development, Waste Management & Environmental Sustainability, Wellbeing & Behavioural Issues, and Reverse Engineering & Kaizen.

The University, through CUCRID, is driving earnestly one of its core values, which is capacity building. Realising the role played by the technical staff of the University, training schemes have been developed to enhance the capacity of this category of workers. Many of them are already enjoying sponsorship to attend training sessions both nationally and internationally. The

University has embraced this idea of developing the capacity base of the technical workers, considering the ever-emerging trends of new technologies. We just have to keep abreast with global trends. Furthermore, more funds have been made available to support faculty to attend conferences and to access research grants, all with the purpose of driving research at cutting edge. The University is committed to supporting faculty with great ideas that will solve the problems confronting the world, especially the African Continent.

RESEARCH CLUSTERS

1. ENERGY, METEOROLOGY AND ENVIRONMENTAL GROUP (EMEG)

The group consists of members from the different colleges in the University.
The group initiated the conference preparatory team for "**International Conference on Energy and Sustainable Environment (ICESE)**", which later metamorphosed into the Local Organizing Committee
The following activities are part of what the group had embarked upon.
1. Advocacy and enlightenment campaign on:
(a) Mitigation of climate change, (b) Watershed management and (c) Erosion control. This will be accompanied with pilot projects where ever possible.
2. Conducting research on energy, meteorology and environment related issues
3. Research and advocacy on the relationship between gender and the environment. The caption is "Socioeconomic and Scientific Benefits of Nurturing the Girls and Grooming the Boys Concurrently".
4. Reaching out for both Research and Developmental Grants (RDG).

2. CENTRE FOR ECONOMIC POLICY AND DEVELOPMENT RESEARCH (CEPDeR)

Given the state of the Nigerian nation and many other African countries, Covenant University is proffering workable solutions to facilitate economic development in the continent. One of the avenues of achieving the objectives is through the concerted and coordinated research activities at the Centre for Economic Policy and Development Research (CEPDeR) – an offshoot of the Department of Economics and Development Studies, College of Business and Social Sciences, Covenant University. Within its short period of existence, CEPDeR has become a world-class hub and innovative platform for evidenced-based economic policy research and consultancy. CEPDeR's development research initiatives are strategically articulated, coordinated and executed with two areas of applied thematic research and analysis - economic policy and development. Thus, research endeavours entail inclusive growth solutions to economic problems and development policy issues in all sectors of the economy – Agriculture, Manufacturing, Financial Services, Energy, Health, and Informal Sectors. At present, CEPDeR is Chaired by Prof. Evans Osabuohien with Dr. Obindah Gershon as the Co-Chair. More information is available online at: http://cepder.covenantuniversity.edu.ng. Enquiries should be sent to: cepder@covenantuniversity.edu.ng.

3. RENEWABLE ENERGY TECHNOLOGIES RESEARCH CLUSTER, COVENANT UNIVERSITY

This is a research group working towards providing seasoned, well researched, tested, and trusted distributed power solutions via Solar and other renewable technologies to reduce the heavy dependence on fossil fuels by the entire community. The deployment of this solution will help reduce the amount of money spent on non-renewable energy and improve the community's well-being.

Core research interests include but not limited to the following:

i. To promote sustainable renewable power sources for household use in our immediate communities and environs;
ii. To provide cheaper, cleaner, and more effective ways of delivering lighting;
iii. To create affordable, accessible and available solar technologies for rural electrification;
iv. To develop a feasible payment model for rural dwellers on solar electrification schemes;
v. Development and deployment of special solar powered lighting schemes that extend the time available for doing business in rural and off-grid communities;
vi. Improve security and well-being in the communities where products and ideas are deployed;
vii. To reduce deforestation and inherent pollution due to the use of non-renewable energy sources

The cluster is headed by Dr Hope Orovwode in acting capacity.

4. BRIEF INFORMATION ON THE BUILT ENVIRONMENT RESEARCH CLUSTER (BERC)

The Built Environment Research Cluster (BERC) was established with the aim of promoting research and development in the built environment in order to achieve sustainable, safe and liveable environment. The specific objectives of BERC include:

i. to engage in collaborative research activities that promote creation and advancement of knowledge in the built environment;
ii. to engage scientific, technological and economic research tools and strategies in seeking sustainable solutions to the challenges of the built environment in the Nigerian context, and developing countries in general;
iii. to produce a diverse range of research products, ranging from building products, patents and journal papers published in high impact journals, indexed conference proceedings and books;
iv. to source for national and international grants and fellowships for cluster and its members including postgraduate students; and

v. to direct its activities towards achieving vision 10:2022 of Covenant University and thereby contribute to the achievement of the Sustainable Development Goals

BERC activities are organised under four sub-clusters, namely

i. Materials, Construction, Costs and Investments Sub-cluster;
ii. Built Environment Management Sub-cluster;
iii. Building Informatics Sub-cluster; and
iv. Education, Practice and Behaviour Sub-cluster.

The Leader of the cluster is Dr. Akunnaya P. Opoko

ICESE 2020 PROGRAMME OF ACTIVITIES

ICESE 2020 General Chart							
DAY	8-9am	9-10am	10-11am	11-12pm	12-1pm	1-2pm	2-3pm
28-Jul	REGISTRATION				OPENING CEREMONY/KEYNOTE PRESENTATIONS		
29-Jul		TECHNICAL SESSION: ENVIRONMENT AND CLIMATE CHANGE			BREAK	TECHNICAL SESSION: ENVIRONMENT AND CLIMATE CHANGE	
		TECHNICAL SESSION: ENERGY MANAGEMENT				TECHNICAL SESSION: BUILT ENVIRONMENT	
		TECHNICAL SESSION: BUILT ENVIRONMENT					
30-Jul		TECHNICAL SESSION: ENVIRONMENT AND CLIMATE CHANGE			BREAK	TECHNICAL SESSION: ENVIRONMENT AND CLIMATE CHANGE	
		TECHNICAL SESSION: ENERGY				TECHNICAL SESSION: BUILT ENVIRONMENT	
		TECHNICAL SESSION: ENERGY MANAGEMENT				CLOSING CEREMONY	
		TECHNICAL SESSION: BUILT ENVIRONMENT					

ICESE 2020 PROGRAMME OF EVENTS

TUESDAY, 28TH JULY, 2020

OPENING CEREMONY

PLATFORM: ZOOM Link

Opening Ceremony	12:00 PM
Opening Prayer	12:00 PM
Introduction of Dignitaries	12:05 PM
Conference Chair Remarks	12:25 PM
Vice - Chancellor Remarks	12:50 PM
Citation of the Keynote Speaker 1	13:00 PM
Keynote Address 1	13:35 PM
Citation of the Keynote Speaker 2	13:40 PM
Keynote Address 2	14:20 PM
Announcement	14:30 PM
Vote of Thanks	14:35 PM
Closing prayer	14:40 PM

THURSDAY, 30TH JULY, 2020

CLOSING CEREMONY

PLATFORM: ZOOM Link

Opening Prayer	13:00 PM
Introduction of Dignitaries	13:03 PM
Conference Chair Closing Remarks	13:13 PM
Vice - Chancellor Closing Remarks	13:38 PM
Announcement	13:58 PM
Vote of Thanks	14:02 PM
Closing prayer	14:05 PM

TECHNICAL SESSION: PRESENTATION SCHEDULE

29TH JULY 2020-MORNING SESSION		
ENVIRONMENT AND CLIMATE CHANGE 9:00AM-12:00PM		
Session Chair: Dr M. Omeje **Co-Session Chair: Dr T.J. Abodunrin**		
1	Empirical Assessment of Ammonia and Urea Concentrations in Wastewater from a Pharmaceutical Plant: A Case Study	Sanni *et al.*
2	Assessing the Viability of Rainwater Harvesting System for Sustainable Manufacturing in Water Stressed Regions	Ogwu, *et al.*
3	Television Media and Maternal Health Development: Awareness and Impact Assessment on Women in Semi Urban Nigeria	Chinedu-Asogwa *et al.*
4	Temperature and Short- wave Irradiation Trends in Ikogosi Climatic Change Pattern	Abodunrin & Emetere
5	COVID-19 infection forecast using artificial neural network: Seeking reliable solution	Emetere *et al.*
6	Yearning to farm -Youth, Economic Shocks and Food Security in Nigeria	Osabohien *et al.*
7	Carbon emission and population growth: Evidence from the magna cum laude oil producing African countries	Daramola *et al.*
8	Exploring the Leadership Approach in Response to COVID-19 among Faith-Based Organisations in Nigeria: A Conceptual Review	Dada *et al.*
9	Accelerating progress on the sustainable development goals: Assessing secondary school students' knowledge of climate change actions	Tunji-Olayeni *et al.*
10	Natural Radionuclide and Radiological Impact Assessment of Teak	Orosun *et al.*

	Plantation, University of Ilorin, Kwara State	
ENERGY 9:00AM-11:00AM		
Session Chair: Engr (Dr.) H. Orovwode **Co-Session Chair: Dr S.E. Sanni**		
1	Improvement on the Production Energy of Shaleoil Using Waste Plastics	Olugbenga *et al.*
2	Production of Fuels from Nigeria's Untapped 'Waste Wealth' Using Pyrolysis	Adeola *et al.*
3	Determinants of Renewable Energy Consumption in Nigeria: A Toda Yamamoto Approach	Gershon & Emekalam
4	Design and Fabrication of an Ablative Pyrolyzer for Production of Bio- lubricants and Chemicals in Oil Well Drilling Application	Adegoke *et al.*
5	Plant Design of Waste Soybean Oil Biodiesel Production using KOH Catalyst	Ayoola *et al.*
6	The role of solvent additive in metal nano-composite doped thin film organic solar cell	Kesinro *et al.*
7	Techno-Economic Analysis of Standalone Solar Power System for Small and Medium Scale Enterprises (SMES) in Nigeria	Waliu *et al.*
ENERGY MANAGEMENT 9:00AM-11:00AM		
Session Chair: Prof (Mrs) R. Uwuigbe **Co-Session Chair: Dr O. Gershon**		
1	Carbon Nanotubes as a Multifunctional additive and its Impact in Oil Based Mud System drilling Hydraulics	Okoro *et al.*
2	Physico-Chemical Properties, Thermal degradation, and Spectroscopic studies of Hybridized Waste Palm Oil	Awogbemi *et al.*
3	Developing a Multi-factor Authentication-based Cardless	Ayo *et al.*

	Electronic Payment System	
4	Renewable Energy Consumption Shocks on CO2 Emissions and Economic Growth of Nigeria	Ezenwa *et al.*
5	Role of Biomaterials in Automation	Fayomi *et al.*
6	A Review of Energy Consumption in Foundry Industry	Fayomi *et al.*
7	Challenges of Commercializing Research Output in Nigeria toward Meeting Sustainable Development Goal	Fayomi *et al.*
8	Evaluation analysis of a developed solar refrigerator using conventional refrigerant for rural and medical applications	Banjo *et al.*
9	Transition to Green Energy and Sustainable Development in Nigeria: A Prospective and Evaluative Analysis	Nwozor *et al.*
10	Effect of Fin spacing on the Performance Evaluation of a Refrigeration System using LPG as Refrigerant	Banjo *et al.*
BUILT ENVIRONMENT 9:00AM-12:00PM		
Session Chair: Dr A.O. Ogunde **Co Session Chair: Dr P.O. Aderonmu**		
1	Dimensions of Impacts of Rapid Population Growth on Public Housing Developments and the Influence on City Resilience	Equere *et al.*
2	The Role of Artificial Lighting in Architectural Design: A Literature Review	Sholanke *et al.*
3	Designing a Secured Mobile Money Platform for Rural and Urban Dwellers in Nigeria	Ayo *et al.*
4	A search for appropriate anchor tenants in shopping malls in Lagos metropolis	Iroham *et al.*
5	Resilient Design Strategy: Engaging Amphibious Structures to Combat Flood in the Development of an Internally Displaced Persons Settlement Scheme in Nigeria	Sholanke *et al.*
6	Homelessness Factors and Psychological Wellbeing Concerns in	Ekhaese *et al.*

	Nigerian Cities	
7	Promoting Green Urbanism in Nigerian Purlieus as Therapy for Psychological Wellbeing/Health	Ekhaese *et al.*
8	Socio-Cultural Resilience to Domestic Space Change, the Benin Traditional City Experience, Nigeria	Ekhaese *et al.*
29TH JULY 2020-AFTERNOON SESSION		
ENVIRONMENT AND CLIMATE CHANGE 1:00PM-4:00PM		
Session Chair: Dr M. Omeje **Co-Session Chair: Dr T.J. Abodunrin**		
1	OVERVIEW OF NANOTECHNOLOGY APPLICATION IN MITIGATING COVID-19	Afolalu *et al.*
2	Long Term Hydrochemical Analysis and Quality Assessment of Five Dams in Lesotho, Southern Africa	Olaleye *et al.*
3	Water Poverty and Development Imperatives: A Defence of Ethics for Sustainable Water Resource use and Management in Africa	Adekeye *et al.*
4	Investigating infection pattern of viral bioaerosols: Case study of COVID-19 in Lagos, Nigeria	Emetere *et al.*
5	Design and Construction of Patient Remote Monitoring System	Usikalu *et al.*
6	Mathematical experimentation of borehole contamination sources: Influence of soil-water diffusivity on contamination diffusion	Emetere *et al.*
7	Impact of Atmospheric Parameters and Noise Temperature on Digital Terrestrial Television Signal Strength over Abuja, North-Central, Nigeria	Ojo *et al.*
8	Prediction of Attenuation using Visibility variations and other Meteorological Parameters in George, Western Cape, South Africa.	Aborisade *et al.*

9	Borehole Contamination and Diffusion Patterns At Specific Hydrogeological Setting	Emetere *et al.*
10	Mathematical Experimentation on Groundwater Contamination and Diffusion in an Unconfined Aquifer	Emetere *et al.*
BUILT ENVIRONMENT 1:00PM-4:00PM		
Session Chair: Dr A.O. Ogunde **Co Session Chair: Dr P.O. Aderonmu**		
1	Impact of Classroom Environments' on the Academic Performance of Architecture Students	Adewale *et al.*
2	Understanding Visual Quality Assessment: A Case Study of Covenant University Senate Building Façade	Obaleye *et al.*
3	Youth Employment Creation as an Inclusive Solution for Sustainable Development: Lessons from the 'Double You Digital Skills Initiative' in Nigeria	Tunji-Olayeni *et al.*
4	Imprints of Security Challenges on Vernacular Architecture of North-Eastern Nigeria	Okeke *et al.*
5	Impact of Television Health Programmes: Women Resident at the Bells Community, Ota in Focus	Olowolade *et al.*
6	Energy Efficiency Design Strategies in Office Buildings: A Literature Review	Erebor *et al.*
7	Innovation in Academic Workspace Design: The Implication for Sustainable Effectiveness	Adenipekun *et al.*
8	Pervious Pavements for Storm Water Control	Busari *et al.*
30TH JULY 2020-MORNING SESSION		
ENVIRONMENT AND CLIMATE CHANGE 9:00AM-12:00PM		
Session Chair: Dr A.A. Akinsiku		

Co-Session Chair: Dr S.A. Akinwumi		
1	Investigating the significance of air pollution in corroded buildings: Case study of Basse-Gambia	Emetere *et al.*
2	Assessment of Quality of Drinking Water from Ogun State, Nigeria	Usikalu et al.
3	Short Review on the Atmospheric Bioaerosols	Emetere *et al.*
4	Eco-mobility Approach for a Sustainable Neighbourhood Road Infrastructure within a Mixed-use Community: The Searchlight on Festac Town, Amuwo Odofin, Lagos	Adesina et al.
5	Exploring Pressure-Temperature Trends toward Climatic change in Ikogosi	Abodunrin & Emetere
6	Mathematical experimentation on the influence of surface water on groundwater in an unconfined aquifer	Emetere *et al.*
7	Multidecadal trends in Ikogosi Temperature and Rainfall to Climate change	Abodunrin & Emetere
8	Microbial Enhanced Oil Recovery using Bio-Surfactant formulated from Subsurface Sandstone Reservoir Hyperthermophiles	Okoro *et al.*
9	A Review of Analytical Methods Used in measure Quantification	Fred-Ahmadu1 *et al.*
10	GENDER –BASED EMPLOYMENT IN AGRICULTURE AND AGRICULTTURAL PRODUCTIVITY IN NIGERIA	Folarin *et al.*
ENERGY 9:00AM-11:00AM		
Session Chair: Engr (Dr.) H. Orovwode **Co-Session Chair: Dr S.E. Sanni**		
1	Pillars of Effective and Efficient Energy Systems in Nigeria	Fayomi *et al.*
2	Design and Fabrication of Cylindrical Ceramic Crucible as Insulator for Energy Storage Systems	Ndubuisi *et al.*
3	The Effect of Dye Extract Purification on The Performance of Dye Sensitized Solar Cells	Boyo *et al.*

4	Progress on organic solar cells: A short review	Kesinro *et al.*
5	Biofuel: A Sustainable Renewable Source of Energy-A Review	Afolalu *et al.*
6	Prospects of Biofuel Production in Nigeria: A Short Review	Emetere *et al.*
ENERGY MANAGEMENT 9:00AM-11:00AM		
Session Chair: Prof (Mrs) R. Uwuigbe **Co-Session Chair: Dr O. Gershon**		
1	Information Communication Technology Access and use towards Energy Consumption in Selected Sub Saharan Africa	Ihayere *et al.*
2	Misery and Economic Growth Nexus in Nigeria: Implications for Energy Management	Ubah *et al.*
3	Liquid Liabilities and Growth Finance Nexus: Implications for Nigeria's Energy Sector	Bello[1] *et al.*
4	Optimization of the mixing ratio for Production of Particleboard from Groundnut Shell and Rice Husk	Olawale *et al.*
5	Physicochemical and Surface Properties of Nanoparticles for Engineering Applications - A Review	Afolalu *et al.*
6	Users' Perception of the Impact of Prepaid Metering on Their Energy Consumption Behaviour: A Case Study of Victoria Garden City Estate, Lekki, Lagos State	Opoko & Asinobi
7	Energy situation in Nigeria and the way out through bioresources	Emetere *et al.*
8	Gender Diversity, Foreign Directors and Environmental, Social and Governance (ESG) Disclosures of Listed Firms in Nigeria	Uwuigbe *et al.*
9	The Effects of Board Ethnicity and Qualification on Environmental, Social and Governance (ESG) Disclosures of Listed Firms in Nigeria	Uwuigbe *et al.*
BUILT ENVIRONMENT 9:00AM-12:00PM		
Session Chair: Dr C.O. Iroham		

Co-Session Chair: Dr I.O. Omuh		
1	ASSESSMENT OF RESIDENTIAL SATISFACTION IN PUBLIC-PRIVATE PARTNERSHIPS (PPPs) HOUSING ESTATE IN LAGOS STATE, NIGERIA	Jegede *et al.*
2	EFFECTS OF ARCHITECTURAL STUDIO DESIGN ON STUDENTS' OVERALL ACADEMIC PERFORMANCE	Adewale *et al.*
3	Achieving Sustainability and Assessing Productivity through Biophilic Design in the Built Environment	Aduwo *et al.*
4	A Comparative Study of Rental Values of Residential Properties at Border Communities of Lagos and Ogun States, Nigeria	Oloke *et al.*
5	The Nexus of Climate Change, Urban Infrastructure and Sustainable Development in Developing Countries	Oloke *et al.*
6	How Real Sector Business Outlook Affect the Effectiveness of Monetary Policy on the Real Sector	Oladimeji *et al.*
7	Various Ways through which Co-Operative Societies Contribute to Sustainable Housing Provision in Ogun State, Nigeria	Baiyewu *et al.*
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30TH JULY 2020-AFTERNOON SESSION		
ENVIRONMENT AND CLIMATE CHANGE 1:00PM-4:00PM		
Session Chair: Dr A.A. Akinsiku **Co-Session Chair: Dr S.A. Akinwumi**		
1	Tropospheric attenuation on Satellite-aircraft propagation: A concise review	Arijaje *et al.*
2	Simulated sea-level rise under future climate scenarios for the Atlantic Barrier Lagoon coast of Nigeria using SimCLIM	Oloyede *et al.*
3	Climate change and coastal vulnerability assessment methods: A review	Oloyede *et al.*

4	Sustainability and Genetic Diversity of Under-exploited African Plants: A Collection Expedition in Nigeria - Facts, Challenges and Prospects	Omonhinmin *et al.*
5	DEGRADATION POTENTIALS OF TROPICAL SOIL BACTERIA ON DETERGENTS	Nwinyi *et al.*
6	SUGAR ALCOHOL- XYLITOL PRODUCTION USING SACCHAROMYCES SPECIES ISOLATED PALM WINE FOR SUSTAINABLE DEVELOPMENT IN FOOD INDUSTRY	Nwinyi *et al.*
7	Production of fruit wine using wild strain of Saccharomyces cerevisiae isolated from fresh palm wine for sustainable food security	Nwinyi *et al.*
8	USE OF Nicotianna tabacum, Jatropha curcas and Ficus exasperata FOR TREATMENT OF PUS-PRODUCING BACTERIA	Nwinyi *et al.*
9	Response Surface Methodology for Silicon Production from Bamboo Leaves	Olawale *et al.*
10	DISTRIBUTION AND DIAGNOSTIC RATIOS OF PAHs IN URBAN SOILS, YENAGOA CITY, BAYELSA STATE, NIGER DELTA REGION, NIGERIA	Leizou, Kaywood Elijah
BUILT ENVIRONMENT 1:00PM-4:00PM		
Session Chair: Dr O. Alagbe **Co-Session Chair: Dr I.O. Omuh**		
1	Investigation of willingness of residents to adopt alternative burial methods in Abuja, Nigeria	Opoko & Adeboye
2	Sustainable Housing Delivery through Co-Operatives Societies in Ogun State, Nigeria: the Critical Success Factors	Baiyewu *et al.*
3	Life Cycle Assessment of Material Waste Generation from Building Construction Projects in Southwest Nigeria	Tongo *et al.*
4	URBANISATION AND SUSTAINABLE GROWTH OF URBAN KANO, NIGERIA	UNAH, Mathew Okopi
5	Student Industrial Work Experience Scheme (SIWES): Is it Beneficial to Students?	Oluwunmi *et al.*

6	Exploring the Effects of Pozzolans on Different types of Portland Cements in Sustainable Cement-Based Applications	Joshua *et al.*
7	MAINTENANCE CULTURE OF RESIDENTS IN SOME SELECTED LOW COST HOUSING ESTATE IN LAGOS STATE	Amusan *et al.*

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THEME 1: ENVIRONMENT AND CLIMATE CHANGE

PAPER ID: ICESE20202003

Empirical Assessment of Ammonia and Urea Concentrations in Wastewater from a Pharmaceutical Plant: A Case Study

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Abstract

In several ways, urea is one of the most prominent sources of fixed nitrogen due to its relative abundance in waste water treatment plants. In this study, the wastewater effluent from X-Chemical Industries was considered for hazard analysis in order to ascertain the water quality and impact at the outfall effluent of company X relative to environmental standards. The study period is for December, 2013 – February 2014. Based on the results, it was observed that at the company's sluice gate, the desorber (primary treatment unit) did not perform optimally. Also, the variation of the parameters measured i.e. urea concentration, pH and ammonia concentrations exceeded the standards established by the International Finance Corporation (IFC) and the National Environmental Standards and Regulations Enforcement Agency (NESREA). It was also observed that the treated waste water advancing the creek (jetty) close to the plant, will have environmental consequences on marine lives such as marine micro-flora as well as fishes.

Keywords: Urea concentration; Wastewater; ammonia synthesis; pH; Water quality

PAPER ID: ICESE20202013

Assessing the Viability of Rainwater Harvesting System for Sustainable Manufacturing in Water Stressed Regions

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Abstract

Water is considered to be the life wire of any manufacturing industry. Water is used for washing, processing of materials, cooling of engines, firefighting and also important for sanitation and welfare of workers. As the population of the world increases, the demand for water to meet domestic and industrial needs of man increases. In line with sustainable development, there is need for practices in manufacturing which will help preserve scarce resources for domestic needs. This water shortage across some parts of the world especially developing regions calls for individuals to invest in strategies for alternative supplies and storage. The global trend in industries is sustainable manufacturing which is hinged at increasing operational efficiency and as well reducing cost and wastages. As a result, there is a growing interest on alternative sources such as rainwater. This paper focuses on the viability of rainwater harvesting principle for a small scale pozzolana plant for sustainable manufacturing. Water consumption in production plant and potential harvestable rainwater from the roof top were estimated. Harvestable rainwater was determined based on the data from the Famine Early Warning Systems Network (FEWS NET) and the rooftop (catchment) area. Design and operational parameters used to describe the behavior of the rainwater harvesting system for the area under study were presented. The results showed that the water demand to run the plant for production and sanitation for staff welfare can be covered substantially using rainwater with a reliability of 99.7% and annual water savings of ₦1,350,000.00. The investment is viable and will be amortized in only 1.6 years. The rainwater harvesting system will generate economic benefits for the company by reducing the cost of production and consequently the selling price of the commodity will be reduced for consumers.

Keywords: Sustainable manufacturing, operational efficiency, harvestable rainwater and operational parameters

ICESE20202039

Television Media and Maternal Health Development: Awareness and Impact Assessment on Women in Semi Urban Nigeria.

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Abstract

Maternal mortality in African countries is high and worrisome. Annually, an estimated 196,000 women suffer preventable deaths arising from complication in pregnancy and childbirth. To achieve the Sustainable Development Goal 3, which is Health for all in 2030, there is the need for sustainable and mediated improvement in ending preventable maternal morbidity. This study investigates the role of television in creating essential awareness; and assesses the impact of televised healthcare programs on women in a semi-urban location in Lagos, Nigeria. Opinions and attitudes of women are examined using the social learning theory. Purposive sampling method of quantitative research was used to design a questionnaire operated on 130 respondents within the age bracket of 15-49 years. Descriptive items were structured in line with the research objectives to elicit responses from the participants. Both terrestrial and subscription television channels were studied for a balanced research finding. Findings indicate that semi urban women are mostly aware of televised maternal health care messages and messages play significant role towards improving maternal health outcomes of study participants. Study further confirms that the television media remains potent in influencing maternal health behaviour despite rapid advancement in technology which gave rise to several other channels of information.

Keywords: Awareness, Impact assessment, maternal health, Program, Television, Women, SDG, healthcare, mothers**.**

PAPER ID: ICESE20202043

Assessment of Quality of Drinking Water from Ogun State, Nigeria

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Abstract

The quality of drinking water is the essential to human kind for survival. The drinking water from its source of origin contains certain amount of trace elements. This study investigated the physiochemical parameters and analyzed the trace elements in drinking water in Ogun State, Southwestern Nigeria. Water samples were collected from all the local government areas of the State. The pH, electrical conductivity and trace element of each sample were determined using the pH meter, electrical conductivity meter and atomic absorption spectrometer (AAS) respectively. The pH measured varies between 5.02 and 7.35 and the electrical conductivity obtained ranged between 23.7 and 336 μScm^{-1}. The trace elements determined in the samples were Copper (Cu), Calcium (Ca), Chromium (Cr), Iron (Fe), Zinc (Zn), Nickel (Ni) and Manganese (Mn) with mean concentrations 71.72 mgl^{-1}, 0.53 mgl^{-1}, 0.44 mgl^{-1}, 0.36 mgl^{-1}, 0.08 mgl^{-1}, 0.002 mgl^{-1} and 0 mgl^{-1}respectively. The study revealed that 80% of the water samples were acidic and electrical conductivity were within set limit except for a location. The trace element concentrations measured were within acceptable limits except for copper concentation that exceeded the set by World Health Organization (WHO) for drinking water. The study therefore recommended periodic monitoring of the water in order to ascertian the quality of water supply to the entire State.

Keywords: Trace elements, Drinking water, Electrical conductivity, pH

PAPER ID: ICESE20202045

Eco-mobility Approach for a Sustainable Neighbourhood Road Infrastructure within a Mixed-use Community: The Searchlight on Festac Town, Amuwo Odofin, Lagos

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Abstract

In major cities in Nigeria the current modes of transportation are generally chaotic and unsustainable. We therefore have to rethink how to move around and reinvent modern ways that are smart, resilient and non-motorized so as to reduce the constant emission of CO2 into the atmosphere. Poor maintenance is one of the major factors adduced to be responsible for the current deteriorated state of mobility corridors and the existing road infrastructure. Overpopulation and increasing socio-economic activities of Festac Town exerts undue pressure on infrastructure, thereby accelerating deterioration. This study is aimed at assessing the existing street circulation networks and the available eco-mobility alternatives to motorized neighborhood travels. Developing a sustainable mobility strategy that brings the neighborhood streets back to the people is an objective which this study pursue. A multi-staged sampling technique was adopted for the study. On-site qualitative approach was majorly employed through the interviews conducted assessing the major mobility corridors and streets from 1st to 7th avenues. A sample frame of 15 major roads with outdoor open spaces along the selected roads all within the selected avenues and major street roads. The instruments for data collection were oral interview and personal/physical observations. The activity profiles, locational data and geospatial coordinates of each avenues were imported into ArcGIS (Version 10.5, ESRI) for various land-use analysis. The sustainable eco-mobility strategies will reduce transportation impacts, create civilized streets that meets environmental design standards of commuter's safety and comfort that are compatible with the unique urban structure and culture of metropolitan Lagos. This study evaluated the issues relating to sustainable eco-mobility, the connection between climate change and transportation systems, the impact of urban mobility on public safety and well-being.

Keywords: eco-mobility; mobility corridor; non-motorized; environmental design, climate change

PAPER ID: ICESE20202047

Yearning to farm -Youth, Economic Shocks and Food Security in Nigeria

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Abstract

This study examines how economic shocks affect youth farmers and its potential impact on food security in Nigeria. The study makes use of Wave 4 (2018/2019) of the Living Standard Measurement Study-Integrated Survey on Agriculture (LSMS-ISA) data applying the propensity score matching (PMS) model and the two-sample t-test. Findings from the PSM showed that households affected by shocks are less food secure. This is validated from the two-sample t-test; testing for the potential impact of shocks on household food security. Though, more percentage of the households (94.42%) are not affected by shocks, compared to those affected by shocks (2.58%), but are worse-off by 0.007% with respect to food security. This means that, households who are not affected by shocks are more food security by 0.007%. Therefore, based on the findings of the study, it recommends that the Nigerian Government should put in place measures (such as the provision of social protection, safety nets, credit facilities and so on) to increase agricultural productivity in order to sustain food security.

Keywords: Agriculture, Economic shocks, Food security, Youth

PAPER ID: ICESE20202048

Carbon emission and population growth: Evidence from the magna cum laude oil producing African countries

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Abstract

This research seeks to find the extent of which Carbon emissions has on population growth among the Magna cum Oil producing Africa countries. In other words, the sample of our study captures data from countries that sit on top of the class among its fellow Africa countries in terms of Oil production. A sizable amount of scientific effort has been applied to question the possibilities of fossil fuel combustion and the consequential Carbon emission which also includes greenhouse gas will cause a distinct enhancement of the greenhouse effect in the next century within the Africa region. A more detailed grasp of the contribution of human activity to potential global warming (*apropos* natural climate variation) is of critical policy interest. Surprisingly little research has been devoted to establishing the underlying statistical relationship between human activities and CARBON emissions. In this paper, we would explore the nature of the relationship between Population Growth and Carbon emissions among the top Oil producing Africa countries by employing Panel data analysis on annual data for 1997–2018.

Keywords: Carbon emissions; Population growth; Pollution Control Adoption and Costs; Demography; Distributional effects.

JEL Classification: Q540; Q56; Q52; J1; Q52

PAPER ID: ICESE20202052

Exploring the Leadership Approach in Response to COVID-19 among Faith-Based Organisations in Nigeria: A Conceptual Review

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Abstract

The purpose of this study was to explore the COVID-19 experience of faith-based organisations (FBOs) leaders and administrators in Nigeria to gain an in-depth understanding of the suitability of leadership style in providing suitable palliative solution to the critical challenging effects of COVID 19 pandemic. The conceptual framework for this study focused on three key concepts: leadership style and FBOs in full range leadership model as the theoretical foundation. Findings from this study indicate that Nigerian FBOs leaders need to embrace participatory leadership with the quick response of stakeholders to ameliorate the effect of COVID-19 suffering and pain in the lives of their followers. The findings also revealed the failures of different leadership styles; some of these FBOs might have applied in steering their organisations during this pandemic. The study emphasises on the significance of positive social change by adopting the participative leadership style, on the sustainability of FBOs in Nigeria. This also increases their capacity to create a flexible and safe environment for their operations.

ICESE20202053

Accelerating progress on the sustainable development goals: Assessing secondary school students' knowledge of climate change actions

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Abstract

The youth plays a significant role in realising the sustainable development goals (SDGs). What young people know about the SDGs and how to engage with the SDGs can contribute significantly to the realisation of the SDGs within the shortest possible time. Specifically, climate change is central to the SDGs because of its substantial nexus with economic, social and environmental outcomes for all regions of the world. Thus, this study investigates the level of climate change knowledge of secondary school students to guide climate change mitigation strategies and practices among young people for the attainment of the SDGs. The study adopts a qualitative research approach using content analysis of the essays on climate change written and presented by students of different secondary schools in Ota, Nigeria. The analysis reveals, among other things, that the students are aware of climate change and that their schools are the most common source of climate change knowledge. The most-reported climate change effect from the essays include: rise in global temperatures, melting of ice, rise in sea level, flooding, drought, extinction of terrestrial and marine life and health challenges. Common mitigation strategies suggested by the students entail awareness, tree planting, use of low carbon vehicles, use of energy-saving bulbs, reduction of carbon emissions, and recycling of waste. With adequate climate change knowledge and mitigation strategies, many young people can contribute and engage practically with the climate change discourse, thereby improving the climate change statistics in their regions and accelerating progress on the SDGs.

Keywords: global warming, mitigation, Nigeria, sustainability, youths

PAPER ID: ICESE20202056

Natural Radionuclide and Radiological Impact Assessment of Teak Plantation, University of Ilorin, Kwara State

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Abstract

The amount of naturally occurring radionuclide in Teak plantation was measured using gamma ray spectrometer RS-125. This device gave an in-situ measurement of radioactivity concentration of ^{40}K, ^{232}Th, ^{238}U and dose rate. The data was taken in 20 locations, the overall mean dose rate is 47.8150 Gyh^{-1}. The overall mean activity concentrations for ^{40}K, ^{232}Th, ^{238}U are 456.1975 $BqKg^{-1}$, 29.0245 $BqKg^{-1}$ and 26.2080 $BqKg^{-1}$ respectively. It is also observed that only the estimated outdoor dose rate D of ^{40}K at study location L1 exceeded the world limit of $57nGyh^{-1}$. This could be due to its closeness to the university main gate with lots of possible interfering human activities around the gate area. However, further study on detailed geochemical investigation is required to reach at some conclusion. By comparing the mean values of the activity concentrations and their radiological risks with the several world standards, it can be concluded that the Teak plantation is highly rich in Potassium.

Keywords: Background Radiation, ^{40}K, ^{232}Th, ^{238}U Conversion factors, Activity Concentration.

PAPER ID: ICESE20202057

OVERVIEW OF NANOTECHNOLOGY APPLICATION IN MITIGATING COVID-19

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Abstract

The recent outbreak of the pandemics of the Severe Acute Respiratory Syndrome that has cause a global challenge with its negative impact upon the world economy and its daily rise high mortality rate across the nations of the world. Vaccinations and anti-viral drugs have proven to be insufficient in curtailing its spread. Several authors have delved into various researches in order to proffer an effective solution to this viral infection. However, amid various field of science, nanotechnology presented vast potential in the fight against COVID-19. Over the decades, nanotechnology have been applied in detection, prevention and treatment of several acute diseases such as cancer. The aim of this paper is to carry out a comprehensive and systematic review of existing literatures, identifying the role of nanotechnology application in mitigating against COVID-19. In this study, we examine the role of nanotechnology in the production of Personal Protective Equipment (PPE), Clinical diagnostic and equipment, Therapeutic drugs for its patients, manufacturing of test kits and vaccine development. The emergence of nanotechnology offers great advantages over the traditional approach in curtailing the spread, control and effect of COVID-19 over the nations of the world.

Keywords: Nano ; Nanotechnology ; Nanoparticles, COVIC-19, Pandemic

PAPER ID: ICESE20202061

Long Term Hydrochemical Analysis and Quality Assessment of Five Dams in Lesotho, Southern Africa

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Abstract

Lesotho, is a mountainous country located within South Africa. Water is one of the major export earnings. One of the major dams in Lesotho is called *Mohale* Dam built at a cost of US$1.5 billion. It has five inflow dams at: *Bokoaneng, Bokong, Likalaneng, Jorodane* and *Senquyanne*. There is sparse data on water quality of these dams, hence, data were collected between 2009 and 2012 to monitor and assess the water quality for drinking using these parameters: Na, K, Ca, Mg, electrical conductivity (EC), pH, total hardness (TH) and turbidity. These were compared with the WHO standard for drinking water. Data were analysed using these procedures: means (PROC MEANS) and cluster (PORC CLUSTER) of Statistical Analysis Systems, and trilinear plots/Piper diagram. Results showed that across sites, these variables (i.e. pH, EC, Ca, Na, K, Mg, TH, and turbidity fluctuated across sites and years and still far lower than the critical limits of the WHO as drinking water quality. The only parameter that was relatively high, when compared to the stringent water quality of (APHA, AWA and WEF, 2012) [1] standard for drinking was the mean turbidity which ranged between 1.32±0.27 (*Bokoaneng*) and 4.70±1.26 (*Jorodane*). However, when compared to the WHO (1986) [2] standard for drinking water quality of 5.00 NTU (WHO, 1986) [2], it still acceptable. The Piper diagram classified the water as sulfate-chloride dominated, though when compared to the critical values of WHO limits of 250mg/L (Cl^-) and 400 mg/L (SO_4^{2-}) it still very low as these values are still ≤ 5 mg/L. As at the time of data collection, there was no source of contaminants. However, the aforementioned values were the highest for a dam located at *Likalaneng*. As, such, it is imperative that sources of the "seemingly" high values should be identified as this might build up over the years.

Keywords: Climate, Pollution, Lesotho, Water Quality, Piper diagram, World Health Organisation

PAPER ID: ICESE20202062

Water Poverty and Development Imperatives: A Defence of Ethics for Sustainable Water Resource use and Management in Africa

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Abstract As the world gathers momentum for the realization of the Sustainable Development Goals (SDGs) by 2030, it is pertinent for nations and regions to begin to evaluate and address specific challenges to development imperatives. The problem of shortage of quality water for consumption in Sub-Sahara Africa (SSA) has been widely discussed by different academic and technical experts using diverse platforms. There are various statistics revealing a glooming picture of water poverty on the Continent despite its relative abundance of natural water resources. While the challenges and the issues that characterize the problem have received critical attention and strategies for better resource management for sustainable provision of quality and adequate water have been suggested, water poverty continues to ravage Sub-Sahara Africa. This research adopts the Secondary Data Analysis method to investigate the fundamentals of the problem. The analysis shows that more than any other factors, unethical human disposition to resource consumption and unregulated consumption pattern are fundamental issues underlying the problem of water poverty in Africa. Flagrant abuses and disregard for environmental resource management instruments in pursuit of economic and subsistent opportunities constitute major catalyst for the increasing water poverty in Africa. In light of the above, the paper explores the blue ethics approach to water resource management in Africa as imperative for 'popular' policy direction in addressing the avoidable water shortage in Africa.

Keywords: Africa, Ethics, Resource Management, Sustainable Environment, Water Poverty

PAPER ID: ICESE20202064

Investigating infection pattern of viral bioaerosols: Case study of COVID-19 in Lagos, Nigeria

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Abstract

The dynamics of viral bioaerosols is not known; hence, its detection and control may be very difficult. In this study, the structural analysis of Influenza A, SARS Coronavirus and IBV Coronavirus was adequately discussed. The infection pattern of the SARS coronavirus was further investigated using dataset from Nigeria Centre for Disease Control (NCDC), Nigeria and 'Ourworldindata' for datasets in parts of China. The artificial neural network (ANN) tool was used to determine the COVID-19 infection in Lagos. It was observed that there are many unaccounted COVID-19 patient roaming the region. . It is recommended that government of Lagos should embark on a compulsory house-to-house testing to detect potential COVID-19 carriers.

Keywords: Bioaerosols, virus, COVID-19, Infection pattern, Lagos

ICESE20202065

Design and Construction of Patient Remote Monitoring System

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Abstract

Health care services are important part of the society, automating these services lessen the burden on humans and eases the measuring/monitoring process. The construction of local remote patient monitoring system (RPMS) was done using the Arduino Uno3 connected to the global system for mobile (GSM) module SIM 800a, heart pulse sensor and body temperature sensors. The constructed device was tested by measuring the body temperature, heart pulse and electrocardiogram (ECG). The testing was conducted on willing students and the values measured were within the normal body temperature between 36.1 to 37.2 ^{o}C. The device also sent message to alert the doctor when the value went below the prescribed value. The response time of the the device to send and receive short message service (SMS) is between 6 s to 13 s. The RPMS worked as intended and when improved upon by neater coupling and packaging, it will be a sellable low-cost product to the country locals as health care monitoring device.

Keywords: remote monitoring system, heart pulse, body temperature, GSM module

PAPER ID: ICESE20202066

Mathematical experimentation of borehole contamination sources: Influence of soil-water diffusivity on contamination diffusion

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Abstract

The provision of portable water from groundwater sources are becoming more challenging in developing countries as many factors are responsible for the contamination of boreholes. In this paper, the mathematical experimentation to support the need for geoscientist to determine soil-water diffusivity in a geographical location was executed with reliable parameters and conditions. It was observed that the point of pollution, concentration of contaminants and contaminant diffusion rates are very important to determine sustainable clean water supply. It is recommended for geoscience practitioner to determine the soil-water diffusivity within a range of 1 km within the hydrogeological settings of the geographical location before sinking borehole.

Keywords: contaminant, water, and borehole

ICESE20202068

Impact of Atmospheric Parameters and Noise Temperature on Digital Terrestrial Television Signal Strength over Abuja, North-Central, Nigeria

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Abstract

In this paper, the impact of atmospheric parameters (atmospheric temperature, pressure, relative humidity and wind speed) and noise temperature on digital terrestrial television signal strength over North-Central, Nigeria, Abuja has been examined. An experimental setup consisting of automatic weather station, Digital non-contact infrared thermometer and CATV signal strength meter installed in Mathson Space International School, Abuja, was used to measure the signal strength of four terrestrial TV stations (AIT, NTA, Channels TV and ETV) and the selected atmospheric parameters. The results showed that atmospheric and noise temperatures as well as wind speed weakly influenced the signal strength while relative humidity strongly influenced the signal strength. The effect of atmospheric pressure over the signal strength was not consistent during the period of measurement. Findings from this study will be of help to satellite link designers, policy makers, antenna modelers and other TV transmission equipment designers on how to mitigate the effect of some of the atmospheric components on digital terrestrial signal strength reception in Nigeria.

Keywords: Digital Terrestrial Television; Signal strength; Noise Temperature; Atmospheric parameters

PAPER ID: ICESE20202073

Prediction of Attenuation using Visibility variations and other Meteorological Parameters in George, South West Cape Town, South Africa

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Abstract

In this work, the impact of selected atmospheric parameters on attenuation of terrestrial and satellite signals over George Woo, South West, Cape Town in South Africa for the purpose of planning reliable and resilient free space optical communication links within the region has been presented. The meteorological parameter data (visibility, temperature, rainfall rate, relative humidity, pressure, wind speed and wind direction) were obtained for ten years (2010 – 2019) from the South African Weather Service (SAWS). The attenuation was calculated based on visibility, rainfall rate, and scintillation data. Attenuation due to rain was observed to account for 58% of the total attenuation and it is wavelength independent. Attenuation due to rain based on subtropics model was found to be about half of the calculated value based on temperate model. Three different wavelengths namely: 850 nm, 1200 nm and 1500 nm within the optical windows were used in calculating the wavelength dependent function. The result will be applicable in the area of the design and implementation of a reliable free space optical (FSO) link in the study location.

Keywords: Visibility; Attenuation; Scintillation; Subtropics; Temperate and Meteorological parameters.

PAPER ID: ICESE20202074

Borehole Contamination and Diffusion Patterns At Specific Hydrogeological Setting

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Abstract

Scientists have shown that pollution at main aquifers is common to places of almost the same hydrological setting. However, it is not clear why the contaminants concentration varies with boreholes in same hydrological setting. In this experimentation, three different topography was considered i.e. flat plain, hilly settlement and undulating topographic setting. The concentration-time and concentration-distance was mathematically monitored within same hydrological settling. It was observed that contaminants diffusion basically depends on the hydrological settings and shape of the aquifer.

Keywords: Borehole, groundwater, contaminants, pollution

PAPER ID: ICESE20202075

Mathematical Experimentation on Groundwater Contamination and Diffusion in an Unconfined Aquifer

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Abstract

The hydraulic continuity that exists between surface and groundwater is very significant in determining borehole contamination. Despite, the hydrogeological information of a geographical area, it is expedient to understand diffusion patterns of contaminants. In this experimentation, the retardation factor as varied at different terrain to understand the contaminants diffusion pattern. It was observed that the terrain of the borehole location had significant effect on the diffusion of the contaminants. Also, contaminant diffusion was found to be controlled by pore-pressure formation at very low retardation factor.

Keywords: water, groundwater, surface water, and diffusion

PAPER ID: ICESE20202076

Investigating the significance of air pollution in corroded buildings: Case study of Basse-Gambia

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Abstract

Air pollution in West Africa has been proven severally to be very high. The implication on the ecosystem is tremendous, as it has led to the death or severe conditions of microorganism. In this paper, the effect of air pollution on buildings was investigated. Fourteen years satellite dataset was used for the study. It was observed that coarse mode aerosols are formed by photochemical reactions and biogenic reactions and are predominant during low wind speeds. This revelation proves that gaseous pollutants around the research site are nucleated by water molecule before deposition on the wall or roof the building.

Keywords: Aerosol, aerosol optical depth, building, Angstrom

PAPER ID: ICESE20202077

Short Review on the Atmospheric Bioaerosols

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Abstract

The variability of bioaerosols cut across seasonal changes, indoor enclosements, outdoor sources and atmospheric conditions. Hence, the easiest way to curb disease-carrying bioaerosols requires in-depth understanding of the aforementioned factors. In this short review, the physical and biological properties of bioaerosols was discussed. It was discovered that its biological and physical properties are salient to determine its diffusion, deposition, control and measurement.

Keywords:

PAPER ID: ICESE20202078

Mathematical experimentation on the influence of surface water on groundwater in an unconfined aquifer

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Abstract

Surface water and groundwater pollution are derived from soil pollution through rainfall, soil infiltration, and surface run off from agricultural land. Despite this basic knowledge, it is still unclear if contaminants in form of particulates are controlled by topography or terrain settings. In this experimentation, three types of terrain were used i.e., flat plain, hilly terrain and undulating terrain. It was observe that for flat plain and undulating terrains, the topography or terrain of the groundwater have no significant impact on contaminants diffusing from surface water to ground water. In hilly terrain, it was observed that there were significant impacts of topography on the distribution pattern of the contaminants. It was postulated that pollution diffusion in hilly terrain is driven by pore pressure. It is recommended that the only way to control ground water pollution is to control soil pollution.

Keywords: Water, groundwater, surface water, and diffusion

PAPER ID: ICESE20202080

COVID-19 infection forecast using artificial neural network: Seeking reliable solution

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Abstract

COVID-19 pandemic has shown that current solutions postulated by recognized organization are temporal. It means that whenever the globe is ravaged by a deadlier pandemic, there would be more deaths before the emergence of a cure or vaccine emerge. In this study, we illustrated the infection forecast of COVID-19 in Nigeria in the next 102 days. It was observed that the infection is expected to increase by 358%. At this point, the infection pattern is mainly airborne. It was recommended that indoor and outdoor bioaerosols monitoring device is necessary to safe lives. Airline, schools, religious center, public places would appreciate these technology to save lives in the nearest future.

Keywords: COVID-19, bioaerosols, ANN, forecast

PAPER ID: ICESE20202082

Exploring Pressure-Temperature Trends toward Climatic change in Ikogosi

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Abstract

Global warming is sketching the isobars on weather maps in a different way, owing to new patterns and their climatic imprint. Climatological reports have shown that atmospheric pressure fluctuations in the past five decades has strong affiliations with human stimulus. Any infinitesimal change in air pressure could produce a dramatic climatic effect, such as wind, precipitation, diurnal perturbations and storms. Pressure in air is the pointing device for atmosphere's circulation, and consequently, determines how humidity circulates. Progressive studies on air pressure from both experimental and theoretical sources have corroborated with each other. The potential for atmospheric pressure is a function of the individual sum of oxygen, carbondioxide, water vapor, nitrogen, and noble gases in air. Although, it is difficult to predict the life span of these atmospheric gases, we cannot assume that the abundance of either of these gases has remained constant over geologic time. This study focuses on analyzing weather changes in Ikogosi SW Nigerian, in conjunction with pressure for almost four decades, using curve fitting regression analysis and statistical methods relative to direct plots. The recommendations given are based on indices of measurement shown by occurrence and the force of atmospheric pressure.

Keywords: Climate change, diurnal temperature, pressure, Gravi-potential electricity

PAPER ID: ICESE20202085

Temperature and Short- wave Irradiation Trends in Ikogosi Climatic Change Pattern

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Abstract

Every living or non-living thing has its temperature that it emits in form of electromagnetic radiation, light. The source of this molecular kinetic is Solar energy incident on Earth's surface, the sole supplier of life on the planet determinant of the climatic conditions in our habitats. This creates the much-required balance in nature influencing myriads of surface processes, ranging from evaporation, photosynthesis and even terrestrial carbon uptake is one such related effect. Timing of events distinguishes the diurnal from seasonal course of surface temperatures and shortwave radiation which contains larger quantity of energy and longwave radiation which holds less amount of energy. Earth's emitted longwave radiation, also major practical implications on solar energy technologies, agricultural productivity, profound environmental, societal, and economic implications. There is cumulative evidence that the volume of solar radiation incident on the Earth's surface is not constant but experiences substantial decadal variations. Thus, this study investigated the prospect of shortwave radiation in Ikogosi SW Nigeria and its implications technologically and environmentally in the future of this topography.

PAPER ID: ICESE20202086

Multidecadal trends in Ikogosi Temperature and Rainfall to Climate change

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Abstract

Ikogosi is located in a humid rainforest noted for its virtually uniform temperature through the year averaging 21°C to 28°C. Thirty-eight years temperature and precipitation data on Ikogosi, reveals a deviation in an erstwhile norm and portends a trend that short-term and regional variations are projected to develop to a more extreme warm climate. In contrast to previous ones, the fifth IPCC report emphasizes on the socio-economic facets of climate change and its dual role in sustainability and in managing risks, it focuses on reducing greenhouse gases and adaptation approaches to climate change. Precipitation and temperature are vital climatic constraints extremely valuable to agriculture, architectural, societal and urban planning. A warming atmosphere is allied with substantial precipitation, owing to human based activities triggering greenhouse gas emissions. The most prominent of these greenhouse gases, CO_2 warms the atmosphere as its volume increases in the atmosphere. In effect, the expanse and degree of future warming will be a function of how much more volume of CO_2 humankind emits. Although current CO_2-induced warming of Earth is essentially irreversible on human timescales, all hands are on deck to obtain scientific information, which is a dynamic prerequisite for society to make informed decisions on mitigation, adaptation, and other ways to tackle climate change. Thus, this study seeks to clarify the degree to which the observed climatic changes in Ikogosi and similar geographical locations create the potential energy for certain extreme weather events consistent with theoretical explanations using software program line regression analysis.

Keywords: Climate change, Diurnal temperature, Precipitation, Afforestation, Simulation

PAPER ID: ICESE20202090

Microbial Enhanced Oil Recovery using Bio-Surfactant formulated from Subsurface Sandstone Reservoir Hyperthermophiles

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Abstract

Microbial enhanced oil recovery (MEOR) is a sort of enhanced oil recovery (EOR) innovation, for the most part, utilized as a tertiary stage where oil recovery utilizing primary and secondary methods aren't possible any longer. Among a few potential biological agents helpful for MEOR, biosurfactants (organically delivered amphiphilic surfactants) assume key jobs such as degradation of hydrocarbon pollutants in soil, removal of metals from soil surfaces, dispersion of inorganic minerals in mining and manufacturing processes and so on. They are generally equal to or better than their chemical surfactants in a few viewpoints including; better environment compatibility, creation from inexhaustible waste substrates, keeping up action at unforgiving natural conditions, lower or no environmental harmfulness. This study is focused on the application of isolated bacteria for the production of biosurfactants. From the isolation result *Bacillus Nealsonii*was the identified microbe Raise (R) and it was used to for the production of biosurfactant, the broth was used as the nutrient source and kerosene was the carbon source. Then this biosurfactant was applied in the MEOR at room temperature (27°C) using a reservoir permeability tester equipment. The recovery process using this biosurfactant gave 68.42% of residual oil recovery after the primary and secondary oil recovery, thus these hyperthermophiles are good agents for MEOR.

PAPER ID: ICESE20202093

A Review of Analytical Methods Used in measure Quantification

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Abstract

Microplastics are pervasive contaminants that has attracted the attention of researchers over the last decades. The methods of sampling and quantifying microplastics vary across environmental matrices making it difficult to compare results from different regions. This paper presents a review of some of the methods of microplastics quantification, highlights their advantages and disadvantages and recommends that standardized methods should be developed to harmonize inter-study comparisons.

ICESE20202095

Gender –Based Employment in Agriculture and Agricultural Productivity in Nigeria

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Abstract

The contribution of women to labour in African agriculture is quoted regularly in the range of 60–80%. Using available statistical data, to compare the level of employment and productivity of both male and female on an individual basis, and consequently proffer ways of improve that with a lower turn-out is the one major aim of the study. The contribution of females in the agricultural sector is substantially lower in Nigeria (37%), and some other developing countries. In order to get appropriate estimation of the model, the Augmented Dicky-Fuller and the Phillips-Perron test are used to check the variables level of stationarity. This also helps to explain the existing relationship between and among the following variable: employment in agriculture, male, employment in agriculture, female, trade and inflation. The result informs the need to enhance the employment of female in the Nigerian economy for higher agricultural productivity. Therefore the study suggests that policies geared towards female empowerment in agriculture and services alongside other concerned sectors should be promoted.

ICESE20202096

Tropospheric attenuation on Satellite-aircraft propagation: A concise review

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Abstract

The attenuation time together with the Complementary Cumulative Distribution Function of attenuation values play a vital role in the design of communication systems. Passengers onboard during flight can be connected to the internet either via satellite or earth-station depending on the nature of the flight. For long distance flight, this internet connectivity is provided through satellite when the aircraft is flying at the upper troposphere. However, the satellite-aircraft link is subject to attenuation due to the troposphere. ITU-R recommendations proposes a model to characterize the channels. In particular, the ITU-R P2041 recommendation proposes a methodology for the synthesis of attenuation on aircraft-satellite and aircraft-earth links. However, it has been shown that the impact of tropospheric parameters such as rain on the satellite-aircraft link at different frequencies are insignificant on the upper troposphere since the aircraft is flying (about 12 km) above the rain height (5 km). However, there is need to draw our attention to the impact of the troposphere such as rain and Doppler effect on the aircraft-earth link if the satellite is flying at 12 km and beaming its signal to a supporting earth-station.

ICESE20202097

Simulated sea-level rise under future climate scenarios for the Atlantic Barrier Lagoon Coast of Nigeria using SimCLIM

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Abstract

One of the challenges of climate change in most coastal regions of the world is sea-level rise. This is of serious consequence as the coastal zone plays host to a large human population, abundant natural resources, and several ecosystem services. To alleviate the effect of climate change, proper planning of the coastal area is necessary to enhance the process of adaptation. This study attempts to project an estimate of the rate of sea-level rise along the coastline of Lagos, Nigeria in various time slices, i.e., 2025, 2050, 2075, and 2100 for all 4 RCP scenarios, as recommended by the IPCC using the simCLIM model. The result obtained shows the median projected sea-level rise values range from 11.86 cm to 49.22cm for RCP 2.6; 11.73 m to 58.91 cm for RCP 4.5; 11.28 cm to 62.28 cm for RCP 6.0; 11.92 cm to 84.25 cm for RCP 8.0 respectively. Based on the results of the projections obtained in this study, coastal planning is advisable to provide a means of adaptation for the inhabitants as the consequence of lack of planning could lead to avoidable losses.

Keywords: Climate change; sea level rise; barrier lagoon coast; coastal ecosystems; simCLIM

ICESE20202098

Climate change and coastal vulnerability assessment methods: A review

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Abstract

Coastal and marine ecosystems have been threatened at local and global scales by multiple stressors – sea-level rise, rising temperatures, climate extreme events, biodiversity loss and habitat destruction. These stressors operating independently or synergistically could alter the ecosystem services while posing a significant threat to the environment, human lives and properties, as well as, result in biophysical and socio-economic losses. In this paper, we present an overview of the methods used in assessing coastal vulnerability of marine areas at local-global scales under chronic environmental stressors. Integrated and strategic methodologies that could identify, highlight and prioritise the vulnerable marine areas have been presented. The framework to assist coastal planners and managers in the conservation and management of vulnerable coastal regions and settlements from permanent inundation and loss have been suggested.

Keywords: Climate change; coastal ecosystems; vulnerability assessment; sea level rise; marine areas

ICESE20202099

Sustainability and Genetic Diversity of Under-exploited African Plants: A Collection Expedition in Nigeria - Facts, Challenges and Prospects

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Abstract

Background and Objectives: Plant genetic diversity loss particularly of under-utilized species threatens several developmental goals in Africa. Preferred safeguard strategies such as *ex situ* and *in situ* techniques have failed in stemming this situation exacerbated by dearth in global information and poor research attention on such species. The study involved an expedition to; generate eco-geographical and related information on under-utilized species; evaluate the prevailing situations for collection exercises in Nigeria, in the attempt to instigate globally relevant researches, conservation and sustainable partnerships. Materials and Methods: A two-phased systematic field survey (North and South) employing a 50 km regular transect distance, covering the wet and dry seasons, a cumulative distance of 8168 km, 192 communities in 34 states and the Federal Capital Territory of Nigeria. Collection diversity was determined with Simpson's Diversity index (1-D). Results: 703 accessions of 30 plants species were collected. 13% of the total species (16% -South; 40% - North) were common to both regions. High diversity (D = 8) was recorded for the collection. The wetter southern states were significantly more diverse (D = 0.7- 0.9) than the north. Conclusion: The study area is heavily imparted yet houses a considerable diversity of the species surveyed. It is imperative to pursue integrated strategies to harness the plentiful flora as well as cultural resources resident therein. Poor security, infrastructures, and awareness of biodiversity issues; population growth and unregulated development; changing ecological, economic, and societal terrains are major challenges towards such productive expeditions, researches and conservation efforts.

Keywords: Genetic Diversity, Under-exploited, Expedition, African, Plants, SDGs.

ICESE20202102

Degradation Potentials of Tropical Soil Bacteria On Detergents

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Abstract

Surfactants belong to a group of chemicals of high environmental relevance due to their large production volumes. They are mainly released into the environment by the wastewater pathway. This could severely affect the soil environment. In this study, we investigated the degradation potentials of soil bacteria in liquid culture media induced-with detergents. Using conventional enrichment methods, via contaminated soil slurry enrichment with selected alkyl-benzene sulphonates (detergents) we obtained pure bacteria species capable of using alkyl-benzene sulphonates as sole source of carbon and energy. From the morphological and biochemical characterization and comparison with respect to the standard references, bacteria strains were presumably *Corynebacterium, Pseudomonas and Bacillus* species. Different concentrations 5.0, 10.0 15.0 and 20.0 w/v of the branded detergents were prepared as sole carbon and energy and screened against our obtained bacteria species to determination their physiological gradient fluxes after 96hours of incubation. Results showed an increase in OD as well as increase in pH values. The mean OD data obtained ranged between 0.017- 0.818 with pH of 7.47-8.95. From this study, it is obvious that our tropical soils may possess unique bacteria species are capable of remediating soils polluted with alkyl-benzene sulphonates.

Keywords: alkyl-benzene sulphonates, Optical density, Tropical soil, bacterial strains, pH

ICESE20202103

Sugar Alcohol- Xylitol Production Using Saccharomyces Species Isolated Palm Wine for Sustainable Development in Food Industry

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Abstract

Xylitol is a naturally occurring sugar alcohol, which is produced chemically on a large scale. This study was carried out to locally produce xylitol using yeast isolates which were isolated from palm wine. The yeast *Saccharomyces* spp were identified using morphological characteristics and biochemical tests. Xylitol production was carried out at 25^{o}C using glucose and D-xylose which were added to the mineral media. The glucose substrate produced more of the xylitol than the D-xylose supplemented media. From the results obtained the *Saccharomyces* spp. isolated can supplement for biological production of xylitol.

ICESE20202104

Production of fruit wine using wild strain of *Saccharomyces cerevisiae* isolated from fresh palm wine for sustainable food security

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Abstract

The problems of post –harvest losses in the developing world have been of serious concerns particularly were food security to the citizenry cannot be guaranteed. Thus, new means of conversion of some these seasonal produce to new stable products is an excellent development. In this study, we carried out the production of wine from citrus fruits (*Citrus sinensis*) and Pineapple fruits (*Ananas Comosus*) using wild strains of yeast *Saccharomyces cerevisiae.* The *S. cerevisiae* was isolated from fresh palm wine and identified using microscopic examination, morphological and biochemical characteristics. Pure yeast isolates were inoculated into sterile volumes of 200ml and 500ml of the orange and pineapple juice respectively and incubated for 8 days. At regular intervals, we assessed some of the intrinsic properties of wine such pH, sulphur dioxide content (SO_2) and titratable acidity (TA). From the results obtained, all the parameters measured were within the permissible limits for fruit wine. The mean pH values of orange and pineapple juice in 200ml and 500ml were between 4.45± 0.16 and 4.86±0.50; while the mean SO_2 (ppm) were 18.36±0.20 - 39.49±3.68 respectively. The titratable acidity (TA) obtained was between 0.63±0.11 - 1.03±0.59 respectively. This study had shown that our strain of wild type of yeast could be used for producing home- brew fruit wine and may not present any hazard to the consumers.

Keywords: *Citrus sinensis, Ananas Comosus, Saccharomyces cerevisiae,* sulphur dioxide content, titratable acidity

ICESE20202105

USE OF *Nicotianna tabacum, Jatropha curcas and Ficus exasperata* FOR TREATMENT OF PUS-PRODUCING BACTERIA

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Abstract

The knowledge of orthodox medicine on the medicinal effects of plant extracts have continued to be a major booster to our modern healthcare delivery for over 80% of the world's population, especially in the developing world. In this study, we examined the leaf extracts activities of *Nicotiana tabacum*, *Jatropha curcas* and *Ficus exasperate* on common pus –producing bacteria that occur during secondary infection of open wounds. The initial plant extracts were extracted using methanol via cold extraction method. The obtained extracts were fractionated via solvent – solvent extraction in the following solvents ethyl acetate, hexane and distilled water. Preliminary studies, carried out revealed that only *Nicotiana tabacum* was effective at inducing inhibitions on the selected clinical isolates namely: *Staphylococcus aureus*, *Streptococcus species*, *Escherichia coli* and *Salmonella typhi*. The antimicrobial assay of the selected plant was done by agar well diffusion method using 20.0 mg/ml and 40 .0 mg/ml concentrations of the selected plant extract. The selected concentrations 40.0 mg/ml and 20.0 mg/ml exhibited different degrees of zones of inhibition. The mean zones of inhibition ranged between ca. 6.0 - 14.5 mm. From the obtained result, *Streptococcus species* were the most inhibited. In addition, the Nicotiana *tabacum* ethyl acetate fraction exhibited significant inhibitory effect when compared to other fractions such as hexane and aqueous fractions. Thus it is evident, that ethyl acetate might be the best choice for extracting the bio- active components from tobacco.

Keywords: pus–producing bacteria, antimicrobial activity, *Nicotiana tabacum*, *Jatropha curcas*, *Ficus exasperate*

ICESE20202107

Response Surface Methodology for Silicon Production from Bamboo Leaves

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Abstract

This study investigated the production of silicon from bamboo leaves to solve the challenge of silicon in solar market using Optimization approach. The effect of three independent variables of: temperature, time and Amount of bamboo leaves were studied using Box Behnken design. The best process level observed from the Box Benhken Design and optimal predicted process were used to produce silica. It was then subjected to X-Ray Diffractometer to determine the most reactive silica. The most reactive silica observed was used to produce silicon. Silicon obtained was subjected to X-Ray Diffraction and Scanning Electron microscope. It was concluded that nanosilicon was produced which can be used as a solar cell component to solve the challenge presently in the solar market.

Keywords: Silica, Agricultural Residue, Central Composite Design, Optimization, Silica

ICESE20202108

Distribution and Diagnostic Ratios of PAHs In Urban Soils, Yenagoa City, Bayelsa State, Niger Delta Region, Nigeria

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Abstract

A total of eighteen samples were collected in order to investigate the distribution and content of the sixteen US EPA priority polycyclic aromatic hydrocarbons (PAHs) in urban soils from Yenagoa city of Bayelsa state, Nigeria. The PAH concentrations in the urban soil samples was performed using GC–MS method. The results were similar for all of the six sampling sites. Six LMW PAHs: naphthalene, acenaphthylene, acenaphthene, fluorene, Phenanthrene, anthracene, and eight HMW PAHs: Fluoranthene, pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Pyrene, Dibenzo(a,h)anthracene were found. The ∑PAH concentration ranged from 0.154 mg/kg to 10.824. In this study, PAH fingerprint ratios for determining both petrogenic and pyrogenic (pyrolytic) PAH accumulation was employed. The Ph/An ratio for the soil samples were 2.49, 3.47, 0.613, 1.59, 1.99 and 2.44 respectively. Benzo(g,h,i)Perylene was below the detection limit. Ind and DbahA was high in soils indicating a minor carcinogenic risk of PAHs in the City.

Keywords: PAHs, distribution, diagnostic ratios, soils, Yenagoa city, Bayelsa state, Niger Nelta Region, Nigeria

THEME: ENERGY

PAPER ID: ICESE20202001

Improvement on the Production Energy of Shale oil Using Waste Plastics

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Abstract

An alternative fuel is obtained by co-pyrolysis of waste plastics and oil shale as well as contribute to the search of technologies that reduce the negative environmental impact of waste. Shale oil and waste plastic are unconventional sources of energy. The two materials are significant to Nigeria's economic sustainability but yet to be exploited efficiently. The aim of this work is to reduce the energy needed to obtain shale oil via kinetic parameters by the thermal decomposition of Lokpanta oil shale mixed with plastics. The kinetics of the thermal decomposition of Lokpanta oil shale/ polyethylene blend was determined using data provided by thermo-gravimetric analysis done at 28^{o}C to 887.44^{o}C with heating rate of 10^{o}C/min and a nitrogen flow rate of 60ml/min. The decomposition of the co-pyrolysis of the mixture of Lokpanta oil shale and the polyethylene was recognized in three stages, of which the first stage was between 28 and 316.41^{o}C which corresponded to the loss of water from the sample. The second stage was between 316.41^{o}C and 481.47^{o}C, which depicted an overlap of the organic matter (kerogen) and the degradation of polyethylene. The final stage was between 481.47^{o}C and 887.44^{o}C, and it exposed the decomposition of the mineral matter of the oil shale. The Kinetic parameter was determined using non-isothermal methods of degradation. Hence the presence of the plastic acted as catalyst in the decomposition of the organic matter of the shale which consequently lowered the activation energy required to obtain shale oil with relevant application as aliphatic fractions of petroleum.

PAPER ID: ICESE20202002

Production of Fuels from Nigeria's Untapped 'Waste Wealth' Using Pyrolysis

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Abstract

The extent of pollution that plastic waste poses to our environment is phenomenal. In Nigeria, millions of metric ton of plastics are manufactured continuously due to industrialization and urbanization, a measurable rise in the generation of waste plastics is inevitable, so also is the need to seek alternate energy sources in the place of conventional fuels. Oral disposal of plastics has led to blockage of drainages, flooding and several mess yet unemployment is very high. It is important to venture into how this solid waste can create job opportunities along recycling value chain. Plastics are made by polymerization of hydrocarbons. These hydrocarbons are of typically high molecular mass which are fuel based material. Thermal and catalytic pyrolysis of waste polyethylene terephthalate was carried out in a fixed bed reactor at a maximum temperature of 6000C and 3500C respectively. The product obtained are liquid fuel, char and gaseous fuels. For the latter, the catalyst to plastic ratio was effective at a ratio 1:10. The liquid oil obtained in thermal pyrolysis has low quality compare to catalysis pyrolysis with high yield of 39%, but 30.5% for catalysis pyrolysis. The effect of catalyst on temperature, retention time and product yield was studied. To identify the hydrocarbon compounds present in the liquid oil, ZSM 5 catalyst ratio was raised to ratio 1:10. About sixty-one compounds were identified and the quality of liquid oil was evaluated in terms of aromatic and aliphatic hydrocarbon content. The direct implication is that the fuels can serve as alternatives to basic petroleum fuel fractions.

PAPER ID: ICESE20202006

Determinants of Renewable Energy Consumption in Nigeria: A Toda Yamamoto Approach

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Abstract

The key factors that determine the utilization of renewable energy in Nigeria are estimated in this paper for a period of twenty-four years using toda yamamoto approach. Long-run relationship exists between renewable energy consumption and its determinants in Nigeria. Real income (real GDP) and emissions of CO_2 are the most significant determinants of oil products import demand in Nigeria. Trade Openness was found to be insignificant. The analysis showed no causality between the consumption of renewable energy and some of its determinants. However, unidirectional causality runs from CO_2 emission to GDP which implies that fossil fuels are significant drivers of real GDP or economic growth for Nigeria. It is evidenced that environmental considerations are less critical than real income to the consumption and development of renewable energy in Nigeria. Policy-makers should aim for macroeconomic stability while implementing policies that drive increased production and consumption of renewable energy.

Keywords: Renewable Energy Consumption; Toda Yamamoto; CO_2 Emissions

ICESE20202008

Design and Fabrication of an Ablative Pyrolyzer for Production of Bio- lubricants and Chemicals in Oil Well Drilling Application

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Abstract

There is a need for urgent attention to producing chemicals/lubricants from biomass in Nigeria today with a population of 190 million people to reduce dependency on importation and use of conventional chemicals generated from fossil fuel. In this study, an ablative pyrolyser having 27.1 cm inner diameter, the height of 74.7 cm and volume of 40 litres was designed and fabricated. 150KW heater was wounded around the reactor chamber to provide a temperature of up to 1400°C. Lathe machine was employed to cut while grinding machine was used for smooth finishing of various materials like stainless steel and mild steel that were welded together to produce this type of pyrolyser. Ablative pyrolyser applies technology of thermal energy in the heated walls of the pyrolyser being transferred to the biomass by conduction in the absence of oxygen for onward disintegration into gas, bio-oil, and biochar. 12 kg each of *Tectona grandis* and *Rhopalosiphum maidis* was fed into the reactor and pyrolyzed at 500°C, the bio-oil product for both samples were mixed together and distilled at 120°C and the bio-oil distillate was characterized for density, kinematic viscosity, pH, acid value and free fatty acid content. The bio-oil distillate shows a density of 0.960 g/cc, pH of 7.2, kinematic viscosity of 84 cst and acid value of 42.20. This reactor has been found on average to melt 12 kg each of *Tectona grandis* and *Rhopalosiphum maidis* to 5353 and 3493 g crude bio-oil respectively for a period of 3 h. The mass of bio-char for *Tectona grandis* and *Rhopalosiphum maidis* were 3325 and 2614 g respectively while the reactor requires 8 h to cool before discharging the bio-char from the reactor. This research work can provide a basic designing formula for effective and workable ablative pyrolyzer fabrication for Nigerian wastes having high energy content.

Keywords: Bio oil; T*ectona grandis*; pyrolysis; reactor; *Rhopalosiphum maidis*; fabrication

PAPER ID: ICESE20202024

Plant Design of Waste Soybean Oil Biodiesel Production using KOH Catalyst

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Abstract

In this study, plant design of 1kg/hr waste soybean oil biodiesel from the two stage saponification- transesterification process, using KOH catalyst and CHEMCAD 7.1.2 software was produced. The engagement of the software for the design revealed that two (2) reactors, one (1) heat exchanger, three (3) mixers, two (2) heaters and two (2) pumps were required in the detailed plant design. The results showed that 0.005kg/hr of 0.125M NaOH (for saponification process), 1.010kg/hr of WPO (for both saponification and transesterification process), 0.5083kg/hr of methanol (for transesterification process), 0.0022kg/hr of KOH catalyst and 1.200kg/hr of cool water (for the washing of the biodiesel produced) were required. The high efficiency of the design process could be justified by the high purity level of biodiesel produced (94%) and total removal of free fatty acid in waste soybean oil during the saponification process

Keywords: Biodiesel, KOH, Plant design, Transesterification, Waste soybean oil

PAPER ID: ICESE20202026

The Role of Solvent Additive in Metal Nano-Composite Doped Thin Film Organic Solar Cell

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Abstract

The effect of solvent additive (1-chloronapthalene) and cadmium doped barium nitrate nanoparticle on the performance of thin film organic solar cells based on P3HT: PCBM was investigated. The use of the solvent additive and nanoparticles was found to improve the photogenerated current and power conversion efficiency of the fabricated devices. The improvement in the power conversion efficiency is attributed to the polymer crystallinity due to the addition of solvent additive and local surface plasmon resonance (LSPR) by the nanoparticles. Further investigation on the charge transport properties, structural and morphological properties of the nanoparticles was carried out.

Keywords: Nanoparticle; power conversion efficiency; solvent additive

PAPER ID: ICESE20202022

Techno-Economic Analysis of Standalone Solar Power System for Small and Medium Scale Enterprises (SMES) in Nigeria

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Abstract

One of the challenges facing small and medium scale enterprises in Nigeria is erratic nature of power supply. Most SMEs augment the power supply with gasoline generator with the believe that it is cheaper. As an alternative, a standalone solar power system is suggested. The results of technical and economic analysis of standalone solar power system carried out for an average barbing saloon outfit in Nigeria is presented in this work. With an assumed power of 409W and energy of 1750Whr/day for an average barbing saloon, the design arrived at 1kVA inverter, 3 nos 12V, 200AH battery, two units of 250W PV module and a 12V, 30A Charge controller. Using a life cycle cost analysis, the solar system gave a cost of ₦ 404,881.4 while a 1kVA gasoline generator resulted to ₦527,563.53 over a life cycle of 5 years. The paper concludes that though initial cost of gasoline generator is cheap, solar system saves cost in the long run in addition to clean nature of the power supply and thus it is recommended for use by barbing saloon in Nigeria.

Key words: *Solar, SMEs, Gasoline Generator, Life Cycle Cost.*

PAPER ID: ICESE20202030

Pillars of Effective and Efficient Energy Systems in Nigeria

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Abstract

Nigeria is posed with a myriad of challenges to achieving efficient energy systems; the colossal collective demand for sufficient electricity for approximately 200 million is a concern. Another challenge is the mismanagement of Nigeria's abundant resources, by individuals and by groups. It has withheld us, for decades, from making the bold and rapid progress which ought to have made for energy system. This report explores the concept of energy system in Nigeria perspective and progresses.

Keywords: energy, electricity, power, development, industrialization, privatization.

PAPER ID: ICESE20202041

Design and Fabrication of Cylindrical Ceramic Crucible as Insulator for Energy Storage Systems

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Abstract

The ubiquitous demand for thermal energy in domestic and industrial applications, necessitates the need that heating systems, are effectively insulated, portable and occupy less space. This research focuses on the design and fabrication of a portable crucible for insulating a thermal energy storage system operating at high temperature. The insulating properties of the crucible were also investigated. Two ceramic crucibles, comprising of kaolin, and a mixture of kaolin and sand, were fabricated using the parameters obtained from simulation. When subjected to thermal treatment, the crucible comprising of kaolin and sand structurally failed at 75 □. However, the crucible comprising of only kaolin remained stable and attained steady state at a temperature of 200 □. The heating and cooling temperature curves of the kaolin crucibles were plotted and the estimated thermal conductivity of the kaolin crucible was 0.09 W/mK at 200 □; this is in good agreement with theoretical values of kaolin which range from 0.03 to 0.3 W/mK. The computed thermal diffusivity is 4.9x10-8 m^2/s, which is much lower when compared with the thermal diffusivity of insulating materials like polystyrene, glass fibre and rock wool. Thus, the rate at which heat diffuses through the crucible is low, making it suitable for insulating a thermal energy storage material operating at 800 □. The results of this study will facilitate an efficient way of transporting stored thermal energy in portable insulating containers.

Keywords: Cylindrical ceramic crucible; Energy storage system; Thermal insulating materials; Cooling curves; Thermal diffusivity; Thermal Conductivity

PAPER ID: ICESE20202044

The Effect of Dye Extract Purification on The Performance of Dye Sensitized Solar Cells

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Abstract

Anthocynanins and anthocyanidins have been widely applied in various fields such as sensitizers in dye sensitized solar cells (DSSCs). DSSCs provide an alternative to the present photovoltaic technology due to its numerous advantages such as flexibility, easy fabrication, semitransparency and colour tunability. In this study, we carry out comparative analysis between crude and purified extracts obtained from withered leaves and flowers of *Euphorbia mili* (crown of thorns) as organic sensitisers in DSSCs. The optical and photovoltaic properties of the extracts was examined using an ultraviolet (UV) spectroscope and solar simulator respectively. There were observed shifts in the wavelength of the absorptions at (350 – 380 nm) for both extracts (crude and purified). The results from the photovoltaic parameters indicate an improved power conversion efficiency (PCE) for the crude extract of the flower at 2.72%.

Keywords: Anthocyanins; crude; dye sensitized solar cells; purified.

PAPER ID: ICESE20202046

Progress on organic solar cells: A short review

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Abstract

An alternative solar energy converter to silicon solar cells is organic solar cells. Organic solar cells offer several advantages compared to inorganic molecules based solar cell devices. In the last decade, intensive research efforts towards reaching the required 10 % power conversion efficiency (PCE) threshold and device environmental stability still remain a main challenge. Polymers are often used as donor layers, buffer layer and other polymer-based micro/nanostructures in binary or tenary devices to influence device performances. In addition, the benefits of organic solar cells for practical application, and possible solutions are also assessed.

Keywords: Buffer layer**;** organic solar cells; power conversion efficiency; polymer.

PAPER ID: ICESE20202050

Biofuel; A Sustainable Renewable Source of Energy-A Review

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Abstract

The improvisation of renewable energy sources is of global concern as there is a foresight of the depletion of fossil fuels. This is because of the dependence on energy fuel consumers over time and the consequent detriment on the biotic and abiotic component of the environment. The need for alternate source of energy source is therefore imperative, the scientific community therefore considered several options especially biofuels and this hinges on the type of biomass. Agro wasteis most considered because of its abundance but it is competed for as feeding purposes in human and animals. However, Lignocellulose is being utilized recently. The preliminary step of the conversion of lignocellulose (pre-treatment) stage is the most challenging which is presented in three major methods; physical, chemical and biological treatment. This review assessed its sustainability and the limitations of each of these methods. The biological pre-treatment poses to be a cost-effective method with low yield of products. These shortcoming could however be managed by redesigning the procedure for a partial chemical pre-treatment, optimization of the process parameter such as pressure, temperature and genetic manipulation of microorganisms of choice.

Keywords: Biofuel; Biodiesel; Biogas; Renewable; Energy; Nanoparticles; Agro waste

PAPER ID: ICESE20202063

Prospects of Biofuel Production in Nigeria: A Short Review

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Abstract

There are lots of potentials in Nigeria that are grossly underutilized. One of such is the biofuel production project. Over 400 million tons of biomassesand 150 million tons of agro-wastes that could have serviced the biofuel project are wasted annually. The biofuel project in Nigeria is currently plagued with challenges that have crippled other sections of the economy. This review examines the potentials and challenges of the biofuel production project in Nigeria. The findings in this write-up will serve as blue print to spark-up public interest, as well as enlighten local and public financial institutions. It is envisaged that the biofuel project in Nigeria is a vital tool to trigger the sustainable development goals (SDG) number 1 and 7.

Keywords: biofuel, energy, renewable energy, prospects, challenges

THEME: ENERGY MANAGEMENT

PAPER ID: ICESE20202004

Carbon Nanotubes as a Multifunctional additive and its Impact in Oil Based Mud System Drilling Hydraulics

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Abstract

The rheology of drilling fluids should exhibit shear thinning characteristics to have less resistance at high shear rates. Nanoparticles can enhance the rheological properties of drilling fluids using different mechanisms. Nanomaterials are engineered materials with at least one dimension in the range of 1–100 nm, and Carbon nanotubes were chosen in this study due to their unique physio-chemical properties, thus, a good candidate for smart oil-based mud formulation. This study investigates the multifunctional ability of carbon nanotubes in oil-based mud system and its impact on the drilling hydraulics. Application of carbon nanoparticles in literature have mostly be on water-based mud systems and mostly at weight volume less than 2 g. Effect of carbon nanotubes on flow properties of oil-based mud systems within the range of 1 to 3 g weight volume was analysed. The result shows that the carbon nanotubes improved the flow properties of the formulated oil-based mud systems into an acceptable and desirable range required for optimal hole cleaning. The flow behaviour index (n) for the oil-based mud systems for drilling hydraulics calculations were between zero and one, thus, they behaved like pseudo plastic fluids (Non-Newtonian fluids) both in the drill pipe and the annulus. It was also observed

that, there was increase in the ratio of flow behavior index to consistency index (□/□) and this will help reduce cuttings bed height in the wellbore.

Keywords: Oil based mud system; Carbon Nanotubes; Flow properties; Drilling hydraulics; Drilling Fluids; Rheological analysis

PAPER ID: ICESE20202005

Physico-Chemical Properties, Thermal degradation, and Spectroscopic studies of Hybridized Waste Palm Oil

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Abstract

Hybridization is one of the techniques for unravelling novel feedstock and diversifying the existing waste cooking oil feedstock. In the present research, in-situ hybridization was carried out on waste palm oil (WPO) samples obtained from different sources. Theproperties, thermal degradation, and spectroscopic studies were performed on five samples of WPO, comprising two individual samples and three hybridized samples and their results compared. Hybridization was found to increase the iodine value, reduces the density, kinematic viscosity, and saponification value but unaffected by the acid value, cetane index and higher heating values of the samples. Though all the samples witnessed one stage of thermal decomposition, samples A, B, C, D, and E experienced 13 %, 11 %, 10 %, 8 %, and 3 % weight loss, respectively between 320 □C and 470 □C. The peak of derivative weight percentage of -0.06 %m-1was observed at 433 °C, -0.05 $\%m^{-1}$ at 430 °C, -0.11 $\%m^{-1}$ at 432 °C, -0.09 $\%m^{-1}$ at 422 °C, and -0.06 $\%m^{-1}$ at 430 °C for samples A, B, C, D, and E respectively. The infrared spectrum curves revealed that the peculiar peaks at 1226cm^{-1}, 1363cm^{-1}, and 1378cm^{-1} found in the parent samples A and B disappeared in the spectrum curves of hybridized samples C, D, and E. The outcome of this investigation shows that hybridization is a veritable technique for improving the quality and creating novel affordable quality, creating novel affordable, and high-quality feedstock for biodiesel generation.

Keywords: Characterization, feedstock, hybridization, waste palm oil, biodiesel

PAPER ID: ICESE20202011

Developing a Multi-factor Authentication-based Cardless Electronic Payment System

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Abstract

The Nigerian economy is still largely cash based arising from inadequate infrastructure, trust and instability in the banking sector. However, there are improvements in the adoption of the electronic platform through the concerted efforts of government by introducing some policies that encourage its use. The recent policy is the cashless policy, which is aimed at reducing the use of cash to the barest minimum. This paper is aimed at developing an electronic payment system that integrates all the bank accounts of a particular holder together and access granted to them with or without a payment card through a multi-factor authentication procedure such as pin, fingerprint, irish or 3D facial recognition. The system will enhance ease of use as well as simplify the use of the e-Payment channels.

Keywords: - e-Payment, Fingerprint, Authentication, ATM, ICT, Mobile phones, and Cardless

PAPER ID: ICESE20202015

Renewable Energy Consumption Shocks on CO_2 Emissions and Economic Growth of Nigeria

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Abstract

The study investigates the impact of renewable energy consumption (REC) shocks on CO2 emissions and economic growth in Nigeria. The paper examines the causal link, co-integration relationship, historical time-varying effects and variance decomposition of generalised impulses amongst renewable energy consumption, CO2 emissions and economic growth (GDP) in Nigeria from 1990 to 2015. The analysis uses the Johansen cointegration and vector error correction model (VECM) to to explore the relationship among variables. The cointegration results show that long-run relationship exists among variables, which allows for the use of the VECM. In addition, the results indicate a bi-directional causal nexus between REC and GDP. Also, we observe unidirectional causal relationship that runs from REC to CO2 emissions. Historical decomposition analysis reveals that the response of GDP and REC experienced a persistent increase and positive impact from 2009 to 2015. The variance decomposition analysis predicts an increase in the use of renewable energy technologies in the five-year forecast period, although CO2 emissions will continuously be on the high due to dependence in fossil fuel consumption. The paper suggests environmental and tax policy instruments, as well as, effective governance to enhance environmental quality and encourage sustainable/green economic growth. The key instruments include: grants, feed-in-tariffs (FIT), production tax credits, renewable portfolio standards (RPS), and loans to enable industrial sector invest in renewable energy.

Keywords: Renewable Energy Consumption Shocks, CO2 emissions, Economic growth, VECM

PAPER ID: ICESE20202029

Role of Biomaterials in Automation

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Abstract

Technology in its real sense is in an advanced state to an extent that automation is the present-day mode of operating machinery and equipment. This technique of operating or controlling a process using a highly automatic means via electronic devices thereby reducing the human interface to a minimum, if not rather than eliminating it completely. Transformation of the global workforce has already begun through automation with innovations of robotics, artificial intelligence remote connectivity, additive manufacturing and medical innovations employing the automated means of delivering or administering drugs and performing surgery on patients. In the present day, various forms of automation are increasingly taking over the place of human thereby, putting a threat to supplant it. The role of biomaterials in automation is the main objective in this discuss.

Keywords: robotics, automation, metallic alloys, biomaterials, industrial automation, implants.

PAPER ID: ICESE20202031

A Review of Energy Consumption in Foundry Industry

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Abstract

Energy is a multiplying factor which allows man to translate various raw material and resources into useful items to meet the daily demands and necessities of human beings. Foundry technology involved casting from molten metal transferred into a mould and permitted to harden under varying conditions depending on the purpose. This paper reviews the foundry industry as an energy exhaustive industry, in the sense that it requires energy in various forms such as electrical, heat and mechanical to carry out various engineering processes to deliver the appropriate casting required. It also reviews the different methods are currently being employed to make the manufacturing process more efficient and each of them have led to an increase in energy demand. It is affirmed that the new methods involved in foundry and their energy management policy can led to more efficient energy consumption for casted product.

Keywords: Foundry, Energy, Energy Consumption, Efficient

PAPER ID: ICESE20202032

Challenges of Commercializing Research Output in Nigeria toward Meeting Sustainable Development Goal

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Abstract

Studies have shown that one of the various ways of developing technology in an ever-developing technological community is to commercialize the research output of research institutions. If this is achieved, it will influence rapid change in customer needs, change of the customer tastes and new developed interests will have been made that will be very difficult for companies and industries to solely rely on their input and ideas to sustain their dominance in the competitive market space. Hence, this study discusses the various challenges and problems involved in commercializing research output towards meeting the sustainable development goals as well as some ways to mitigate these challenges.

Keyword: Sustainability, Research Commercialization

PAPER ID: ICESE20202036

Evaluation analysis of a developed solar refrigerator using conventional refrigerant for rural and medical applications

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Abstract

This paper study the performance evaluation of a refrigeration system that operates on solar energy as alternative source of power to enhance the refrigerating effect, coefficient of performance and preservation of perishable items and short time drug such as vaccine, to remote communities and parts of the urban settlement around the developing nations where there is no access to modern electrical source. The system was made from locally sourced materials using a conventional refrigerant HFC134a as working fluid to improve thermal efficiency and stability of the vapour compression refrigeration system. The COP of the system was enhanced by 8.67% when working with solar and with energy reduction of 2.38% respectively. In case the weather is cloudy or during the night hour when the energy generation is low, the refrigerator can work on battery for an average of 12 hours if fully charge during the day to avoid idle time of the refrigeration system.

Keywords: Coefficient of performance; HFC134a refrigerant Refrigerating Effect

PAPER ID: ICESE20202037

Transition to Green Energy and Sustainable Development in Nigeria: A Prospective and Evaluative Analysis

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Abstract

Since the global discussions on climate change and environmental sustainability began, Nigeria has been actively involved in terms of participating, flowing with global trends and meeting its international obligations in that context. Thus, from the United Nations Framework Convention on Climate Change (UNFCCC) to Kyoto Protocol and then the Paris Agreement, Nigeria has been involved as it ratified and became a Party to them. Corollary to being a Party to the Paris Agreement, Nigeria committed itself to reducing its carbon emissions by 2030 by embracing clean, low carbon alternative energy sources to meet its domestic energy needs. Nigeria's commitment is not without challenges considering a number of factors, namely it is dependent on fossil fuels for its foreign exchange earnings, it has a lingering problem with gas flaring and spills, its energy holdings are mainly dependent on fossil fuels, and there is evident lack of capacity and capability to harness its renewable energy resources. These challenges notwithstanding, Nigeria has developed various policy frameworks with targets and projections aimed at harnessing its abundant renewable energy resources in order to transit to green economy. The question that this paper attempts to address is whether Nigeria has been able to harness its renewable energy resources to address its energy challenges as well as transit to green energy as envisaged by its various policy document. This paper engages secondary data in evaluating the extent to which the country has or has not transited to green energy as projected and targeted.

Keywords: Climate change, green energy, Paris Agreement, renewable energy, Nigeria

PAPER ID: ICESE20202038

Effect of Fin spacing on the Performance Evaluation of a Refrigeration System using LPG as Refrigerant

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Abstract

In this paper, experimental analysis was carried out on a vapour compression system by varying the parallel tube condenser fins spacing under the same atmospheric condition in a selected Refrigeration and Air-condition laboratory to examine the upshot on performance of the refrigeration system. The fins spacing were 2, 4 and 6 mm using Liquefied petroleum gas (LPG) as working fluid with a mixture proportion of 17.2% isobutane, 56.4% butane, 24.4% propane. The result shows that the coefficient of performance of the system while working with fins space of 2 mm increased by 28.8 and 35.9% than when the system worked with the fin space of 4 and 6 mm respectively. Energy consumed by the single hermetic compressor while the system worked with a condenser fin spacing of 2 mm reduced by 16.4 and 17.6% compared to the fins space of 4 and 6 mm while the pull down time of the cooling system was attained in 2 hours 45 minute with minimum evaporator temperature of -13 □ that runs with 30 g mass charge of LPG.

Keywords: Coefficient of performance; LPG, Fin space

PAPER ID: ICESE20202049

Information Communication Technology Access and use towards Energy Consumption in Selected Sub Saharan Africa

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Abstract

Major new opportunities abound from energy integration among regions in Africa with the sole aim of reducing transaction costs and with the role of ICT, it would take energy from where it is easily affordable to places where it is needed. Given the controversy over the net energy-saving effect of ICT, this study focuses on a new perspective, that is., Household energy consumption, to ascertain the use of ICT by household in accessing energy. This study explores the extent to which Energy integration among the five regional power pools in Africa can achieve ending energy poverty among region members using three measures of energy sustainability, namely: energy security, energy equity and environmental sustainability**.** The study utilises the Pooled Ordinary Least Squares technique on data from the SSA economies over the period 2000-2019.The study concludes by suggesting the acceleration of ICT development in Sub-Saharan African economies, given the global common task of sustainable energy consumption.

Keywords: Technology and Distribution; Common Knowledge; Aggregate Energy Consumption; Sustainable Development; Energy; Green Technology, ICT-based; Households.

PAPER ID: ICESE20202054

Misery and Economic Growth Nexus in Nigeria; Implications for Energy Management

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Abstract

At first glance, misery seems unquantifiable but has been established to be an aggregation of unemployment and inflation. Nigeria is in a pitiable condition as she is ranked the 6th most miserable country in the world. Economic growth could be ascertained as one avenue to combat the issue of misery due to its role in achieving sustainable development. This study aims to ascertain the effect of economic growth on Misery in Nigeria, that is, to determine whether economic growth rate has strengthened or weakened the misery of Nigerians in the long run. Misery is the dependent variable which will be captured by aggregate inflation and unemployment while the regressors are RGDP growth rate, access to electricity, population growth rate and death rate. This study adopts Autoregressive Distributed Lag (ARDL) model because it considers policy lags of economic phenomena and allows combined order of integrations, precisely I(0) and I(1). The study finds an inverse nexus between economic growth and misery. Hence, recommendations were made in form of measures to control population growth, more accessible electricity and the need for economic growth to increase at faster and higher pace to combat high misery levels in Nigeria.

Keywords: Misery, Economic Growth, Nigeria

PAPER ID: ICESE20202055

Liquid Liabilities and Growth Finance Nexus: Implications for Nigeria's Energy Sector

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Abstract

Liquid liabilities are required for the development of key sectors that drive the Nigerian economy by ensuring that credits are made available for investment purposes. However, controversies concerning the effectiveness of investments in fostering economic growth in Nigeria exist. Thus, this study examines the relationship between liquid liabilities and finance for growth in Nigeria, with specific insight and implications for Nigeria's energy sector. In achieving its objective, the study utilises secondary data from the annual reports of the Central Bank of Nigeria (1980-2018). The study finds that gross domestic savings significantly drive finance for growth in the long-run compared to stock market development and Remittance inflows. The findings imply that to finance growth efficiently in the Nigerian economy, attention should be paid to liquid liability development policies such as driving gross domestic savings by all stakeholders and attention should be paid to the Nigerian energy sector as it possesses the potential to both be a source of liquid liability and a viable investment option.

PAPER ID: ICESE20202058

Information Communication Technology Access and Use towards Energy Consumption in Selected Sub Saharan Africa

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Abstract

Major new opportunities abound from energy integration among regions in Africa with the sole aim of reducing transaction costs and with the role of ICT, it would take energy from where it is easily affordable to places where it is needed. Given the controversy over the net energy-saving effect of ICT, this study focuses on a new perspective, that is., Household energy consumption, to ascertain the use of ICT by household in accessing energy. This study explores the extent to which Energy integration among the five regional power pools in Africa can achieve ending energy poverty among region members using three measures of energy sustainability, namely: energy security, energy equity and environmental sustainability**.** The study utilises the Pooled Ordinary Least Squares technique on data from the SSA economies over the period 2000-2019.The study concludes by suggesting the acceleration of ICT development in Sub-Saharan African economies, given the global common task of sustainable energy consumption.

Keywords: Technology and Distribution; Common Knowledge; Aggregate Energy Consumption; Sustainable Development; Energy; Green Technology, ICT-based; Households.

ICESE20202060

Optimization of the mixing ratio for Production of Particleboard from Groundnut Shell and Rice Husk

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Abstract

The aim of this work is to optimize the mixing ratio for production of particleboard from Groundnut Shell andRice Husk. This research is tailored to develop new environmentally friendly and optimization approach for turning agricultural waste into quality value-added composite particleboard (PB) for sustainable development. Box Behnken Design was used to optimize the effect of the three process variables: Groundnut husk (0-100 g); Rice husk (0-100 g) and resin (1.5-2.5 g) respectively. The optimal process levels predicted by the software for the PB was validated. The PB produced was analyzed using Scanning Electron Microscope. The best levels from the interactions of the variables were: groundnut husk:50g; rice husk:100g and resin:3.50 with MOR of 3.50 N/mm^2 and MOE of 932.4 N/mm^2 while the predicted optimal levels of 65.99g; 86.34g and 1.69 was validated. The result of the Validation gave MOR of 3.49 N/mm^2 and MOE of 932.10 N/mm^2. It can be concluded that particle board produced at the optimized conditions satisfied the American National Standard ANSI/A208.1-999 specification for general purpose particle boards for sustainable development.

Keywords: Particle board; Urea Formaldehyde; Groundnut Shell; Rice Husk; Optimization.

PAPER ID: ICESE20202069

Physicochemical and Surface Properties of Nanoparticles for Engineering Applications - A Review

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Abstract

Over the past few decades, scientists and engineers have been working on mastering the intricacies linked with nanoscale particles. Now researchers have gained valuable insight on how to create nanoparticles with physicochemical properties never envisaged before. These engineered nanoparticles can then be incorporated into synthesizing nanomaterials for novel applications in a diversified range of disciplines such as medicine, cosmetology, engineering, food packaging and bioprocessing, and many more, to achieve specific performance goals. This review focuses on the electronic, optical, magnetic, mechanical, thermal, vibrational and surface properties of nanoparticles and how they are generally being utilized in engineering.

Keywords: Nanoparticles, Nano-Additives, Physicochemical, Nanotechnology, Surface Properties

ICESE20202072

Users' Perception of the Impact of Prepaid Metering on Their Energy Consumption Behaviour: A Case Study of Victoria Garden City Estate, Lekki, Lagos State

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ABSTRACT

There is a global drive to reduce energy consumption. Consequently, many countries are adopting smart metering at the domestic level. In 2006, Nigeria commenced introduction of the electricity advanced metering infrastructure (AMI), a type of prepaid meter with some smart features. This paper examined the perceptions of domestic electricity consumers on changes in their electricity consumption behaviour since the installation of the prepaid meters in their homes. The specific objectives were to i. ascertain if there had been changes in consumers' energy consumption behaviours, and ii. the most significant behavioural changes deemed to have taken place. Data for this paper is drawn from a case study involving 350 residents of the Victoria Garden City, Lagos State, Nigeria – one of the earliest residential neighbourhoods to benefit from the AMI programme in Nigeria. The quantitative research method using the questionnaire as the main data collection instrument was adopted for this research. However, it was complimented by qualitative data obtained through interviews using interview guides. The quantitative data was analysed using the Statistical Package for the Social Sciences (SPSS) version 20 and was presented in tables. The qualitative data was content analysed.

The study found that respondents perceived changes in their energy consumption, consciousness and behaviour since the installation of the prepaid meters in their homes. Out of the six energy consumption behaviours investigated, the three most highly ranked behaviours were switching off electrical appliances when not in use (4.32), consideration of energy rating of electrical appliances before purchases (4.26) and avoidance of use of some electrical appliances (4.17). A major implication of the findings is the need for the electricity distribution companies to encode more interactive features in the meters and support consumers with information that will guide

their consumption behaviours to achieve maximum efficiency. This will entail devoting attention to research, sensitizations, feedbacks and other forms of engagement with customers.
Keywords: Prepaid metering, domestic energy consumption behaviour, households, Victoria Garden City

PAPER ID: ICESE20202079

Energy situation in Nigeria and the way out through bioresources

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Abstract

The energy crisis in Nigeria is identified as the major factor that has kept 65% of its population below poverty line. This review examines the current state of energy crisis in the country and the abundant resources that abound. In 2017, Nigeria is ranked by Food and Agriculture Organization (FAO) to be within the first ten countries that have arable land and cropland area in the globe. Also, the current production of certain agricultural product would certainly attract investors. It was discovered that the biofuel project and plant-generation project would be very successful if government can revamp its energy policy and rapidly invest in the provision of reliable infrastructure such as good roads, proper water, and power supply to enhance production of feedstock.

Keywords: Energy, biofuel, power generation, Nigeria

ICESE20202100

Gender Diversity, Foreign Directors and Environmental, Social and Governance (ESG) Disclosures of Listed Firms in Nigeria

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Abstract

The advent of socially responsible investing (SRI) and sustainability reporting has made ESG disclosure more important today. The purpose of this study is to examine the relationship between some selected board characteristics and its effect on Environmental, Social and Governance (ESG) disclosures on listed firms in Nigeria. The board characteristics are gender diversity and presence of foreign directors. To achieve the objective of this study, a total of 30 firms listed on the Nigerian stock exchange was used. A disclosure index based on the GRI G4 performance indicators was developed to measure ESG disclosures from the companies report for the years 2012-2016. The multiple regression analysis was used to test the hypotheses in the study. The results showed that board gender diversity and the presence of foreign directors have significant and positive relationship with ESG disclosures. Therefore, companies should have gender diverse boards so as to increase their ESG disclosures in order to maintain legitimacy.

Keywords: ESG disclosure, Board characteristics, Sustainability reporting, gender diversity.

ICESE20202101

The Effects of Board Ethnicity and Qualification on Environmental, Social and Governance (ESG) Disclosures of Listed Firms in Nigeria

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Abstract

The inconclusive nature of the above topic has necessitated the need to empirically discover the relationship and effect certain board attributes have on environmental, social and governance (ESG) disclosures of listed firms in Nigeria. The board attributes are ethnicity and board qualification. To achieve the objective of this study, a total of 30 firms listed on the Nigerian stock exchange was used. A disclosure index based on the GRI G4 performance indicators was developed to measure ESG disclosures from the companies report for the years 2012-2016. The multiple regression analysis was used to test the hypotheses generated for the study. The results however, revealed that board ethnicity and board qualification do not have a significant relationship with ESG disclosures.

Key words: ESG disclosure, Board attributes, Sustainability reporting, Board diversity.

THEME: BUILT ENVIRONMENT

ICESE20202007

Dimensions of Impacts of Rapid Population Growth on Public Housing Developments and the Influence on City Resilience

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ABSTRACT

Rapid population growth in urban centres has been identified as a threat to city resilience. However, in a developing country like Nigeria, there is a dearth of research on how dimensions of impacts rapid population growth on public housing developments influence city resilience. This study evaluated selected public housing schemes in Abuja, Nigeria, with a view to identifying the dimensions of the impacts of rapid population growth on the socio-economic and environmental fabrics of the public housing schemes, and determining their influence on city resilience. Data for this study were collected from questionnaire administered to 345 residents of the estates selected. The resident samples were asked to indicate their level of agreement/disagreement with 26 statements describing the possible impacts of rapid population growth in the housing estates they lived. The questionnaire was based on a 5-point Likert type scale ranging from 1=Strongly Disagree to 5=Strongly Agree. The data obtained were analyzed using descriptive statistics, factor analysis and Principal Component Analysis (PCA) to identify the key dimensions. Seven dimensions of impacts of rapid population growth on the estates emerged. The first dimension, which accounted for around 11.05% of the variance in the data, comprised the addition of more rooms, consideration of distance to place of work and economic situation in the estates. The application of this result to housing that influence city resilience is drawn from previous study which identified five key factors of housing that influence resilience

and adaptation to stress. The result reveals that none of the seven dimensions of impact of rapid population growth on the estates that emerged in the current study appears as a factor that influences housing resilience and adaptation to stress. This study implies that for public housing schemes in developing countries like Nigeria to influence city resilience, housing designers and developers should consider factors of housing that are more likely to adapt to the stress of increasing population.
Keywords: Abuja, Housing for resilient city, Public housing, Rapid population growth.

ICESE20202009

The Role of Artificial Lighting in Architectural Design: A Literature Review

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Abstract

Artificial lighting design is an integral part of the building design process. However, little or no emphasis is usually placed on its importance in the initial design process, as lighting is often understood as merely the idea of illuminating spaces. This paper investigated the variety of roles artificial lighting plays in architectural designs in the context of psychology and communication. Data was compiled from existing knowledge on artificial lighting techniques, tools and practices to develop a literature for better understanding of the capabilities of artificial lighting within the urban context. The study focused mainly on the use of artificial lighting in the 21st century, in a bid to capture the diverse roles artificial lighting plays in the built environment in recent times. The study is a qualitative research that relied strictly on data from secondary sources. Relevant scholarly publications were sourced and data retrieved from them by textual analysis. The publications were gathered using Google search engine via the internet. The data were analysed by content analysis. The analyzed data were grouped in themes and presented using descriptive approach. The study revealed that artificial lighting plays important roles in delineating spaces, beautifying environments, improving workers' productivity level, as well as serving as a tool for navigation and communication in the urban environment. The paper concluded that over the years, artificial lighting has evolved beyond spatial illumination, but now functions as a tool for passive non-verbal communication. Therefore, planning for artificial lighting should be introduced early in the design process to avoid incurring unnecessary cost and time wasting usually associated with late decision making in the building industry.

Keywords*:* Artificial lighting, Luminaires, Illumination, Communication, Productivity, Navigation.

ICESE20202010

Designing a Secured Mobile Money Platform for Rural and Urban Dwellers in Nigeria

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Abstract:

The adoption of cashless policy in Nigeria is gradually taking shape but at a slow rate. The scheme was formulated to reduce the amount of cash in circulation and to gradually migrate the populace to the electronic platform. Six years after its introduction, there are a number of issues ranging from inadequate infrastructures and facilities to the level of literacy that inhibits its adoption in the rural areas. This paper proposes a money transfer system that offers ease of sending money between relatives in the urban cities and their rural community friends and families and also act as a secondary legal tender for exchange of goods and services in rural markets and urban communities. AngularJS (A JavaScript Framework) with Ionic framework was used to build the hybrid mobile application while the web dashboard was built with AngularJS, HTML and CSS. The Middleware was built with SailsJS, which is a NodeJS Framework while the Backend was built using MySQL. The system employs user-centered design to foster usability and enhance financial inclusion for inhabitants of rural areas as well as break the phobia for technology.

Keywords: Cashless, e-Payment, Financial Inclusion and Remittances, ICT, Mobile Money, Mobile phones.

ICESE20202012

A search for appropriate anchor tenants in shopping malls in Lagos metropolis

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Abstract

Anchor tenant which have been regarded as tenants in shopping mall that propel visitation and activities in the mall has been studied majorly in line with its impact on customers, other shopping outlets and generally on the mall. There appears to be no work on a search for the constituents of anchor tenant in the mall. This happens to be the crux of the present study with emphasis on three notable malls in Lagos Metropolis, The Palms Mall, Ikeja City Mall and Adeniran Ogunsanyan Shopping Mall. A total of 207 questionnaires were distributed to customers of the mall using the mall intercept approach of which a cumulative response rate of 81% was achieved. Data collated which was geared towards ascertaining the stores/products offered that attract the customers to the malls was rated on a likert scale of 5 and analysed using the weighted mean and result substantiated with the chi-square test of significance both at the 0.05% and 0.01% level of significance. The study advocated that mix of the plethoric of Departmental Stores (4.7917); Entertainment centres (4.6250); clothing foot wares and accessories (4.5833); Electronics and electrical appliances (4.4881); food and beverage (4.4583); food stuff (4.2381); Watches, jewellery and ornament (4.1904); and Financial Services (4.0000) will be best suited as anchor tenants in the study area.

Keywords: Anchor Tenant, Shopping Mall, Stores, Lagos Metropolis

ICESE20202014

Resilient Design Strategy: Engaging Amphibious Structures to Combat Flood in the Development of an Internally Displaced Persons Settlement Scheme in Nigeria

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Abstract

Flooding is a natural disaster that has been on the increase in many parts of the world. In the last two decades, this unforeseen destructive occurrence has led to the loss of millions of lives and properties valued at millions of dollars in many countries, including Nigeria. Though several attempts have been advanced as possible solutions to help curb the devastating consequences of flooding in the past, many of the solutions have proven not to be as effective as expected. This paper, examined the potentials amphibious structures present as a resilient strategy to combat flood, to develop an architectural design proposal of a sustainable Internally Displaced Persons (IDPs) settlement, that can withstand the peculiar challenges caused by flooding in Nigeria. The study adopted qualitative research approaches. Data consulted to develop the design proposal were assembled through random search of the internet from archival documents related to the subject and the data were analysed by thematic textual analysis. The findings were presented with texts, architectural two-dimensional and 3-dimensional drawings, tables and plates. Useful information from the analysed data became the conceptual framework on which the scheme was developed. The outcome of the study is the development of an architectural design scheme that utilised a combination of amphibious structures strategy and simple sustainable innovative design measures to proffer solution to an environmental problem, as well as the peculiar social, cultural and religious issues associated with the study area. The conceptual base on which the model was developed is for the settlement to co-exist with flood, rather than the common concept of resisting flood. Though the design was developed for a location in Girei, Adamawa State in the Northern part of Nigeria, the scheme is a useful guide for designing settlements and

addressing issues in flood-prone areas in other parts of the globe, as well as a valuable educational material on issues pertaining to the development of settlements in flood-prone areas.

Keywords: Amphibious Structures, Resilient Design, Flood, Internally Displaced Persons Sustainable Settlement, Nigeria.

ICESE20202016

Homelessness Factors and Psychological Wellbeing Concerns in Nigerian Cities

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Abstract

Homelessness is a social, psychological, environmental, economical, family, and individual condition that describes the homeless. The objective of this paper is to identify the homelessness factors and its psychological wellbeing concerns on the urban residents in Nigeria. The study employed qualitative method using observation schedule, photographs, tables, charts and interview guide to collect data among homeless people in cities across the six geopolitical zones of Nigerian. Findings indicate that homelessness are in categories, and are characterized by factors such as psychological, anthropological, ecological, economic, cultural, sociological and religious. The psychological wellbeing implications of homelessness among the homeless population in Nigerian urban cities were highlighted. The result of study showed that homelessness factors in Nigerian cities can predict the severe health and psychological wellbeing consequences of urban residents. It was concluded that the concerns of homelessness on the psychological wellbeing and general health of the homeless in Nigerian cities require urgent attention.

Keywords: Homelessness, homelessness factor, Socioeconomic, Psychological wellbeing, health concerns, Nigerian Cities

ICESE20202017

Promoting Green Urbanism in Nigerian Purlieus as Therapy for Psychological Wellbeing/Health

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Abstract

Green urbanism highlights on reducing unforeseen dangers to human wellbeing through exposure to various environmental hazards, poor living conditions and other challenges associated with purlieus. This paper examined the influence of green urbanism on psychological wellbeing (physical symptoms and positive functioning) of residents in urban sprawls. Participants were 240 residents of purlieus' in Ota, Ogun, Nigeria randomly selected to participate in the study. They completed standardized questionnaires which measured demographic variables, Physical symptoms and Positive Functioning. Data analysis was done using inferential statistics. Findings indicated that Physical Symptoms (PS) means score was found to increase as number of children in the family increases. Positive functioning (PF), among the participants were found to decrease as the number of children in the families increases. Physical symptoms (PS) increases as the length of stay in the houses increases among the participants while Positive functioning (PF) was found to be decreasing. Most of the houses were constructed in the 2000s yet they do not meet the standard practice in sustainable buildings. The poorly built houses are situated in unhygienic environment where basic amenities are unavailable. The implication of this is that the occupants of these building are prone to high level of physical symptoms such as stomach upset, headache, backache, have trouble sleeping, diarrhea, dizziness, tiredness and fatigue. The result of the study has addressed health related issues in built environment as well as showed that built environment should have an organic sustainable content (green living initiatives) for healthy living and psychological wellbeing.

Keywords: Green Urbanism, Green living initiative, Purlieus, Psychological Wellbeing, Therapy for Health

ICESE20202018

Socio-Cultural Resilience to Domestic Space Change, the Benin Traditional City Experience, Nigeria

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Abstract

Research over time has revealed that activity spaces in domestic home have undergone evolution, adaptation and resilience over the years across Benin residential zones, Nigeria. Space segments/activities sections like cooking/eating, household goods storage, visitors and conveniences sections have somehow remain unchanged in terms of function, meaning, and arrangement. The study identified socio-cultural factors as responsible for resilience of domestic space to change in Benin domestic architecture across Benin City. The paper engaged both qualitative and quantitative research method. Triangulation was adopted for collection through focused group discussion using Semi-structured interview guide, questionnaire, observation guide and photographs. Factor analysis was use to analysis of data in order to reduce the identified socio-cultural factors to sizeable portion. The finding showed that, whilst some activity space, it size and location have evolved in Benin contemporary architecture, the style has remained intact. For instance some activity spaces in some residential zone of the city have been adapted to suit the new realities. Further observation itemised the socio-cultural factors that are responsible for resilient to change in Benin domestic architecture. Result of research underscores the role of culture in process of architectural development amidst rapid urbanization. Research upon completion is expected to be a good case study for measuring resilience to evolution of spaces in typical house setting in any African traditional city.

Keywords: Socio-Cultural Resilience, Domestic Architecture, Domestic Space Change, Traditional City, Urbanization.

ICESE20202021

Impact of Classroom Environments' on the Academic Performance of Architecture Students

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Abstract

The variety of physical locations, cultures and contexts in which students learn is referred to as the Learning environment. This definition recognizes that students learn in various ways in very diverse contexts. Because students must learn, the aim is to create an aggregate learning environment that optimises students learning abilities. Nigerian Schools of Architecture face the various challenges of out-dated design, declining conditions, and capacity utilization pressures. The effects of these conditions are threats to the academic performance of the students. The study aims to investigate and assess the impact the learning environment has on the academic performance of students of Architecture in school in Ogun state, Nigeria. This research made use of quantitative and qualitative research approach. The Data were collected through structured questionnaire, and the IBM SPSS (Statistical Package for Social Sciences) was used to analyse the quantitative data. Results show that classroom environment has effects on students' academic performance. This is due to their satisfaction and comfort with the learning environment. Findings also show that the comfort derived from facilities and physical components within the classroom affects their academic performance. Although the research findings have shown that the physical components of the classroom learning environment have no direct impact on the students' academic performance, based on the research it is recommended that visual learning aid should be maximized. Also, the classroom facilities should be improved upon to encourage students to make use of their classrooms. In conclusion, the classroom environment affects but does not have direct impact on students' academic performance; however, the perception of students on these components should be explored to create a comfortable classroom environment.

Keywords: Academic Performance, Architecture Students, Classroom, Learning Environment, Ogun state, Satisfaction.

ICESE20202023

Understanding Visual Quality Assessment: A Case Study of Covenant University Senate Building Façade

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Abstract

Visual quality assessment plays a key role in determining the visual sustainability of the physical world. Diverse studies have been carried out on the subject of visual quality in architecture from other parts of the world, yet very little is seen on record in the Nigerian context, and a decline in university visual property is also on the increase. In the light of this, the covenant university senate building façade was considered for this study. Therefore, this study is aimed at identifying the architectural elements on the covenant university senate building facade with a view to understand users' perception for future application in architectural education and visual sustainability of the building typology. A survey and case study research designs were adopted with the stratified random sampling technique used in selecting respondents. Totally, 577 valid responses were collected from respondents in ten selected universities in southwest Nigeria and analysed descriptively using the Statistical Package for Social Sciences (SPSS). Photograph of the covenant university senate building façade was attached to the questionnaire to serve as bases for assessing the facade. The results from the study revealed that façade shape and height were perceived as the most interesting in the façade attractiveness. The study implies the need for training of architects on the perception of architectural design elements for effective facade conceptualization in designing. This in essence will enhance the attractiveness of the university senate building façade and ultimately the entire campus visual sustainability.

Keywords: Aesthetics Perception, Building Façade, Visual Sustainability, Visual Quality Assessment

ICESE20202025

Youth Employment Creation as an Inclusive Solution for Sustainable Development: Lessons from the 'Double You Digital Skills Initiative' in Nigeria

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Abstract

One of the most pressing issues facing world leaders in the 21st Century is increasing youth unemployment. In Nigeria, youth unemployment hit an all-time high of 55.4% at the third quarter of 2018. Youth unemployment has negative implications on economic and social progress. Digital skills have potentials for boosting decent jobs for both gender youth groups. Evidence shows that 55% of Nigeria's populace subscribes to the internet with the youth constituting a great proportion of internet users. Despite this, the Nigerian youth still lacks requisite digital skills training relevant for workplace and for creating decent jobs. With lean annual budget allocation for infrastructure and social development projects, there is a need to optimize limited available resources with a view to guiding the design and implementation of digital skills training programs. Thus, this paper highlights the lessons learnt from a digital skills training program. It adopts a case study research design with the use of youths from different States of Nigeria who registered for a digital skills training program in 2019. The data is analyzed using statistical tools. The lessons from the digital skills training documented in the paper are useful for policy with respect to the designing and implementing of digital skills training programs.

Key words: Digital skills; Gender; Internet; Nigeria; Tertiary institutions; Youth unemployment

ICESE20202027

Imprints of Security Challenges on Vernacular Architecture of North-Eastern Nigeria

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Abstract

Despite the significant benefits associated with traditional architecture and its environmental responsiveness, efforts to utilize and explore its characteristics are marginal. It is apt to ask why little attention on knitting modern environment with Nigeria vernacular architecture of northern Nigeria. Is security the fundamental component of shelter playing any major role in this drift of design theory? The paper examines the influence of security threats on the architectural form of contemporary Northern Nigerian architecture with Maiduguri, Nganzai and Monguno local government areas as case study. Utilizing primary data obtained through photographs taken of northern traditional architecture and secondary data from published literature, the research result demonstrates the gradual shift of Northern Nigeria vernacular architecture to accommodate the security challenges facing the region. Its conclusion advocate for the interweaving of vernacular architecture to the metamorphosing modern environment to address the prevalent issue of sustainability.

Keywords: Security, Vernacular, Architecture, Northern Nigeria, construction

ICESE20202028

Impact of Television Health Programmes: Women Resident at the Bells Community, Ota in Focus

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Abstract

Health is of utmost importance to the development of individuals, community, state and any nation at large. The study explored the impact of Television Health Programmes on women resident at The Bells Community, Ota, Ogun State, focusing on health programmes on AIT. This is an empirical study and the essence of this study is to be able to generate information or statistics that would be useful for areas or sectors in Nigerian that deals with health. In gathering these information or statistics, questionnaire was used. 60 copies of questionnaires were used to gather information from women who are resident in The Bells Community. The study found that only a few women in that community actually watch television programmes. It concluded the health programmes on AIT should be made more interesting and fascinating for women who would invariably call other women's attention to the programmes.

Keywords: Impact, AIT, Health programmes

ICESE20202033

Energy Efficiency Design Strategies in Office Buildings: A Literature Review

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Abstract

The growing concerns over the adverse effects of buildings on the environment and the need to achieve users' thermal, visual, acoustic, spatial and indoor environmental air quality comfort have given rise to the demand for energy efficient buildings. Although several energy efficiency design strategies have been advocated both in academic and research literature, the ones applicable to office buildings have not been clearly identified and categorised in literature. This paper relied on a systematic review of 68 articles published between 2007 and 2019 to identify and categorise energy efficiency design, planning and construction applicable to office buildings. The results revealed that at least 29 energy efficiency design strategies for office buildings classified into energy efficient landscape designs, site selection, building orientation, building plan and appropriate space organization, exist. It was also established that building envelope systems, building orientation, integration of renewable energy sources and day lighting design strategies were the most implemented energy efficiency building design strategies in office buildings. The review concludes by highlighting the key areas of focus in energy efficiency design strategies in office buildings, the extent research has progressed on the subject and future possible directions in energy efficiency designs and researches.

ICESE20202034

Innovation in Academic Workspace Design: The Implication for Sustainable Effectiveness

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Abstract

This paper aims at discovering sustainable academic workspace design amid technological changes from emergent innovation for effectiveness in the contemporary time world of work. The issue of sustainability of effectiveness in recent time will no doubt focus on both the workspace and the users. Nevertheless, innovation sometime becomes disruptive to effectiveness in a short period of time. The objective of the paper is to illustrate the point that effectiveness of workspace determines space utilisation and the value investors place on real estate. Space utilisation and values determination are derivatives of design and its sustainable effectiveness. The paper considers current thought in this area and presents a literature review. Emergent work modes from changing technology and innovations in workspace designs for universal effectiveness were holistically considered. Certain factors are inevitable in workspace design consideration for sustainable effectiveness in both ways. Consequently, 5 factors were discovered to be essentially important to enduring and easily changeable workspace design capable of sustaining effectiveness of workspace itself and that of the worker. The paper establishes that effectiveness of workspace and the user depends on how design will sustain the general effectiveness in organisation looking at the rate changes in technologies and the quest for simplifying mankind work-life continue to impact contemporary time effectiveness at work for enhanced productivity. This implies that design of workspace must imperatively be sustainable by inserting element of flexibility, otherwise, the time scale major refit benefits of designs for office of the future will turn around to become hindrances to effectiveness.

Keywords: Innovation, Academic Workspace, Design, Implication, Sustainable Effectiveness.

ICESE20202035

Pervious Pavements for Storm Water Control

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Abstract

Pervious pavement is a special type of pavement with high porosity that allows rainwater to pass through it into the ground below. The purpose of a pervious pavement is to reduce runoff and return water to the underground aquifer. It could also be used to trap solids and keep pollutants from contaminating the water stream. This review of literature examines existing studies methodologies, technologies, advantages and drawbacks on the use of pervious pavement for stormwater control and aquifer recharge. The result of the review revealed that cement content, water-cement ratio and compaction level affect the mechanical strength of pervious concrete in rigid pavement construction. Due to the complex nature pervious properties of this concrete, ASTM has not released a standard test method for its mechanical properties. Pervious concrete requires stricter quality control of the concrete mixture proportioning as compared with the conventional concrete. Surface sweeping method of pore-clogging removal was ineffective in the improvement of the hydraulic conductivity of pervious pavements, as it can only help in the removal of surface debris and not sediments removal from deep voids. The development of this pavement is a positive way forward for stormwater management and aquifer recharge. It is a viable technology in the reduction of stormwater runoff and the concentration of pollutants.

Keywords: Sustainable pavement, Pervious pavement, Rigid pavement, Flexible pavement, Runoff

ICESE20202040

ASSESSMENT OF RESIDENTIAL SATISFACTION IN PUBLIC-PRIVATE PARTNERSHIPS (PPPs) HOUSING ESTATE IN LAGOS STATE, NIGERIA

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Abstract

Approaches towards public housing has been noted as Government-sponsored over time, the government have been accorded the responsibility of provision of safe, secure, sanitary, accessible and affordable housing for its citizens, both for low, medium and high incomes. However, due to various limiting factors, the government have run short of meeting this expectation and in order to bridge this gap, it has brought about the private-public partnership (PPP) schemes to meeting mass housing provision. However, the success of public-private partnership is dependent on certain socio-economic variations. This study assessed the residential satisfaction amongst residents of selected public-private partnership housing estate in Lagos State, Nigeria. With a view to understanding the performance of the estates in meeting residents housing needs. This is done by identify the socio-economic and demographic characteristics of residents, examining the physical characteristics of housing units in PPP housing estates and identifying the factors that influence occupants' satisfaction with the PPP housing estates. The data were analysed using descriptive statistics and categorical regression analysis. The result showed that the housing situations are generally satisfactory to the residents. The residents were mostly satisfied with their housing unit features, followed by their neighborhood environment and least satisfied with the maintenance practices. This study revealed that the greatest influence of residents' satisfaction is the location of the estate. The study concluded that satisfaction derived by residents of the PPP housing estates studied can be improved by provision of better housing maintenance practices and effective infrastructures and services.

Key words: Residential Satisfaction, Public-Private Partnerships, Housing Estates, Lagos State.

ICESE20202059

EFFECTS OF ARCHITECTURAL STUDIO DESIGN ON STUDENTS' OVERALL ACADEMIC PERFORMANCE

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ABSTRACT

An architecture student cannot go through the Architectural education without having to offer design studio at different levels all through the years of studying. The design studio is the core of architectural education at Covenant University and other schools of architecture. The courses are architectural courses required for the better understanding of design studio and general university courses. There has to be a balance between the design studio and other courses offered to ensure effective academic performance. Nonetheless, the design studio has been observed to affect students' overall academic performance over the years. This paper examined the important aspects in architecture design studio and its effects on the overall performance of the students. The survey method was used to obtain quantitative data from architecture students in Covenant University through the use of structured questionnaires. The quantitative data gotten were analysed using the IBM SPSS (Statistical Package for Social Sciences). Results showed that the design studio either had a positive or negative effect on their overall academic performance; this was due to some factors relating to the courses offered by the students. Findings also showed that the time allocated to design studio could be a determinant of their performance. The paper therefore suggests a review of curriculum in order to eradicate unnecessary excesses for improvement of architectural student's overall academic performance. Findings of this study are expected to offer experimental justifications for a revisit in curriculum review for a better academic performance of architecture students.

Keywords: Architectural education, architectural course, design studio, student academic performance.

ICESE20202067

Achieving Sustainability and Assessing Productivity through Biophilic Design in the Built Environment

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Abstract

With developers seeking minimalist designs that maximise space with land being at a premium, the quality of life has been neglected amidst the technological advancement and development. Human beings require contact with nature now more than ever to live healthy, productive lives. This affiliation with nature is what is described as Biophilia. Biophilic design is the incorporation of elements of nature into the design of spaces and is regarded as an extension of sustainability. Lagos is often described as the city with the fastest growing economy, which implies a lot of business activities are sprung up and the need for a sustainable working environment cannot be overemphasised. The study adopts a stratified random sampling technique to select respondents who are mainly users of the selected buildings. Data obtained from respondents was analysed using regression analysis. Findings reveal that biophilic design strategies has a significant influence on workers' productivity, however the biophilic elements occurred as isolated occurrences of nature as to a culminated effect. The study recommends early-on integration of biophilic design patterns to attain maximum effect, as well as the proper integration of biophilic design elements.

ICESE20202070

A Comparative Study of Rental Values of Residential Properties at Border Communities of Lagos and Ogun States, Nigeria

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Abstract

This study delves into the pattern and level of development of two adjacent border communities of Lagos and Ogun States, Nigeria to compare the impact on rental values of residential properties in the two communities. The study attempted to find out if there are significant differences as well as definite relationship between the values. Questionnaires were distributed to two groups of respondents which are 84 estate surveying and valuation firms in Ikeja, Lagos as well as 152 residential property owners in the two communities. Data were analysed with both descriptive and inferential statistical tools such as tables, percentages and mean. Student's t-test statistics was used to ascertain the difference in rental values of properties between the two communities. Pearson coefficient of correlation was used to establish the degree of relationship of rental values while the impact factors influencing rental values were determined using the relative importance index. Analysis were presented in percentages, tables and charts and then discussed. Result of t-test showed that there are significant statistical differences in rents of the two communities despite the proximity. It was further observed that neighbourhood density and level of infrastructure development play vital roles in the gaps observed in rental values. However, the Pearson correlation coefficient revealed that there is a relatively strong positive correlation between rental values of properties in the two communities. The research therefore concluded that for property market on the Ado-Odo/Ota side of the emerging Lagos megacity to attain its full potential, there is the need for major urban renewal and investment in physical and economic infrastructure. The study recommends partnership with private sectors and property

owner in the locality to achieve this physical and economic transformation and close infrastructure gap and economic inequalities in the emerging Lagos megacity.

Keywords: comparative, border, communities, megacity, rental value, property, infrastructure

ICESE20202071

The Nexus of Climate Change, Urban Infrastructure and Sustainable Development in Developing Countries

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Abstract

This study weighed in on the topical issue of climate change impacts and sustainable urban development in developing countries, especially Africa. Climate change is a global challenge that is much discussed at national and international fora. The study reflects on the lot and plight of cities as well as peri-urban communities in developing countries in the face of climate change disaster. Perusing the volume of anecdotal evidences, journal articles, local and international reports on climate change, urbanization and infrastructure, extant literatures were reviewed to establish the perspective and position of the study. The study examined the global threats of climate change and the local impact of disasters to urban dwellers in developing countries like Nigeria. It further shed light on urbanization process and the state of infrastructure development in developing nations. Vulnerability of African's settlements in terms of infrastructure deficit was brought to the fore with a view to enhancing their capacity and preparedness against the pangs of climate change disaster. Salient concepts such as climate change, urbanization challenge, urban infrastructure, sustainable development were examined to contextualize the study. The study concludes by advocating for positive urbanization in developing countries which is the aim and essence of sustainable development of human settlements.

Keywords: infrastructure, climate change, sustainable development, urbanization, developing countries

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How Real Sector Business Outlook Affect the Effectiveness of Monetary Policy on the Real Sector

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Abstract

The effectiveness of monetary policy on the real sector has been a major concern of the monetary authority in Nigeria, over a few years ago. This has resulted into series of regulatory actions of the Central Bank of Nigeria (CBN) to ensure more funds is channelled to the sector, in line with policy objectives of the government to improve the sector. The ability of the real sector investors to meet up with their loan repayment obligations sometimes restrict the flow of credit from the banking system to the sector, thereby jeopardizing the efforts of the monetary authority. This study considered business outlook in its model, while investigating the effectiveness of monetary policy on the real sector. The results of the study revealed that business outlook significantly affect the effectiveness of monetary policy to the real sector and also reorder the transmission channels. It is therefore recommended that government should put in place policies that are targeted at improving the business environment and reducing the cost of business operations.

Keywords: Real Sector, Monetary Policy, Business Outlook, Structural VAR

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Various Ways through which Co-Operative Societies Contribute to Sustainable Housing Provision in Ogun State, Nigeria

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ABSTRACT

Housing co-operatives have been recognised as one of the ways through which the home-ownership desire of the low and middle-income group in Nigeria could be realised. They however need to engage in some activities before this could be achieved. At present, there is a dearth of empirical studies on the contributions of co-operative societies to sustainable housing provision in Ogun State, Nigeria. The aim of the study, therefore, is to identify the various ways through which housing co-operatives contribute to sustainable housing provision in Ogun State, Nigeria. To achieve this, a review of literature was carried out with a view to identifying the activities that they engage in to contribute to sustainable housing provision and these activities were then put to test in the study area. The study adopted post-positivism as its philosophy and applied the quantitative method approach. The survey method was engaged for the study and copies of questionnaires were administered on the Managers of the fifty-six (56) co-operatives involved in housing provision in the study area; however, only fifty-two (52) copies of the questionnaires were returned. The data collected were analysed using frequency distribution, descriptive summary measures, spearman correlation analysis and One-way of Variance (ANOVA). The study identified some general and self-enhancing activities of housing co-operative societies involved in housing provision in the study area. It identified the need for housing co-operatives to get involved in lobbying and advocacy to cause awareness, gain more recognition and support for the delivery of housing. The study also found a strong positive association between 'source of funding' and 'means of actualising housing units' by the co-

operators in Ogun State. The import of these findings is that the impact of co-operative societies involved in housing provision can now be improved upon having discovered the various ways through which co-operative societies could effectively contribute to sustainable housing provision in Ogun State, Nigeria.
Key words: Activities, contribution, housing provision and housing co-operatives

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Sustainability Assessment of the Engineering Properties of Asphalt Concrete Incorporating Pulverized Snail Shell Ash as Partial Replacement for Filler

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Abstract:

In furtherance to the search for reliable and cost-effective road construction materials which is expected to engender the development of sustainable and less expensive pavements, coupled with the increase in agricultural wastes due to the current rise in the consumption of white meat, this research investigated the engineering properties of modified bitumen and subsequent performance of asphaltic concrete incorporating Pulverized Snail Shell Ash (PSSA) as strength modifier and filler. In order to achieve specific objectives, preliminary physical and chemical tests were initialized to characterize the virgin bitumen and snail shell ash. Pulverized proportions of the snail shell ash were blended with bitumen at 10%, 20%, 30%, 40% and 50% respectively by weight of mineral aggregates; and subsequently incorporated as filler at the same proportions. The rotational viscometer and penetrometer were engaged to determine the viscosity and penetration of the modified bitumen, and the Marshall mix design method was employed to determine the mechanical and rheological properties of the resultant asphaltic concrete composites. The modification of bitumen with egg shell ash resulted in a decrease in penetration of virgin bitumen from 80/100 pen to 60/70 pen, including the rotational viscosity. Different mixtures of PSSA ranging from the aforementioned proportions, incorporating substitutions of mineral fillers were evaluated by the Marshall mix design method; the stability was found to be higher than the control mix at 30% of grade which satisfied the Marshall

specification for wearing course mixes. X-ray diffraction (XRD) showed the distinct presence of oxygen and Calcium in the hot mix Asphalt modified with PSSA, while the scanning electron microscope (SEM) provided an in-depth perspective of the concrete grains in the HMA matrix. The results suggest feasible use of PSSA as partial aggregate substitution in HMA. It was noted that the PSSA was finer than the conventional mineral filler and it filled the voids, engendered a stiffer, and denser mix, as well as reduced the number of voids present in the mix and increased its stability. Experimental results indicated higher stability value of 35.08KN for the mixture having 30% PSSA as optimum filler content in comparison with conventional mix which was 34.7KN and standard specification of 34KN minimum. This study has therefore established the feasibility of using PSSA as alternative filler instead of the conventional in asphalt concrete mix by satisfying the standard specification. Also making the reuse of agricultural waste possible, thereby making construction cost cheaper, and also reducing waste.

Keywords:Civil Engineering, Pulverized Snail Shell Ash (PSSA), Marshall Stability, Flow, Optimum Bitumen Content (OBC), Sustainable Pavement, Sustainable Transportation

ICESE20202087

Investigation of willingness of residents to adopt alternative burial methods in Abuja, Nigeria

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ABSTRACT

As cities grow in population, there is pressure on urban land resulting in prioritisation of scarce land for various uses. Burial grounds are often poorly rated in the priority scale since comparatively, they are considered as poor contributors to public economy. This situation. coupled with growing concerns about the environmental and health implications of casket cemetery burials has led to the growing adoption of alternative burial methods globally. in Africa, including Nigeria however, adoption of alternative burial methods has been slow. This paper therefore investigated the willingness of residents of Abuja, Nigeria to adopt alternative modes of burial. Specifically, it sought to identify the current burial methods prevalent in Abuja, ascertain residents' willingness to consider alternative burial methods, the alternative burial methods favoured by residents and the factors that influence choice of alternative burial methods by residents. Data were obtained by administering copies of a questionnaire to randomly selected respondents. Data was analysed using the Statistical Package for Social Sciences. The paper found that although residents willing to adopt alternative burial methods marginally surpassed those who rejected the idea, there is strong religious and sociocultural resistance against adoption of alternative burial methods. The paper therefore identified the need for sensitization of residents especially through credible religious, sociocultural leaders and other opinion moulders including the media, review of policies and regulatory frameworks to accommodate alternative burial methods.

Keywords: Alternative burial methods, conventional burial methods, burial practices, cultural beliefs, Abuja.

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Sustainable Housing Delivery through Co-Operatives Societies in Ogun State, Nigeria: The Critical Success Factors

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ABSTRACT

Housing co-operatives have been identified as a sustainable housing delivery model and a viable housing production option by past housing policies in Nigeria. Therefore, the need to identify the Critical Success Factors that would assist in enhancing the contributions of housing co-operatives to housing provision in Ogun State, Nigeria becomes imperative. The aim of the study is to identify and analyse the Critical Success Factors (CSFs) of housing co-operatives required for sustainable housing delivery by co-operative societies in the study area. The study adopted post-positivism as its philosophy and a quantitative method approach. The survey method that makes use of questionnaire administration was applied and the data collected were analysed using frequency distribution, descriptive summary measures, spearman correlation test, one-way of variance (ANOVA) and principal component analysis. A total of nineteen (19) factors were identified from the review of literature and were tested with the use of copies of questionnaire administered on the fifty-two (52) managers of the co-operative societies involved in housing provision in the study area. The factors were ranked based on their criticality as perceived by the respondents with the use of Relative Importance Index (RII). These factors were further subjected to Kaiser-Meyer-Oklkin (KMO) and Barlett's Test which confirmed that factor analysis can be conducted on the data. The study then employed Principal Component Analysis to determine the most significant critical success factors for housing co-operative societies in Ogun State. The result of the analysis revealed the following factors: regular training of members

and directors of the housing co-operatives, effective communication and adequate participation of the members which cumulatively explained 56.1% of the critical success factors enhancing the performance of co-operative societies in housing provision in Ogun State, Nigeria. The study recommended the evolvement of policy statements that would promote the Critical Success Factors identified in this study towards enhancing the performance of housing co-operatives in housing provision and achieving sustainable housing delivery.

Keywords: Sustainable housing delivery, Critical success factors, housing provision, housing co-operatives, contribution.

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Life Cycle Assessment of Material Waste Generation from Building Construction Projects in Southwest Nigeria

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ABSTRACT

Studies recognized that construction waste constitutes 30-40% of the overall construction cost, and this has an impact of on our personal lives, our work situation, savings, the cities and places we live in, and the entire world around us. This research studied building life cycle and waste generation across building construction projects in southwest Nigeria through the use of structured questionnaires to the firms of registered construction industry professional. A total of four hundred and three (403) questionnaires were randomly administered to the firms of registered professional within the study area, out of which only two hundred and sixty-one (261) were considered valid and usable, the data was rank on 5 points Likert scale. The study found that post-construction stage activities had the greatest affinity for material waste generation with the highest mean score of 3.5172, the construction stage activities with the mean score of 3.0672 indicating that waste generation at this stage is moderate. Based on this, the study concludes that there is a need to develop a post-construction waste management plan, construction and maintenance guideline, training and better storage, for the handling of materials delivered to site, adoption of sustainable approach across all the building procurement stages.

KEYWORD: Building, Construction Waste, Construction Stages, Life Cycle, Southwest, Nigeria

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URBANISATION AND SUSTAINABLE GROWTH OF URBAN KANO, NIGERIA

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Abstract

During the past century, Kano city in the sub-Sahara Africa have undergone massive transformations, characterized by urbanization and rapid population growth. The full impact of urbanization pressures has led to the rapid pace of globalization and economic restructuring and infrastructural development of Kano city. The city metropolis has emphasized advocatly on urban growth management approaches that give particular interest to sustainable urbanization dated from the colonial era. The paper seeks to highlight and undertakes a descriptive analysis of underlying issues associated with the practice of sustainable urbanization challenges facing Kano, particularly the promotion of growth management within the fast growing City which is the commercial hub of the Northern Nigeria. The qualitative nature of the paper was a critical literature review of relevant materials focusing on urbanization and sustainable management of urban development of Kano metropolitan city. This paper seeks to provide an insight into sustainable paradigm, particularly on the urban growth development of Metropolis Kano-city urbanization within northern Nigeria and sub-Sahara fastest growing regions of Africa. The finding shows that sustainable urbanization has been a key factor in the adoption of urban growth development expansion. Findings from the study reveal that physical development plans for the urban growth areas have been very pre-colonial and developed in harmony with the urban population which is mostly characterized by a high infrastructure pace.

Keywords: Urban growth, development, sustainable urbanization, Metropolis, Kano -city.

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Student Industrial Work Experience Scheme (SIWES): Is it Beneficial to Students?

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Abstract

This study focused on the perception of private university students of SIWES programme. The authors administered questionnaires to 105 students and a response rate of 74% was achieved. Data was analysed using mean and Relative Importance Index (RII) and presented in tables. The analysis showed amongst others that the SIWES programme is generally beneficial to students as it helps them to acquire professional skills. They however stressed that getting a placement was their major challenge. Appropriate recommendations were made and a conclusion drawn from the study.

Keywords: SIWES, Benefits, Students, Private, University

ICESE20202094

Exploring the Effects of Pozzolans on Different types of Portland Cements in Sustainable Cement-Based Applications

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Abstract

The sources of pozzolans could be natural, industrial and agricultural wastes that are recycled into concrete and mortar applications. There have also been many studies and recommendations guiding the use of blending these pozzolans from multiple sources with cement with the aim of producing more durable, greener and sustainable mortar/concrete. These investigations are mostly based on testing these pozzolans with a certain type of cement and making recommendations on the optimum percentage replacements. This type of study underscores that a pozzolan can behave differently with other types of Portland cements with varying distinct chemical compositions that associates the cement with its type. This could result to a particular pozzolan having different optimum percentage cement replacements with different types of cement and hence results in less durable concrete of which this study intends to address. The pozzolan used in this study is Pulverized Calcined Clay (PCC) and the types of cement is based on the British and American standards classification. The cement variants used in this study is broadly rapid hardening and low heat cement form the two (2) major cement brands in Nigeria. The X-Ray Fluorescence (XRF) analysis was performed on the cements and the PCC to determine their oxide compositions and classify the pozzolan, the Strength activity index (SAI) of the pozzolan was also determined. The optimum percentage replacements (replacement level with maximum strength) of the cements with the pozzolan was also determined. The results

indicate that the optimum replacements for the low-heat cement was at 20% replacement with PCC and substantially higher for the rapid-hardening cement. This could be adduced to the difference in the chemical compositions as shown in the XRF analysis. It was concluded that the optimum replacement of different cement types with a pozzolan could vary, resulting to less durable concrete when a single optimum replacement is recommended across all cement types. It is therefore recommended that the optimum replacements of cements with pozzolans should be specific to a cement type and recommended that optimum replacement for other cement types with same pozzolan be determined and not generalized across all cements.

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MAINTENANCE CULTURE OF RESIDENTS IN SOME SELECTED LOW COST HOUSING ESTATE IN LAGOS STATE

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ABSTRACT

Building infrastructures is part of what provides people with shelter, protection and comfort in a country, it is one of the major factors for survival and wellbeing of people. It is therefore very important that the facilities of buildings be constantly preserved and maintained well to meet up with Occupants satisfaction therefore meeting the purpose to which they were built and developed for. The sample size is the total number of observations, population elements of sampling unit that are selected for investigation in the study. The sample size of this study would be developed from 3 selected low-cost housing estate within Lagos and a relatively 75 questionnaires was distributed to various residents for evaluation of maintenance practice. Training and retraining of artisans and craftsmen should be vied as an essential strategy. Construction firm should invest in the training and retraining of their craftsmen to promote optimum performance. Construction professionals and stakeholders should contribute to the skills acquisition programmes both onsite and offsite

Keywords: Building- Informatics, Maintenance, Cost, Housing Shelter, Construction.

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