STEM
Science | Technology | Engineering | Mathematics
International Organization

ONLINE SUMMIT ON

ENVIRONMENTAL SCIENCE AND EARTH SCIENCE (SUSTAINABILITY CHAPTER) (ESES-2021)

FEB 26, 2021

Corporate & Bank - Address
19 W 24th St, New York, NY 10010
Email: secretary@stemio.org
Global Operation : Asia Pacific
912 Jurong West Street 91, #04-252 Singapore-640912
Tel: +65 8464 4650

Invited Oral Presentations

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Using life cycle literacy for environmental education

Latifah Abdul Ghani
Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Malaysia.

Abstract
The Life Cycle Assessment (LCA) approach contributes significantly to improving the quality of environmental care for participants. The LCA approach may provide solutions to identify environmental issues that are constantly evolving over time. Based on this statement, a study was conducted to examine the usability of the Life Cycle Literacy (CKH) module in order to improve the learning performance and comprehension of participants. The purpose of this study is to explore in depth the relevant components, including the realization, motivation and usability of the Life Cycle Literacy module by participants. A qualitative survey design based on targeted sampling was developed in two groups of 10 respondents. The first group is expected to have an environmental science background, while the second group has no environmental science background. The results of the study show that the performance of the two groups increases when the Life Cycle Literacy module is used in the environmental education learning process.

Keywords: Life Cycle Assessment (LCA). Life Cycle Literacy. Environmental Education. Learning Module

Presenting Author Information

Full name: Latifah Abdul Ghani
Organization/Institute/ Company: Universiti Malaysia Terengganu, Malaysia
E-mail address: latifah.ghani@umt.edu.my

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Can Connectedness to Nature in Children and Adolescents be predicted by Knowledge of Circular Economy, Pro-Environmental Behavior, Satisfaction with Life, and Beliefs? A pilot study in Rural Areas

Raquel Fernández-Cézar[a], Dunia Garrido[b], Felipe Gértrudix[c], Natalia Solano-Pinto[d]
[a]Department of Mathematics, Didactics Area, Castilla La Mancha Unversity, Spain
[b]Department of Psychology, Granada University, Spain
[c]Department of Didactics of Musical, Plastic and Physical Education, Castilla La Mancha Unversity, Spain
[d]Department of Psychology, Educational Psychology Area, Castilla La Mancha Unversity, Spain

Abstract

Background/ Objectives and Goals
Sustainable development (SD) is crucial to maintaining and preserving the planet we live
on. The new paradigm of circular economy (CE) corresponds to the sustainable development goals and includes environmental, economic, and social dimensions. The United Nations has set quality education and the search for good health and well-being in the long term as tools for achieving SD. Taking into account the reviewed literature, it seems that connectedness to nature is a key concept in the achievement and promotion of SD and so, of EC. Therefore, this study aims to identify the predictors of connectedness to nature in children and adolescents using knowledge of CE, pro-environmental behavior, beliefs about caring for the environment, and satisfaction with life as possible predictive variables.

Methods
This pilot study uses as participants 120 young people enrolled in state schools in rural areas of Castilla La Mancha (Spain), among which 93 were valid and composed the convenience sample. The exploration of the influence of these predictors and de dependent variable was done on a correlational base, considering sex and age as covariates. To determine the prediction capacity, a binary logistic regression model was achieved.

Expected Results/ Conclusion/ Contribution
We found that low scores on pro-environmental behavior, satisfaction with life, knowledge of waste management and CE, and beliefs about environmental behavior were related
to a low degree of connectedness to nature. Regarding covariates, neither sex nor age do play any predictor role. Thus, our findings suggest that the educational system must promote not only the assimilation of knowledge on SD and EC, and contribute to the development of positive beliefs about them, but also take into account the satisfaction with life in the educational community, given its capacity of prediction of connectedness to nature.

Keywords: pro-environmental behavior; connectedness to nature; knowledge; life satisfaction; circular economy; rural students; elementary education

Acknowledgements
Spanish Foundation for Science and Technology (grant number FCT-18-13150)
Castilla La Mancha University co-funded by the European Fund for Regional Development
(grant number 2020-GRIN-29110).

Biography

Raquel Fernández-Cézar has completed her PhD at the age of 28 years from University Autónoma of Madrid, Spain. She is professor and researcher in the Critical Eye group of Castilla La Mancha University (Spain), and her research line is focused on STEM education in compulsory education in Spain. She has published more than 30 papers in reputed journals, editor in chief for two years of Journal of Research in Sciencie, Mathematics and Technology Education, serving now as an editorial board member of the publication. She is reviewer of many other reputed journals, and is part of outreach associations for the diffusion of STEM among young and general population.

Presenting Author Information

Full name: Raquel Fernández-Cézar
Organization/Institute/ Company: Castilla La Mancha Unversity, Spain
E-mail address: raquel.fcezar@uclm.es

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Business Sustainability Strategy in a Cooperative Kibbutz Industry

Yaffa Moskovich
Behavioral Science, Zefat Academic College, Israel

Abstract

Background

A business strategy constructed from communal, internal, and external narratives promoted the business sustainability of T INDUSTRY.
Business strategy and sustainability have strong interdependence and interaction; corporations are committed to address sustainability through their organizational strategy (Khan, Serafeim and Yoon, 2016; Burritt et al, 2020)]. This research addresses the moral and ethical concerns of TI, including long–term sustainability, that have assimilated into its business strategy. Previously, research literature has not invested much effort in examining these concerns in business affairs.

Methods

This research adopted the case–study approach. The analysis presented in the current work represents an entrepreneurial biography that describes the development of the organizational sustainability of a particular firm from 2000 to 2020.

Expected Results/

The study found that the strategic management of T Industries comprises three major components: (1) socialist concern for community wellbeing; (2) an external strategy that focuses on expansion and rendering the industry global, with numerous organizational alliances and acquisitions; and (3) an internal strategy that includes self-criticism, professionalism, creativity, and organizational learning. Strategies of the top management have the ability to integrate conflicting methods into their strategy while promoting innovation and originality and can increase economic success and reassure its sustainability for the business and the community.

Keywords: kibbutz industry, kibbutz community, business strategy, Sustainability

Acknowledgements

Zefat academic college; Haifa university

References

Burritt, R.L.; Christ, K.L.; Rammal, H.G.; Schaltegger, S. Multinational enterprise strategies for addressing sustainability: Need for consolidation. J. of Business Ethics 2020, 164, 389–410.
Khan, M.; Serafeim, G.; Yoon, A. Corporate sustainability: First evidence on materiality. The Accounting Rev. 2016, 91, 1697–1724.

Biography

Yaffa Moskovich, Ph.D., earned her doctorate at Bar Ilan University, Israel. She has worked in the School of Management, Zefat Academic College in Zefat, Israel since 2002. Currently she is a Professor and heads the Department of Behavioral Sciences at Zefat Academic College. Her expertise is in the field of organizational sociology.
Her work involves organizational change, kibbutz industry, business strategy, leadership in political parties, unions, NGOs, and multi-cultural group relationships.
Professor Moskovich is recently researching kibbutz factory and community, she is a member of kibbutz cooperative research institution in Haifa university

Presenting Author Information

Full name: Yaffa Moskovich
Organization/Institute/ Company: kibbutz cooperative institute, Haifa university; Israel
E-mail address: yafam@zefat.ac.il

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Integrated Ecological Footprint Assessment: how to measure building's efficiency by looking at the role of human over-consumption

Alice Paola Pomè[a], Chiara Tagliaro[b], Gianandrea Ciaramella[c]

[a] Department of Architecture, Built Environment and Construction Engineering, Politecnico di Milano, Italy

[b] Department of Architecture, Built Environment and Construction Engineering, Politecnico di Milano, Italy

[c] Department of Architecture, Built Environment and Construction Engineering, Politecnico di Milano, Italy

Abstract

Background/ Objectives and Goals

The literature suggests the potential of Ecological Footprint (EF) in measuring over-consumption of resources, as an alternative indicator to carbon footprint and others. However, most previous studies applied only a static snapshot, did not include all possible impact sources, and disregarded the number of people occupying buildings.

The present research aims at overcoming these limitations by developing a model to assess the environmental impact of buildings over their in-use stage by including a wide range of impact sources.

Methods

By comparing previous studies on EF, we developed a theoretical model, the Integrated Ecological Footprint Assessment (IEFA), for expressing the environmental impact of a building over its in-use stage.

Finally, we tested the model's applicability on the experimental case of an Italian headquarters.

Expected Results/ Conclusion/ Contribution

The proposed IEFA model intended to assess the environmental footprint of buildings through a synthetic indicator that depicts the buildings' demand for resources on Earth and, therefore, how efficiently they perform.

The case study application shows that IEFA evaluates the buildings' impact in the in-use phase by looking at the influence of people behaviors and simultaneous occupancy.

IEFA advances the pre-existing models because it gathers all impact sources, and, by adding the occupant pressure on resources' demand, it considers the role of users in potentially reducing the EF. Finally, it provides a synthetic and concrete measure of over-consumption, which can encourage a more sustainable culture of building occupants.

Issues with data provision; absence of benchmarks; and lack of standards for calculation that were encountered in this study require future developments. However, the result of the case study resembles the same order of magnitude of previous studies. So, we can consider the IEFA valid and useful to assessing sustainability in buildings' in-use stage. A crucial question yet to explore is: which unit of measurement can induce people to adopt sustainable behaviors? Is EF effective in this regard?

Keywords: Ecological Footprint, in-use phase, sustainable development, green policies, environmental impacts.

Acknowledgement:

This research received no external funding.

Biography

Alice Paola Pomè is a PhD student at Politecnico di Milano, in the Department of Architecture, Built Environment and Construction Engineering (Italy). She is an engineer working. Her research is currently being carried out at the Real Estate Center of Politecnico di Milano and focuses on the implementation of new building management protocols to enhance the sustainability of the operational stage of building life cycle.

Presenting Author Information

Full name: Alice Paola Pomè
Organization/Institute/ Company: : Politecnico di Milano, Italy
E-mail address: alicepaola.pome@polimi.it

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

An investigation of plastic waste in Aalborg municipality: *What can be learned from the bottom of a waste bin?*

Edward Vingwe[a], Fan Liu[b]

[a]Department of Development and Planning, Aalborg University, Denmark
[b]Department of Civil Engineering, Aalborg University, Denmark

Abstract

Background/ Objectives and Goals
This study investigates post-consumer plastics not being source-sorted at single-family homes, multi-family homes and service-sector in the city of Aalborg, Denmark, one year after the city implemented source sorting. The study provides useful information to waste managers, producers and users of plastic packaging products and plastic items, supplementing studies of the sorted plastic-fractions, thereby enhancing knowledge for a circular plastic economy.

Methods
450 kg residual waste from the three sources was manually sorted, weighted, washed, weighted again, and representative samples were analyzed for polymeric composition and design for disassembly. The prepared plastic objects were analysed for polymer type composition during ***stage 4***. Both polymer type and chemical composition of each sample were determined by using ATR-FTIR, a method that can reliably identify the polymer composition of the outer layer of a plastic product. The equipment was a Cary 630 FTIR Spectrometer from Agilent Technologies, equipped with a single reflection diamond ATR crystal accessory.
Spectra were collected over the wavelength range of 4000 to 650 cm^{-1}, and resolution was set at 8 cm^{-1}. Spectra for background were measured with 64 co-added scans and 32 co-added scans for unknown samples. Prior to the scan of each sample, the ATR diamond was cleaned with LC-MS grade ethanol and a background scan was performed. A clamp was used to compress samples against the diamond crystal, thus ensuring good contact between sample and ATR crystal. The samples spectra were analyzed by comparing them to reference polymer spectra from commercial libraries hosted within Agilent Micro Lab software. The analyzed spectra of unknown samples and the spectra of the best match from the reference library were registered, with a numerical value indicating the quality of the match.

Expected Results/ Conclusion/ Contribution
The study shows the amount of plastic in the residual stream one year after implementation of the source sorting scheme was lowered to 6,3% and 7.7% from 12.4% in single-family homes and multi-family homes, and to10.7% from estimated 15% in the service sector residual waste. The non-sorted plastic consisted of about 50% plastic mono-material PE, PP, and PET items, that with proper cleaning and sorting could be readily recycled. The remaining products were not suitable for recycling due to multi-polymer composition, hereof 17% combined and in principle separable polymers, and 32% inseparable multi-layered polymers. The investigation identifies a large improvement-potential for recycling through use of homogenous polymer types of plastic product design, and improved system for collection, emptying and cleaning, combined with improved end-user practice with respect to emptying and cleaning. It is recommended to enhance producer and end-user practice through better design for recycling and reuse through national or European design requirements, combined with local improvements in sorting and separation, involving the end-users, collectors and recyclers.

Keywords: Municipal solid waste, Residual waste stream, Post-consumer plastic waste, Product design, Circular economy, Recycling

Biography
Edward Vingwe is a Ph.D. Fellow at the Department of Development and Planning at Aalborg University. His research focusses on mining data for sustainability strategies and boundary objects for facilitating business experimentations for sustainability. He has published a paper on national mass flows in Denmark and has two papers under review, one focusing on using company- specific data to calculate plastic mass flows and the other on business experimentation. Fan Liu completed her Ph.D. in 2020 at the Department of Civil Engineering, Aalborg University, Denmark. Her research focused on the concentration of microplastics in urban water streams.

Presenting Author Information

Full name: Edward Vingwe
Organization/Institute/ Company: Aalborg University, Denmark
E-mail address: evingwe@plan.aau.dk

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

EO for better management of the Med fish resources

Naglaa Zanaty[a], Elham M. Ali[b], Islam Abou El-Magd[a]

[a]Environmental Studies Division, National Authority for Remote Sensing Space Sciences (NARSS), Egypt
[b]Suez University, Faculty of Fish Resources, Aquatic Environment Department, Suez, Egypt

Abstract
Background/ Objectives and Goals

Achieving sustainable use of marine resources needs effective monitoring and management of the world's fish stocks. Mediterranean Sea is one of the main marine resources of fish for North African countries. Fish communities tend to aggregate in areas that exhibit the favored environmental conditions. Remote sensing is a widely used tool that helps to manage the marine fisheries at sustainable levels. It can give guiding to locate fish communities more efficiently based on defining the suitable environmental indicators.

Methods
In this research, Earth Observation data was used to define areas potentially important for fishing along Egypt's North coast, particularly Sardinella Aurita species "Round Sardine". Two main products from MODIS/aqua satellite were acquired including "Sea Surface Temperature (SST)" and "Chlorophyll-a (Chl-a) to detect the potential fishing zones (PFZs). Data was used monthly during the period 2018-2020. The suitable environmental conditions for Sardine were defined as 22-28.5°C for SST and values more than 0.2 for Chl-a. Weighted overlay model was developed on ArcGIS to define the areas matching with these favored conditions to define the PFZs. In addition, data reported by the authority of fish resources and field survey were used as ancillary data.

Expected Results/ Conclusion/ Contribution
The defined PFZs of Sardinella Aurita's differs between months in area and spatial distribution. The months of Sardine abundance were from May-November due to the suitable SST on this time of the year, while months from December-April SST is lower than the suitable range. In addition, the chlorophyll-a content is higher near the coast more than the deep Sea. August has the lowest area of PFZs compared with other months. In June 2018, the highest amount of produced Sardine was 1249Ton, and the least amount was 380Ton in January. The greater amount produced on Port-Said (4020Ton). In conclusion, this study proves the ability of remote sensing for detecting the PFZs.

Keywords: Satellite Observations, sea surface temperature, chlorophyll-a, Mediterranean Sea, potential fishing zones.

Acknowledgment
This work is constructed under the full technical support of NARSS as the lead institute for NAfCOAST project which is serving the North African countries (Egypt, Tunisia, Morocco, and Mauritania). The project is financially funded by the European union, the African union through GMES & Africa program.

Biography
Naglaa Zanaty has completed her PhD in environmental monitoring using remote sensing applications from University of Port Said. She is an assistant researcher at the environmental studies department, National Authority for Remote Sensing and Space Sciences (NARSS), Egypt. She has more than 8 years' experience in applications of Remote Sensing and environmental sciences. She has joined various research and development projects at NARSS. Recently, she is working on the Potential Fishing Zones service developed by one of GMES& Africa projects namely NAfCOAST Project which serves the north African countries including Egypt.

Presenting Author Information

Full name: Naglaa Atwa Hassan Zanaty
Organization/Institute/ Company: National Authority for Remote Sensing & Space Sciences, Egypt
E-mail address: n.zanaty2@gmail.com

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Open Source Model for Monitoring Oil Spills

Mohamed Zakzouk[a*], Islam Abou El-Magd[a] and Elham M Ali[b]

[a*] Environment Division, National Authority for Remote Sensing and Space Sciences, Egypt
[B] Suez University, Faculty of Fish Resources, Aquatic Environment Department, Suez, Egypt

Abstract

Background/ Objectives and Goals

Egypt's marine environment is under the risk of potential oil spills which represent a serious threat to the marine environment and its related economics. Using the available space-borne facilities based on open source solutions to help safeguard the environment by fast report the spills is an urgent need in clean-up operations and to prosecute the polluter.

Methods

As oil spills dampen sea surface capillary waves causing low back scatter in the Synthetic Aperture Radar (SAR) Images, it appears darker than the surrounded water in SAR images, the detection of these oil spills is done in a semi-automated model based on Sentinel Application Platform (SNAP) and Quantum-GIS software. The analyst inspects visually the SAR scene, defines all the dark spots, and then uses the prepared model for automating the preprocessing and extracting dark spots based on a predetermined threshold for backscatter. Based on the analyst experience, the area ancillary data like spot geometric pattern, wind speed, marine infrastructure, the automatic identification system (AIS) data, algae blooms and suspended matter is used to judge whether the dark spill is an oil spill or other look-alike.

Also, based on the fact that fresh, heavy oil spills of considerable thickness on the water surface are characterized by extreme low reflectance than the surrounding water which gives a good anomaly for detection, optical images were tested for possible oil spills. Unsupervised image classification has been done to extract the oil layer.

Expected Results/ Conclusion/ Contribution

The present work analyzed nearly 3000 scenes of Sentinel 1 data and 2000 scenes of both Landsat 8 and Sentinel 2 for 8 potential areas over 3 years' time span between 2017 and 2019. More than 270 pollution sites could be detected from SAR and only 20 large cases from multispectral data with a total pollution area nearly equal 2500 km^2 during the three years. The coastal area near Port Said city reported the highest in pollution rates.

This research study proofed that Egypt coasts encounter a serious environmental oil spill. pollution issue. The presence of near real-time monitoring system may decrease the rate of pollution cases as the polluter will be careful to avoid penalty in response to the Egyptian Environmental Act.

Keywords:
Egypt Coasts; Oil spills; Remote Sensing; Synthetic Aperture Radar (SAR); Multispectral imaging

Acknowledgment

This work is constructed under the full technical support of NARSS as the lead institute for NAfCOAST project which is serving the north African countries and financially funded by the European union, the African union through GMES & Africa program.

Biography

Mohamed Ramadan got his master's degree in petroleum engineering on oil spill monitoring using optical and synthetic aperture radar remote sensing from Cairo university and has publications in that field. He has 4 years' experience in satellite remote sensing and currently works as a research assistant for the environmental studies department at the National Authority for Remote Sensing and Space Sciences (NARSS), Egypt. He also acts as the oil spill monitoring service developer for one of GMES& Africa international projects known as NAfCOAST which serves the north African countries. He participated in other 5 local research projects managed by NARSS.

Presenting Author Information

Full name: Mohamed Ramadan Abdallah Zakzouk
Organization/Institute/ Company: National Authority for Remote Sensing & Space Sciences, Egypt
E-mail address: mr.zakzouk@gmail.com

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Sustainable Development in context of Customer Value Management

Monika Spychalska-Wojtkiewicz[a,]
[a*]Institute of Management, Faculty of Economics, Finance and Management, University of Szczecin, Poland

Abstract

Background/ Objectives and Goals

The concepts of sustainable development and customer value management are deeply embedded in literature separately. Nevertheless, the possibility of combining them has not been thoroughly investigated. The sustainable development movement is an essential trend that can resist excessive consumption and over-exploitation of resources. There have been considerable changes in the perception of the term 'sustainable development' over the last 30 years. Difficulties in implementing the principles of rational use of natural resources have resulted from a general conflict between the objectives of economic development and the increasing dynamics of industrial production, the quality of the environment and the objectives of environmental protection.

Methods

This research goal was to describe ways of linking sustainable development trends and the customer value management process. Research also aimed to indicate what this relationship drives. In order to process the collected individual in-depth interview material, the author applied a qualitative analysis. As a result of the exploratory research, it was found that there is no complete agreement on who is responsible for implementing the sustainable development assumptions: producers or customers. However, the process of linking sustainable development trends and customer value management can be pointed out.

Expected Results/ Conclusion/ Contribution

Research aimed to indicate what this relationship drives and indicate that they are customers. In connection with this result, the author of the proposed sustainable offer, which can be a concept of the offer combining CVM and sustainable goals policy in entities. Today's economy is experiencing a series of economic, ecological and social problems affecting all populations. The sustainable development movement can resist excessive consumption and over-exploitation of resources. Recent months have redefined the relationship between supply and demand to some extent. Intensively developing enterprises and economies have been forced to face the new situation: a completely new dimension of disruption due to the coronavirus. The economic slowdown is, however, temporary because the world's economy has not stopped but has changed significantly.

New challenges have emerged, but new opportunities have also appeared. The importance of creativity now is as high as ever. Creativity and sustainability have sometimes been described as contradictory phenomena: they are described in ways that place them in opposition to each other [1]. Nevertheless, creativity has also been proposed as a tool for sustainable development.

Research results show that management creativity will help in implementation of sustainable offer that takes into account the assumptions of the sustainable development policy based on sustainable goals and delivers value and experience to customers in a way that preserves natural sources. Links between sustainable development trends and the customer value management can be strengthened by addressing the real needs of the client, through sustainable offer and through the use of new technologies in CVM.

Those recommendations and proposed directions will therefore have an immanent impact on many entities in COVID-19 pandemic and post pandemic time. Demand and supply will react to the new situation. However, it is a unique time to redefine the relation between sustainable development trends and customer value management. On the basis of the opinions of entrepreneurs, the author proposes that focus be placed on the client, who is a link between these approaches as a social entity and as a consumer, and that a sustainable offer be created as a value for the customer. At present, this thoughtful, sustainable offer could go to very fertile ground. According to this study, as those who make purchasing decisions, customers are the axis of this relationship. On the basis of the results of this research, as long as customers buy particular products, they will be offered by producers.

Keywords: sustainable development; customer value management; circular economy; experience economy

Acknowledgement:

I am grateful to the funding agency (The project is financed within the framework of the program of the Minister of Science and Higher Education under the name "Regional Excellence Initiative" in the years 2019 – 2022; project number 001/RID/2018/19; the amount of financing PLN 10,684,000.00) and small and medium enterprises experts for valuable comments and suggestions. I also appreciate the effort of the business entities' employees who agreed to participate in the study.

References:

Williams, C.C.; Milligton, A.C. The diverse and contested meanings of sustainable development. *Geogr. J.* **2004**, *170*, 99–104.

Biography (up to 100 words):

Monika Spychalska-Wojtkiewicz has PhD in economics from University of Szczecin (Poland). She is an academic lecturer, permanently connected with the University of Szczecin (Faculty of Economics, Finance and Management), cooperating with the whole Europe in international research projects. She specializes in the commercialization process, economics of the creative sector, its impact on regional development. She is an expert in marketing research, project management, design thinking, business model development. She is a certified member of International Project Management Association.

Presenting Author Information
Full name: Monika Spychalska-Wojtkiewicz
Organization/Institute/ Company: University of Szczecin, Poland
E-mail address: monika.spychalska-wojtkiewicz@usz.edu.pl

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

The Corporate Social Responsibility and Governance of Hydropower – New Challenges for Investors and Policy

Werner Hediger*
*Center for Economic Policy Research, University of Applied Sciences of the Grisons, Chur, Switzerland

Abstract

Background

Hydropower is a major pillar of current energy systems and their future development, in many countries, especially in mountain areas. It is a clean and renewable source of energy, but not undisputed, as it can entail substantial impacts on the environment, economy and society. Accordingly, hydropower activities must increasingly be judged from a sustainable development perspective. Corporate social responsibility (CSR) is the principle frequently applied to evaluate corporate contributions in this context. Moreover, regarding water rights, investment decisions and the distribution of resource rents, it further involves issue of corporate and public governance, as well as policy design.

Methods

To investigate the above issues from a theoretical and conceptual perspective, we apply a generic welfare-economic model that integrates corporate and societal perspectives of hydropower activities. This relies on insights from an integrated sustainability assessment that involves results of impact assessment and the evaluation of tradeoffs across the various system goals. Altogether, this provides corporate and social accounting prices to weigh the external and distributional effects of hydropower from a societal perspective against the financial concerns of the shareholders and other recipients of revenues from the hydropower company.

Conclusion

For sustainable development, investments in hydropower facilities should be undertaken if the total value of hydropower is positive, as it includes the financial net present value of the project as well as its external value that accounts for externalities and distributional effects. Moreover, when it comes to the analysis of future prospects of hydropower and policy design the issues of water rights, resource rents and governance must be jointly addressed. This is crucial when analyzing projects of hydropower companies with shared private and public ownership; i.e., if external stakeholders are also sensitive shareholders who grant, at the same time, the company the right to operate. Altogether, this shall support better informed decision making on both corporate and policy levels.

Keywords: Hydropower, resource rents, water rights, sustainable development, corporate social responsibility, governance, energy policy.

References:

Hediger, W. (2010). Welfare and capital-theoretic foundations of corporate social responsibility and corporate sustainability. Journal of Socio Economics, 39, 518-526. https://doi.org/10.1016/j.socec.2010.02.001
Hediger, W. (2018). The corporate social responsibility of hydropower companies in Alpine regions—Theory and policy recommendations. Sustainability, 10(10), 3594. https://doi.org/10.3390/su10103594
Hediger, W. (2019). Corporate social responsibility and governance of hydropower – New challenges in energy economics and policy. IAEE Energy Forum, second quarter 2019, 23-25. https://www.iaee.org/newsletter/issue/98

Biography (up to 100 words):

Werner Hediger holds a doctoral degree from the University of Zurich, Switzerland, and habilitated at ETH Zurich, where he is a University Lecturer in agricultural and resource economics. At the University of Applied Sciences of the Grisons (FH Graubünden), he is head of the Center for Economic Policy Research and a professor of economics. He published in various fields of energy, agricultural, environmental and resource economics, and ecological economics, acted as adviser to public administrations and scientific committees, and is a board member of the foundation Alpine Energy Research Center (AlpEnForCe) in Disentis, Switzerland.

Presenting Author Information
Full name: Hediger, Werner
Organization/Institute/ Company: University of Applied Sciences of the Grisons, Switzerland
E-mail address: werner.hediger@fhgr.ch

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Identification of Catchment Scale Best Management Practices by using RUSLE and MMF Soil Loss Models at a Mountainous Watershed in India

Susanta Das [1], Proloy Deb [2], Pradip Kumar Bora [3] and Prafull Katre [4]

[1] Department of Soil and Water Engineering, Punjab Agricultural University, Ludhiana, Punjab 141004, India

[2]Department of Civil, Construction and Environmental Engineering, Centre for Complex Hydrosystems Research, The University of Alabama, Tuscaloosa, Alabama 35487, USA

[3]College of Post Graduate Studies, Central Agricultural University, Umiam, Meghalaya 793103, India

[4]Department of Soil and Water Engineering, Swami Vivekanand College of Agricultural Engineering & Technology, Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh 492012, India

Abstract

Nongpoh is a peri-urban hilly watershed situated in Meghalaya, India and is facing the major problem of soil erosion. To minimize this problem, this study primarily focused to prepare an alternative land use and management plan by prioritizing the critical erosion hazard areas within the watershed based on average annual soil loss and land use and land cover. Two soil erosion models namely Revised Universal Soil Loss Equation (RUSLE) and Modified Morgan–Morgan–Finney (MMF) models were used to estimate soil loss with the input parameters extracted from satellite information and automatic weather stations. The RUSLE and MMF models showed similar results in estimating soil loss, except the MMF model estimated 7.74% less soil loss than the RUSLE model from the watershed. The results also indicated that the study area was under severe erosion class, whereas agricultural land, open forest area, and scrubland were prioritized most erosion prone areas within the watershed. Based on prioritization, best management plans were developed at catchment scale for reducing soil loss. These findings and the methodology employed could be widely used in mountainous to hilly watersheds around the world for identifying best management practices (BMP).

Keywords: soil erosion; LULC; RUSLE; MMF; prioritization and management plan

Acknowledgements

The authors would like to acknowledge Ranjit Das of North Eastern Space Applications Centre (NESAC), Umiam, Meghalaya, India and M.P. Tripathi of Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, India for their assistance and suggestions while conducting the study.

References:

Renard, K.G.; Foster, G.R.; Weesies, G.A.; Porter, J.P. RUSLE: Revised universal soil loss equation. J. Soil Water Conserv. 1991, 46, 30–33.

Morgan RPC, Morgan DDV, Finney HJ. 1984. A predictive model for the assessment of soil erosion risk. J Agr Eng Res. 30:245–253.10.1016/S0021-8634(84)80025-6

Biography (up to 100 words):

Susanta Das is a PhD scholar at Punjab Agricultural University (India). Earlier he work as an assistant professor at Indira Gandhi Krishi Vishwavidyalaya, India and also having experience on teaching and research. Also he worked as a intern in Northeastern space Application Centre, Meghalaya, India. He has published many papers in reputed journals (including Scientific Report and Sustainability) and serving as a reviewer board member of Elsevier journals.

Presenting Author Information

Full name: Susanta Das

Organization/Institute/ Company: Punjab Agricultural University, India

Email-address: susanta-swe@pau.edu

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

A Review of Energy Storage Technologies' Application Potentials in Renewable Energy Sources Grid Integration

Henok Ayele Behabtu [1,2,*], Maarten Messagie [1], Thierry Coosemans [1], Maitane Berecibar [1], Kinde Anlay Fante [2], Abraham Alem Kebede [1,2] and Joeri Van Mierlo [1]

[1]Mobility, Logistics, and Automotive Technology Research Centre, Belgium;
[2]Faculty of Electrical and Computer Engineering, Jimma Institute of Technology, Jimma University, Ethiopia

Abstract
A large-scale grid integrated renewable energy sources (RESs) such as wind and solar are frequently hit by fluctuations due to, for example, insufficient wind or sunshine. It is, therefore, necessary to maintain the power fluctuation of a power system integrated with a large amount of RESs such as wind and solar. Energy storage technologies (ESTs) mitigate the problem by storing excess energy generated and then making it accessible on demand. Hence, the relationship between ESTs and their application is interdependent; a knowledge of the technical characteristics of each ESTs as well as their application potential in RESs are very important toward technology adoption. Even though there are various ESTs already reviewed in the literature, there is limited information and updated data on characteristics of ESTs and their application potential for RESs grid integration. There is also a lack of evaluating ESTs with the help of graphic comparison from a complete selection criteria perspective such as technical, environmental, and economic. Therefore, this review paper aims to address this gap by evaluating the application potential of ESTs for RESs utility grid integration based on up-to-date selected criteria such as energy and power density, lifetime, cost, efficiency, technology maturity, response time, self-discharge time, power rating, discharge time, and environmental impacts. Relevant literature data related to technical characteristics of ESTs have been collected from Scopus, ScienceDirect, and IEEE Xplore databases. The critical review shows a high potential application for Li-ion batteries and most fit to mitigate the fluctuation of RESs in the utility grid integration sector due to their high energy density (350Wh/l) and power density (1250W/L), being lighter in weight and smaller in size, high cycle efficiency (90.5%), low daily self-discharge rare(0.19), the rapid response time(sec), and low environmental impacts. However, for Li-ion batteries to be fully adopted in the RESs utility grid integration, their cost needs to be reduced.

Keywords: intermittent energy sources; energy storage application; characteristics of ESTs; comparison of ESTs; selection criteria of ESTs

Acknowledgements
Network for Advancement of Sustainable Capacity in Education and Research in Ethiopia (NASCERE), Jimma University, Ethiopia, and Vrije Universiteit Brussel (VUB), Brussels, Belgium are acknowledged for providing a joint Ph.D. scholarship to the first author during the study.

Biography (up to 100 words):
Henok Ayele received his first degree in Electrical /Electronic Technology in 2009 from Adama University, Ethiopia. He received his master's degree in Power System Engineering in 20014 from Bahirdar University, Ethiopia. Currently, he is studying his PhD in MOBI's Battery Innovation Centre at Vrije Universiteit Brussel (VUB). His research interests are Advanced Power Electronics for Power Systems and Renewable Energy Resources and Energy Storage Technologies.

Presenting Author Information
Full name: Henok Ayele Behabtu
Organization/Institute/ Company: Vrije Universiteit Brussels, Belgium
Email-address: Henok.ayele.behabtu@vub.be

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Assessing perceptions of sustainability among high school economics students: A gender distinction

Javier Cifuentes-Faura[a], Ursula Faura-Martínezb, Matilde Lafuente-Lechuga[b]

[a]Department of Financial Economics and Accounting, University of Murcia, Spain
[b]Department of Quantitative Methods for Economics and Business, University of Murcia, Spain

Abstract

Background

Education plays a key role in promoting sustainable development. Bringing sustainable development into the classroom requires a profound transformation in the traditional teaching methodology, which focuses on the acquisition of knowledge and skills for professional practice. The aim of this paper is to analyze the differences in knowledge, attitudes and behaviors related to sustainable development from a gender perspective.

Methods

A survey has been carried out among students in the Economics subject of the baccalaureate which responds to an integral approach to sustainable development. It considers ecological, social, cultural, economic, political, etc. aspects, covering the three dimensions of sustainability: social, economic and environmental. It has been developed taking into account different scales used in various research studies to analyze the perceptions of subjects regarding the natural environment.

Conclusion

The results show that young people, in general, are aware of the need to preserve the environment in order to ensure the future of the planet, although girls value more than boys the aspects related to the reduction of water consumption and the use of renewable natural resources. The students are aware of the problems involved in sustainable development, but they think that this problem mainly affects the environment and that the social and economic spheres, although the former is important mainly for girls and the latter for boys, remain more in the background.

By means of a factor analysis for each of the three different blocks of the survey, different sub-scales were obtained. This made it possible to calculate partial sustainability indices for students' knowledge, attitude and behavior towards sustainability. In both knowledge and behavior the subscales found are associated with the environmental, social and economic dimensions of sustainability, while in attitude the social and economic spheres have not been differentiated. Women always show a stronger attitude and behavior towards environmental aspects than men.

Keywords: Sustainability; secondary school; economics; gender; sustainable development

References:

Aleixo, A.M., Azeiteiro, U. M., & Leal, S. (2018). The implementation of sustainability practices in Portuguese higher education institutions, International Journal of Sustainability in Higher Education, 19(1), 146-178, https://doi.org/10.1108/IJSHE-02-2017-0016

Aleixo, A.M., Leal, S., Azeiteiro U.M. (2018). Conceptualizations of sustainability in Portuguese higher education: roles, barriers and challenges toward sustainability. Journal of Cleaner Production, 172, 1664-1673, http://dx.doi.org/10.1016/j.jclepro.2016.11.010

Alkhayyal, B., Labib, W., Alsulaiman, T, y Abdelhadi,A. (2019). Analyzing Sustainability Awareness among Higher Education Faculty Members: A Case Study in Saudi Arabia. Sustainability (11), 23, 6837; https://doi.org/10.3390/su11236837.

Azeiteiro, U.M., Bacelar-Nicolau, P., Caetano, F.J.P., Caeiro, S. (2015). Education for sustainable development through e-learning in higher education: experiences from Portugal. Journal of Cleaner Production 106, 308-319

Biography (up to 100 words):

Javier Cifuentes-Faura graduated in Business Administration from the University of Murcia with an Extraordinary End-of-Career Award and the best mark of the promotion. He has carried out postgraduate studies such as the Master in Business Administration MBA and the Master in Commercial and Marketing Management, at the European Business School in Barcelona, both with Cum Laude recognition for their academic excellence. He has been awarded the "Economics and Business 2018" prize by the Official College of Economists. He received a scholarship for a stay at Georgetown University in Washington DC. He is a researcher at the University of Murcia and a member of the work plan for the EDINSOST2 project: Integration of sustainable development objectives in sustainability training in Spanish university degrees. He has published articles in several journals and has participated in international conferences, being a guest lecturer in some of them.

Presenting Author Information

Full name: Javier Cifuentes-Faura
Organization/Institute/ Company: University of Murcia, Spain
E-mail address: javier.cifuentes@um.es

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Modelling the link between economic complexity and environment

Olimpia NEAGU, Ph.D.Habil[1]
"Vasile Goldiș" Western University of Arad, Romania

Abstract
The paper exposes three econometrical models of the link between economic complexity and environment. Economic complexity is expressed by the Economic Complexity Index (ECI) and as variables of environment GHG and CO2 emissions were uses as well as the Ecological Footprint (EF). The first model estimates the long-run coefficients of ECI and energy consumption structure in the 25 EU countries, in a linear regression model where the dependent variable is GHG emissions as expression of environmental pollution. In the second model, the validity of Kuznets curve is tested also in the panel of 25 EU countries as well as in the 25 individual countries, by using a polynomial cointegrating regression. In the third model, the effect of economic complexity on the ecological footprint is tested in a linear dependency model, along with traditional factors of pollutions (GDP per capita, fossil fuel consumption). Data are extracted from Observatory of Economic Complexity, Global Footprint Network and World Bank databases. The methodological approach included a panel data analysis complemented with individual time series for individual countries, by using unit root tests, cross-sectional dependence and heterogeneous cointegration test of linear dependency as well as cointegration test of a quadratic dependency (polynomial cointegrating regression).
The findings show that: (i) the effect of economic complexity on environment is higher in countries with low economic complexity, suggesting a higher risk of pollution; (ii) the model of Kuznets curve, including economic complexity index as explanatory variable, is validated
(iii) the rise of economic complexity has an extension effect on ecological footprint in the most complex economies in the world.
As policy implications, we mention: (i) realistic plans for carbon and GHG emission reduction in all countries; (ii) effective strategies for transition to low-carbon industries; (iii) incentives for investment in research activities and clean technologies; (iv) assessment of the potential environmental impact of a complex product in its design phase.

Presenting Author Information
Full name: **Olimpia NEAGU**
Organization/Institute/ Company: Vasile Goldiș" Western University of Arad, Romania
Email-address: olimpia.neagu@uvvg.ro

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

From Transfer to Knowledge Co-Production: Transdisciplinary Research Approaches for Air Pollution Mitigation

Liina Tõnisson[a]

[a]Directorate, Leibniz Institute for Tropospheric Research, Leipzig, Germany

Abstract

Background

Air pollution, which kills an estimated 7 million people every year, is one of the greatest environmental health risks of our times. Finding solutions to this threat poses challenges to practitioners and policymakers alike. Identifying appropriate research approaches for air pollution mitigation is the goal of the presented work.

Methods

Two effective ways for tackling air pollution issues in urban areas can be identified based on WTimpact and TAME-BC projects. Firstly, a citizen science method for air pollution mapping and awareness building, based on BMBF funded WTimpact (grant 01IO1726) project, was found to increase the air quality-related scientific knowledge among citizens that in turn can lead to healthier and greener lifestyle choices. Secondly, the combination of TRANSFORM and Follow the Innovation (FTI) sustainability methods for black carbon mitigation, based on BMBF funded TAME-BC (grant 01LE1903A) project proved to be effective in knowledge co-creation and for research results local embedment. The citizen science approach integrated low-cost air quality measurement tools with scientific air quality measurement infrastructures for citizen participation in particulate matter and black carbon pollution mapping Leipzig wide. The latter transdisciplinary approach integrated BC measurements with technological, socio-political, and health aspects to improve the scientific state of the art, policymaking, transport sector planning, and clinical studies related to air pollution health effects in the Philippines, Metro Manila.

Expected Results/ Conclusion/ Contribution

Working toward air quality mitigation and knowledge transfer solutions that meet the interests of various stakeholders requires a “transdisciplinary” research approach. Two sets of methods for the purpose of better urban air quality can be concluded to be effective based on WTimpact and TAME-BC approaches, namely:

1. Citizen science approach with low-cost sensors (WTimpact) for awareness building and knowledge transfer from science to society;
2. “Follow the Innovation” (FTI) approach for the collaborative participation of multi-stakeholders in planning and implementation processes combined with the TRANSFORM approach for integrating foresight, backcasting, and intervention research for institutional change towards better air quality management in urban regions.

The citizen science approach is recommended for civic involvement in knowledge transfer and creation processes, whereas FTI and TRANSFORM combination of methods is recommended for institutional science, technology, and knowledge transfer.

Keywords: Air pollution, black carbon, particulate matter, knowledge transfer, low-cost sensors, sustainability, transdisciplinary research.

Biography (up to 100 words):

Liina Tõnisson received her Ph.D. in economics from Leipzig University (Germany) at the age of 29. She is an experienced scientific coordinator with a demonstrated history of a decade working in the ICT applied research industry. A trained economist and sustainable development research professional. Skilled in sustainability research, knowledge-, and technology transfer, financial-, and impact analysis.

Presenting Author Information

Full name: Liina Tõnisson

Organization/Institute/ Company: Leibniz Institute for Tropospheric Research, Germany

E-mail address: tonisson@tropos.de

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Study and design optimization of hollow bricks as possible applications for rubber/crete mixtures

Abbas Sibai, Matteo Sambucci, Marco Valente

Department of Chemical and Material Engineering, Sapienza University of Rome

Abstract

Generally, there is no strict regulations regarding rubber tire disposal. Hence, tires end up thrown in seas and lands and are considered to be a dangerous pollution source for the environment. This project sheds the light on incorporating shredded/powdered rubber tires into cement-based material used upon certain percentage that could reach 50% of mixed rubber tire in the aggregate, where it shows a dual functionality: economic–environmental benefits and technological functionalization of the building material. According to engineering properties of Rubber/Crete compound, a possible technological application could be hollow bricks as insulating building component in construction-architectural field.

Methods

This research represents the simulation of a mold for brick production with standard hollow design as square and circular, as well as unconventional geometrical shapes such as fractal, hexagonal and hybrid (fractal + hexagon) structures for the achievement of topological optimization considering also the characteristics of this particular materials that allow maximizing the physical-mechanical performances of a standard rubber-cement component for building-architectural applications. The modeling work studies the properties of the molded bricks with their optimized hollow design through the usage of Comsol multi-physics software, depending on the void percentage, size and shape of the design and structure used.

Expected Results/ Conclusion/ Contribution

The aim of this project through the design of the standard and of the unconventional hollow shapes of the molded brick, is to arrive for properties that could compete standard brick from performance as related to thermal insulation, mechanical strength and light weight, as well as production where it is possible to print molds in any shape and size required.

Keywords: Rubber tire recycling, rubber/crete, architecture, topological optimization, finite element method, thermo-mechanical analysis

Biography (up to 100 words):

Abbas Sibai a doctoral researcher student at La Sapienza University of Rome, Italy, Faculty of Material Science and Engineering, working on an innovative idea and product made of recycled material for building, construction, and architectural design. Holder of Master of Science degree in Product Design Faculty of Architecture from the La Sapienza University of Rome, and Bachelor of Art degree in Interior Architecture from the Lebanese International University in Beirut.

Presenting Author Information

Full name: Abbas Sibai
Organization/Institute/ Company: La Sapienza University, Department Chemical Engineering Materials Environment, Italy
E-mail address: abbas.sibai@uniroma1.it

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Effect of the Parking Lane Configuration on Vehicle Speeds in Home Zones in Poland

Alicja Sołowczuk [a], Przemysław Gardas [a]
[a*]Department of Road and Bridge, West Pomeranian University of Technology in Szczecin, Poland

Abstract
Nowadays, traffic calming measures that are designed to influence the drivers' behaviour in the first place and thus make them slow down (and increase the safety of traffic as a result) are used increasingly often in traffic engineering. As a rule of thumb, carefully planned street geometry and street furniture should advise the drivers of the traffic calmed area ahead of them, which makes them reduce the vehicle speed by influencing their perception.

Methods
One of the most common treatments are road narrowings and horizontal deflections of the route of travel. The reduction of the vehicle speed increases the driver's central visual area, which results in earlier and easier spotting of pedestrians that are about to cross the roadway.
A reduction of noise and exhaust emissions is an additional benefit. However, the current sustainable design guidelines are not specific regarding how often the route should be deflected by alternate parking lanes and how frequently they should be placed in the home zones (woonerven in Dutch) in order to achieve the desired reduction of vehicle speed, noise, pollution, and exhaust emissions.

Expected Results/ Conclusion/ Contribution
This being so, the authors carried out a speed survey research on a chosen street that includes woonerf design features, as typically used in Poland, with carriageway narrowings being created by parking lanes differently sited along its length. Several speed measuring devices were deployed to automatically and simultaneously measure and record the vehicle speeds and volume of traffic at different test locations. The measurement data were subjected to statistical analyses, including conventional statistical tests. The alternative hypothesis, proposing that the vehicle speeds depend on the configuration of parking lanes and carriageway narrowings was confirmed in almost all cases. The results have confirmed that the siting of parking lanes is a relevant factor as far as speed reduction is concerned, with the degree of this reduction depending on the remaining travel lane width and the length of roadway narrowing.

Keywords: home zone (woonerf), vehicle speed reduction; parking lane; carriageway narrowing

References
1. Devon County Council. Traffic Calming Guidelines TCG; Engineering and Planning Department: Devon, UK, 1991.
2. Department for Transport; Department for Regional Development (Northern Ireland); Scottish Executives; Welsh Assembly Government. Traffic Calming, Local Transport Note 1/07; TSO: Belfast, Northern Ireland, 2007.
3. Regional Council, Roads Development Guide, Strathclyde Regional Council: East Ayrshire, UK, 2010.
4. Vejdirektoratet, Urban Traffic Areas Part 7 Speed Reducers, Vejdirektoratet: Copenhagen, Denmark, 1991.
5. Stephanie, Paris: Plus de zones à 30km/h dès septembre, Permis A Points PAP 16 August 2014, France. Available online: https://www.permisapoints.fr/actualites/zone-a-30kmh-140815 (accessed on 20 October 2018).
6. Fressancourt, M. Une Limitation de la Vitesse Pour un Meilleur Partage de la Route…, AQTr 21 June 2011, France. Available online: https://aqtr.com/association/actualites/limitation-vitesse-meilleur-partage-route (accessed on 21 October 2018).
7. TrinityHaus Civil, Shared Space, Shared Surfaces and Home Zones from a Universal Design Approach for the Urban Environment in Ireland Key Findings & Recommendations; TrinityHaus Civil, Structural and Environmental Engineering Trinity College Dublin: Dublin, Ireland, 2012. Available online: http://universaldesign.ie/Built-Environment/Shared-Space/Shared-Space-Full-Report.pdf (accessed on 20 October 2018).
8. Wikipedia, Living Street. Available online: https://en.wikipedia.org/wiki/Living_street (accessed on 22 August 2019).
9. AXA Team. Regulations Applicable in Home Zones and Internal Traffic Zones, Article of 18 July 2013. Available online: https://www.smartdriver.pl/przepisy-obowiazujace-w-strefach-ruchu-i- zamieszkania? categoryName=bezpieczenstwo, Poland (accessed on 22 July 2019.)
10. SWOV. 30 km/h Zones, SWOV Fact Sheet; Instituut voor Wetenschappelijk Onderzoek Verkeersveiligheid: Haag, The Netherlands, 2018. Available online: https://www.swov.nl/ feiten-cijfers/factsheet/ 30kmuur-gebieden (accessed on 15 August 2019).

11. Woonerven, MENSenSTRAAT; Delft, The Netherlands, 2018. Available online: http://www.mensenstraat.nl/ inspiratie/woonerven/ (accessed on 22 August 2019).
12. Institute of Highway Incorporated Engineers, Home Zone Design Guidelines, HQ Design & Print: Essex, UK, 2002. Available online: https://www.theihe.org/wp-content/uploads/2019/03/Home-Zone-Design-Guideline.pdf (accessed on 20 August 2019).
13. Janssens, I.; Chalanton, I.; Bertrand P-J.; Caelen, E.; Broeckaert, M.; Dullaert, I.; Englebin, Y.; Houdmont, A.; Mathieu, V.; Temmerman, P.; et al. Het (Woon) Erf, Brochure ter Attentie van de Weg Beheerders; Belgisch Institut voor de Verkeersveiligheid BIVV: Brussel, Belgium, 2013. Available online: https://webshop.bivv.be/frontend/files/products/pdf/fa190b14bb74dfbe89179cd512d173e9/web_2013_zr_nl.pdf (accessed on 22 August 2019).
14. Bureau suisse de prevention des accidents BPA. Brochure technique Zones 30; Bureau suisse de prevention des accidents BPA: Bern, Switzerland, 2011. Available online: https://www.police-du-chablais.ch/N603/circuler-dans-les-zones-30-km/h.html (accessed on 22 August 2019).
15. Touring Club Schweiz TCS. Sicherheit in den Quartieren, Eine Informationsschrift über Strassengestaltung und Verkehrsmassnahmen; TCS CHF 10; Touring Club Schweiz Verkehrssicherheit: Vernier, Switzerland, 2002. Available online: https://www.mein-iesendangen.ch/index.php/files/21/Verschiedenes/24/tcssicherheit- in-den-quartieren.pdf (accessed on 22 August 2019).
16. Biddulph, M. Home Zones: A Planning and Design Handbook; The Policy Press and the Joseph Rowntree Foundation: Southampton, UK, 2001. doi:10.13140/2.1.1360.9927. Available online: https://www.researchgate.net/publication/267624323_Home_zones_A_planning_and_design_handbook(accessed on 17 August 2019).
17. Huguenin-Richard, F. La Mobilité des Enfants à L'épreuve de la Rue Impacts de L'aménagement de Zones 30 sur Leurs Comportements; Enfances Familles Générations EFG: France, 2010; pp. 66–87. Available online: https://doi.org/10.7202/044393ar (accessed on 28 August 2019).
18. Allinger-Csollich, E. Begegnungszonen: Kriterien–Gestaltung–BürgerInnenbeteiligung. Gemeinden Lebenswert Gestalten Sachgebiet Verkehrsplanung, Amt der Tiroler Landesregierung, Abteilung Verkehr und Straße; Sachgebiet Verkehrsplanung: Innsbruck, Austria, 2016. Available online: https://www.tirol.gv.at/ fileadmin/themen/verkehr/verkehrsplanung/downloads/mobile06_16_web.pdf (accessed on 20 August 2019).
19. Speed Humps vs. Speed Bumps; Germany, 2010. Available online: https://www.stmarysmd.com/docs/speedbumpsvshumps.pdf (accessed on 20 August 2019).
20. Google Earth. 2019. Available online: http://www.earth.google.com (accessed on 19 September 2019).
21. Road and Transportation Research Association Directives for the Design of Urban Roads; RASt 06; Road and Transportation Research Association: Köln, Germany, 2012.
22. Department for Transport; Scottish Executives. Traffic Calming, Local Transport Note 1; The Stationery Office TSO: London, UK, 2007. Available online: https://www.gov.uk/government/publications/traffic-calming-ltn-107 (accessed on 12 August 2019).
23. Speed Displays Traffic Detection, Radar, Detection, Software, Vitronic; Kędzierzyn Koźle, Poland, 2015.
24. Künzler, P.; Dietiker, J.; Steiner, R. Nachhaltige Gestaltung von Verkehrsräumen im Siedlungsbereich, Grundlagen für Planung, Bau und Reparatur von Verkehrsräumen; Herausgegeben vom Bundesamt für Umwelt BAFU: Bern, Switzerland, 2011. Available online: https://www.bafu.admin.ch/dam/bafu/de/ dokumente/luft/uw-umwelt-wissen/nachhaltige_gestaltungvonverkehrsraeumenimsiedlungsbereich.pdf (accessed on 12 August 2019).
25. Nina67, Consommation D'essence en Fonction de Vitesse et Rapport, Astuces-Pratiques, Article of 23 July 2015. Available online: https://www.astuces-pratiques.fr/auto-moto/consommation-d-essence-en-fonctionde-vitesse- et-rapport (accessed on 12 August 2019).
26. Delacrétaz, Y. Quel Aménagement Pour Quelle Vitesse? Les «Marges de Manoeuvre» en Milieu Urbain; Schweizerischen Vereinigung der Verkehrsingenieure und Verkehrsexperten SVI, Présentation: Mobilité et transports, 4 November 2014; Lausanne, Switzerland, 2014. Available online: http://www.svi.ch/fileadmin/geschwindigkeiten/Presentation_Delacretaz_SVI_2014.pdf (accessed on 22 August 2019).
27. KB, Verkeerswereld Geeft te Weinig Aandacht aan Woonerf, Verkeerskunde, Mensenstraat April 2012. Available online: https://www.mensenstraat.nl//wp-content/uploads/2013/06/verkeerskunde2012-04 woonerf.pdf (accessed on 22 August 2019).
28. Bigazzi, A.Y.; Rouleau, M. Can traffic management strategies improve urban air quality? A review of the evidence. J. Transp. Health 2017, 7, 111–124. doi:10.1016/j.jth.2017.08.001.
29. Nocera, S.; Ruiz-Alarcón Quintero, C.; Cavallaro, F. Assessing carbon emissions from road transport through traffic flow estimators. Transp. Res. Part C Emerg. Technol. 2018, 95, 125–148. doi:10.1016/j.trc.2018.07.020.
30. Andrzejewski, M. The Effect of the Driving Style on Fuel Consumption and Amount of Harmful Exhaust Gas Emissions. Ph.D. Thesis, Poznań University of Technology, Poznań, Poland, 2013. Available online: http://repozytorium.put.poznan.pl/Content/285883/Maciej_Andrzejewski_Wplyw_stylu_jazdy_kierowcy_ na_zuzycie_paliwa_i_emisje_substancji_szkodliwych_w_spalinach.pdf (accessed on 16 December 2019).
31. Tański, M. Parking in Home Zones, Polish Traffic Code; Article of 13 March 2019; Poland, 2019. Available online: https://www.prawodrogowe.pl/informacje/ekspert-wyjasnia/parkowanie-w-strefiezamieszkania-wyjasnia-ml-insp-mariusz-tansk (accessed on 10 August 2019).

Biography (up to 100 words):
Przemysław Gardas obtained a doctoral degree at the age of 32 at West Pomeranian University of Technology in Szczecin. He runs his own design office dealing mainly with road design and road reconstruction. He developed several dozen road projects. His research work includes: intersections and roundabouts designing as well as traffic calming. He published 19 articles and he presented 2 papers at international conferences.

Presenting Author Information
Full name: Przemysław Gardas
Organization/Institute/ Company: West Pomeranian University of Technology in Szczecin, Poland
E-mail address: p.gardas@wp.pl

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

The full costs Model of centralized and decentralized warehousing (including external costs)

Dr hab. Prof. US, Dariusz Milewski

Department of Organization and Management, Institute of Management, Faculty of Economics, Finance and Management, University of Szczecin, Poland

Abstract

Background

The author conducts research on the impact of the warehousing centralization strategy both on the economic efficiency of logistics processes and on external costs.

The aim of these studies was to investigate in which cases this strategy is effective.

Methods

The author using the electronic simulation model developed by him conducted simulations in order to calculate the impact of different strategies on the economic efficiency of processes and external costs for different variants (types of goods, efficiency of transport processes, a chosen mode of transport, transport distances).

Expected Results/ Conclusion/ Contribution

This research is being continued and the author is currently working on a mathematical model that will allow e.g. logistics managers to calculate the impact of this strategy on total costs, including external costs.

Keywords: Centralization of distribution; “square root law” of inventory management; economical efficiency of logistics processes; simulation; external costs of transport

Biography (up to 100 words):

Dariusz Milewski works at the University of Szczecin (Poland) since 1992. He is associated professor at the Department of Organization and Management in Institute of Management . His fields of scientific and research work include issues related to economic efficiency, optimization and management of logistics, transport and production processes. He also has practical experience as manager responsible for logistics in different companies and participated in national and international projects concerning transport and logistics. He has published more than 80 publications – books and papers in scientific journals and professional magazines.

Presenting Author Information

Full name: Dariusz Milewski

Organization/Institute/ Company: University of Szczecin, Poland

E-mail address: Dariusz.Milewski@usz.edu.pl

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Geographies of Flowers and Flower Power in the New Urban Normal

Annie TUBADJI[a], Valentina MONTALTO[b]

[a] Economics Department, Swansea University , the UK
[b] Joint Research Center of the European Commission, Ispra, Italy
[c]Collegio de Milano, Milan, Italy

Abstract
Geographies of discontent are well studied nowadays with regard to the geography of economic deprivation, although the sources for radicalization are often reported as very complex. Meanwhile, we know that economic prosperity is only one part of the local endowments that shape the utility function of the citizen.

It has been shown that the utility function of houseowners includes also the presence of green areas in the locality. It has also been shown that human capital concentrates in places rich of creative activities. In a changing urban reality (due to exogenous shocks such as COVID-19 and processes as the intensifying AI-presence in goods and services) the importance of understanding how green areas and creative milieus affect the utility function, happiness and even radicalization of the emotional state of citizens is of paramount importance.

Our study hypothesizes that the utility function of the urban inhabitant is driven among other by a trade off between virtual reality and availability of creative human interaction and real green environment that can be physically experienced in immediate proximity to where one lives. Using data from Eurostat and other sources, we test empirically this hypothesis.

We use the levels of happiness, depression, social protest as alternative measures of citizen's utility and explain it through the geographies of flowers (i.e. green areas) and geographies of flower power (i.e. creative industries), which are the main sources of green ambient and social expression in a city. We control for the economic endowment of the city as well.

Establishing the existence of this utility function empirically, we can at a next stage proceed with applying a location coverage model that optimizes the use of green spaces and creative industries in order to allow for the highest levels of happiness, lowest levels of depression and most socially peaceful regions of Europe.

Keywords: green areas, creative industries, digital, virtual reality, happiness, geography of discontent

Biography (up to 100 words):
Dr. Annie Tubadji has completed her PhD at Regensburg University (Germany). She is a cultural economist, working on the paradigm Culture Based Development (CBD), assistant professor at Swansea University and the Official Representative of the university at the UNESCO and OECD led Learning Cities Network and its PASCAL Observatory. She has published more than 40 papers in reputed academic outlets and serves as a referee and editorial board member of leading journals in the field of regional and urban economics.

Presenting Author Information
Full name: Annie Tubadji
Organization/Institute/ Company: Swansea University, the UK
E-mail address: a.k.tubadji@swansea.ac.uk

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Understanding communities' disaffection to participate in tourism in protected areas: A social representational approach

Birame SARR[1]

[1]Researcher in tourism
University of Las Palmas of Gran Canary, Spain
International Visiting Research Trainee, UQAM, Canada

Abstract

Tourism has been a popular strategy to foster economic benefits from national parks to local communities while also empowering them. Nevertheless, in many African countries like Senegal, the establishment of national parks had often led to the dispossession of local communities who usually found themselves impoverished and disempowered (Agrawal & Redford, 2009). Yet, prominent scholars argue that a prerequisite to empowering social subjects is to decipher their ideas, beliefs and perceptions. In spite of the widespread use of social representations theory, which substituted social exchange theory to analyze residents' attitudes towards tourism and tourists, it was mainly focused on developed tourist destinations. For this, this manuscript uses a social-representational approach that allows for including social interactions, history and cultural background to explain and cluster resident attitudes to tourism in protected areas in developing countries.

Based on the published evidence on the failure of community-based tourism programmes and projects that aim to achieve community engagement and benefits, and on scholars attributing those failures to the lack of consideration given to the perceptions and ambitions of local communities, that in turn are split into different groups that perceive tourism dissimilarly, our paper propose a pathway to foster community engagement and participation.

Therefore, through a fieldwork carried out in ten (10) villages neighboring this protected area, this investigation relied on a methodology used to characterize clusters based on communities' perceptions and attitudes towards tourism as well as to investigate the potential of each group to align with an empowerment strategy that may lead to a structural reform of tourism in protected areas likely to confer power and benefits to local communities. Three group profiles were identified: *the reluctants, the innovators and the escapists.*

The first group consists of the largest minority who is reluctant to accept any type of tourism at all. As regards the innovators, they actively support alternative types of community-based tourism such as agrotourism. The last group consists of those who mainly want to escape their unwanted existence and migrate with the help of tourists. This group could also be named the opportunists.

In the light of the aforementioned groups, it can be concluded that, the expected results of this paper is to achieve successful sustainable tourism development, interventions should capacitate the group that supports tourism to lead initiatives, seduce the reluctant ones and energise those who seek to migrate and negotiate with the external tourist agents to achieve more equitable tourism development in which locals actively participate.

Keywords: : Tourism, Protected areas, Social representations theory, Empowerment, National Park of La Langue de Barbarie, Saint-Louis, Senegal

References

Andereck, K.L.; Vogt, C.A. (2000). The relationship between residents' attitudes toward tourism and tourism development options. Journal of Travel Research. 39, 27-36.

Andriotis, K, Vaughan, R. (2003) .Urban residents' attitudes towards tourism development: the case of Crete, Journal of Travel Research.

Almeida–Santana, A.; Moreno-Gil, S.; Boza-Chirino, J. (2018). The paradox of cultural and media convergence. Segmenting the European tourist market by information sources and motivations. International Journal of Tourism. Research.

Ap, J. (1992). Residents' perceptions on tourism impacts. Annals of Tourism Research, 19, 665-690.

Cole, S. (2006). Information and empowerment: The keys to achieving sustainable tourism. Journal of Sustainable Tourism.

Locke, H. and Dearden, P. (2005). Rethinking protected areas categories and the new paradigm. Environmental Conservation, 32(1), 1–10.

Biography (up to 100 words):

Birame SARR is a Senegalese researcher and consultant in tourism and sustainability. He has just completed his PhD of tourism from University of Las Palmas of Gran Canary (Spain) and is about to defend it. Currently, Birame is interested in tourism developed in protected areas in developing countries (western Africa) with special focus on Community-based tourism, social representations theory and empowerment in the tourism sector. Currently, Birame SARR is an International Visiting Research trainee at York University (Toronto, Canada) and the University of Quebec in Montreal (Montreal, Canada). Birame has published many papers in reputed journals as Journal of Sustainable tourism and Sustainability.

Presenting Author Information

Full name: Birame SARR
Organization/Institute/ Company: TIDES/ University of Las Palmas of Gran Canary/ Department of Tourism, Economy and Management, Spain
E-mail address: sarrbirame@hotmail.fr

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Emerging Paradigms of Geographic Transferability: Eastern Boundary Upwelling Systems (EBUS) and the Disciplining of Climate Change Modeling

Will McConnell

Interdisciplinary Studies, Woodbury University, U.S.A.

Abstract

Background

As climate changes on land become increasingly significant to structuring global and local systems of effective response and longer-term resilience for humans, ocean studies remain largely misunderstood, and underrepresented in the predictive modeling of climate change—fundamentally, in the significance of changes in ocean systems' processes for designing or re-designing land-based strategies of mitigation and adaptation. Oxygen availability is a major environmental gradient for organizing the structure and functioning of marine ecosystems; thus, while the overall impact of increasing deoxygenation on climate change more generally remains uncertain, recent findings of dramatic levels of increasing deoxygenation across multiple oceanic zones and systems suggest that humans' ability to rely on the productivity of coastal ecosystems may be significantly impacted in the near future.

Methods

Through the design of a case study methodology that identifies the rapidly increasing rates of hypoxic ("dead zones") ocean areas as "canaries in the coal mine" of climate change impacts not well-understood, I focus on the emerging studies of hypoxic zones in both coastal waters and global oceans, with a specific focus on the four eastern boundary upwelling systems (EBUS) as significant sites for data design, collection, and interpretation.

Expected Results/Conclusions/Contribution

I argue for the need to develop alternative interpretation strategies, and different combinations of disciplinary approaches, for increasing the collaborative availability of scientific and extra-scientific data to better understand and mitigate both the rise of hypoxic events and impacts of increasing, and increasingly alarming, rates of change in deoxygenation in these key zones of the global oceans. Challenges to, and the need for, more effective modeling of deoxygenation in EBUS sites globally is addressed in a proposal for additional data design and collection.

Acknowledgements

Woodbury University has supported elements of the research described above.

Biography (up to 100 words):

Will McConnell received his Ph.D. from McMaster University, Canada, where he began combining research modes from the sciences, social sciences, and humanities. He has published and delivered mixed-mode research internationally across several disciplines. His research designs solutions in multiple areas of ocean and land-based research; these research areas combine the chemistry of the ocean and land-based cycles of consumption, ocean and atmospheric pollution, and the production and perception of waste; social marketing and community-based social marketing applied to changing human behavior and the understanding and awareness of agricultural production techniques' impact on GHGs as well as ocean interactions; political discourse and best practices policy and decision-making in combining environmental, economic, and social forms of sustainability; aridity, the production of GHGs and bio-agriculture of the south-west United States region; food desertification and the production and distribution of food in the United States; international law and policy of non-territorial ocean areas; successful reef protection, management, and regeneration efforts globally, with a focus on marine protected area (MPA) design and interdisciplinary strategies. His most recent work focuses on the emerging issues of global ocean deoxygenation and the design of solutions for better tracking of oxygenation levels across the major upwelling current systems of the global ocean (eastern boundary upwelling systems—EBUS). He is an avid scuba diver, having incorporated diving into the study of many underwater regions across the globe; while on land, he has an abiding interest in xeriscaping and zero waste urban and architectural design. He is now based in Los Angeles, California.

Presenting Author Information

Full name: Will McConnell
Organization/Institute/ Company: Woodbury University, U.S.A.
E-mail address: will.mcconnell@woodbury.edu

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Spatial decision support for environmental analysis and planning with recent examples of applications

Keith M Reynolds
[a*]US Department of Agriculture, Forest Service Research, USA

Abstract

Background/ Objectives and Goals

Contemporary forest management is significantly challenged to provide for the sustainability and resilience of forest ecosystems, while taking into account numerous competing societal demands for ecosystem services and multiple interacting environmental and human-caused stressors. In response to these challenges, spatial decision support technologies to support decision making in forest management have been steadily evolving since the early 1990s. This presentation provides an overview of key features of the Ecosystem Management Decision Support (EMDS) system that provide a state-of-the-art framework for spatial decision support of forest ecosystem management.

Methods

EMDS is a GIS-based technology that provides a flexible framework for designing knowledge-based decision support applications for a wide variety of forest management problems. The core system functionality mediates the interoperability of four analytical engines that provide support for logic-based and probabilistic reasoning about ecosystem condition, multi-criteria decision analysis for strategic and tactical planning, and Prolog-based decision trees for complex tactical planning. The framework architecture of EMDS is built around modern workflow methods, and implements a workflow editor that allows forest planners to invoke the analytical engines in arbitrarily complex task sequences that can support the complex requirements of modern forest management decision making related to maintaining the sustainability and resilience of forest ecosystems.

Expected Results/ Conclusion/ Contribution

Application of the EMDS framework for forest ecosystem analysis and planning is illustrated in the presentation with two examples. The first example presents a simple but practical hypothetical case that demonstrates the rationale for the workflow-based approach in EMDS to managing the interoperability of its four analytical engines. The second example presents a recent real-world application in which we evaluate the performance of five management strategies for maintaining forest ecosystem resilience over a 100-yr timeframe in the Lake Tahoe Basin in the Sierra Nevada mountain range of California.

Keywords: Spatial decision support, logic models, multi-criteria decision models, decision trees, Bayesian networks, workflows

References

Reynolds, K.M., P.F. Hessburg, and P.S. Bourgeron (eds). 2014. Making Transparent Environmental Management Decisions: Applications of the Ecosystem Management Decision Support System. Berlin: Springer.

Biography (up to 100 words):

Dr. Keith Reynolds is a research forester with the Pacific Northwest Research Station (US Forest Service) and is located at the Corvallis Forestry Sciences Laboratory in Corvallis, OR. His primary areas of expertise are in statistics, biomathematics, and knowledge-based systems theory and application. He has been the team leader of the Ecosystem Management Decision Support project at the PNW Station since 1993, designing and implementing new spatially enabled knowledge-based systems technologies for environmental analysis and planning.

Presenting author details

Full name: Keith Morgan Reynolds
Organization/Institute/ Company, Country: US Department of Agriculture, USA
E-mail address: keith.reynolds2@usda.gov

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Delivering UN Sustainable Development Goals' Impact on Infrastructure Projects: An Empirical Study of 40 Senior Executives in the UK Construction Sector

Paul Mansell [1], Simon P Philbin[2], Efrosyni Konstantinou[3]
[1] Doctoral Researcher at Nathu Puri Institute for Engineering & Enterprise, London South Bank University and Associate Staff at University College London, Bartlett School of Construction and Project Management
[2] Professor and Director of Nathu Puri Institute for Engineering & Enterprise, London South Bank University
[3] Associate Professor in Strategic Management of Projects, The Bartlett School of Construction and Project Management, University College London

Abstract
Background/ Objectives and Goals
Achievement of the United Nations' 2030 Sustainable Development Goals (SDG) is of paramount importance for both business and society. Across the construction sector, although there is growing evidence of an intent to measure the SDG Global Goals, at both the business and project levels, there continue to be major challenges achieving this objective.

Methods
The presentation/paper shares the results of an empirical study of 40 interviews with executives from the United Kingdom (UK) construction industry. The semi-structured interviews were designed to answer three research questions: the perceived value and importance of measuring SDGs (i.e. the outcomes); their current approach and capability (i.e. the mechanism); and, their identification of the challenges and opportunities (i.e. the context) such as skills, tools, processes, structures and methods. NVivo© was chosen as the web-enabled data collection tool. The research partnered with the Institution of Civil Engineers (ICE) to enable access to their senior members that mostly had a global footprint (57%), had staff levels mostly between 5,000-25,000 (62%), including nearly a third at CEO or Board level.

Expected Results/ Conclusion/ Contribution
The findings indicate that SDG measurement practices at both business and project levels in the construction industry are embraced in principle but are problematic in practice, and that rarely does action match rhetoric. While the research was completed in the UK, the findings have broader applicability to other countries since most construction firms have extensive global business footprints. Researchers can use the findings to extend the current understanding on measuring outcomes and impact at project level, and for practitioners, the study provides insights to the contextual pre-conditions necessary to achieve the intended outcomes of adopting a mechanism for the measurement of SDGs. Finally, the findings have implications for investment decisions involving broader benefits in regard to people, profit and planet considerations.

Keywords: Sustainability; Project Success; Business-Society; Business Models; Sustainable Development Goals (SDGs); Sustainable Development; Infrastructure project

Biography (up to 100 words):
Paul has a portfolio career: senior independent project advisor to UK Government since 2008; leading/teaching the governance module at UCL on the MSc 'Strategic Management of Projects' since 2012; full-time PhD Research into 'Measuring Infrastructure Projects' SDG Impact' with Nathu Puri Institute (completes in March 2021).
Previously Paul worked for 20 years for the UK government, then 5 years in Deloitte Consulting as a Director, afterwards jointly setting-up a leading project performance consultancy in 2004, winning many UK national awards, including the APM Firm of the Year twice in its first 5 years. BT bought the firm in 2008. Paul has led (as programme director) national (public and private) mega-programmes across telecom, finance, energy/nuclear and transport sectors. He has an MPhil in International Relations from Cambridge University; MSc in Major Programmes from Oxford University and MA in Strategic Defence Studies from KCL.

Presenting author details
Full name: Paul Mansell
Organization/Institute/ Company, Country: London South Bank University and Associate Staff at University College London, UK
E-mail address: paulrmansell@gmail.com

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Music as an instrument that supports the Sustainable Development Goals

Amaya Epelde and Ligia Isabel Estrada

University of Granada, Spain

Abstract

Music is an instrument to improve coexistence, being able to reduce the levels of bullying and cyberbullying in young people. In the case of intervening in school environments, its influence contributes to the improvement of the Sustainable Development Goals (SDG) "Good Health and Well-being" (SDG 3), "Quality Education" (SDG 4) and "Peace, Justice and Strong Institutions" (SDG 16). By improving coexistence behaviors, the climate of the center is favored and therefore, a warmer environment for learning is fostered. As an example, music can improve the relationships between students, in a way that favors their attitude towards learning and teamwork when carrying out group activities.

In this work, we present the results of the intervention in students between 11 and 14 year of age from two educational centers. The intervention consisted of carrying out activities through music for four months and a talk about human values. The main objective was the reduction of aggressive behaviors among young people The quasi-experimental study, with a pretest-posttest design and a equivalent randomized control group were adopted. The instrument used to collect information was the Maite Garaigordobil´s Cyberbullying Test, whose comparison analysis of groups (T-Student and D-Cohen) was carried out with the computer program for the treatment of quantitative data IBM SPSS 24.0. The results indicate a decrease in victims, aggressors and witnesses of cyberbullying in the semi-public education centre, and a decrease in victims of bullying in the public center. In conclusion, music is a resource that allows improving people's relationships, and therefore their coexistence (SDG 16), thus having an impact on an improvement in the quality of education (SDG 4) by creating environments of better well-being (SDG 3) that promote learning.

Presenting Author Information

Full name: Amaya Epelde and Ligia Isabel Estrada
Organization/Institute/ Company: University of Granada, Spain
E-mail address: aepelde@ugr.es, ligia@ugr.es

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

DCCA coefficient for planning actions to achieve Sustainable Development Goals in cities

Thiago B. Murari[a]

[a] PPG GETEC, Centro Universitário SENAI CIMATEC, Brazil

Abstract

Background

United Nations are committed to the Sustainable Development Goals (SDGs), with 17 global goals and 169 targets, to be met by 2030. Goals have been established for social, environmental and economic challenges in a structured way. An indicator framework shows the situation of each country in relation to the established objective [1]. Defining actions in each city to assist in the fulfillment of these SDGs can be a difficult task, since large cities are huge dynamic systems and the population of urban areas, mainly in the metropolises, has been steadily increasing worldwide [2].

The objective of this work is to present a method to correlate different time series that can indicate the areas of cities that need more attention from municipal governments. For instance, Detrended Cross Correlation Coefficient (ρDCCA) were used to identify areas in the city where bus passengers with reduced mobility are most affected by rainfall [3], impacting on social inclusion and reducing inequalities. It can also be used to correlate data on sustainable mobility, security or assess the spread of arbovirus epidemics.

Methods

The ρDCCA can be applied in different areas of knowledge. It is the ratio between the detrended covariance function of Detrended Cross-Correlation Analysis and the variance function without trend of Detrended Fluctuation Analysis in two time series. ρDCCA is calculated according to [4]. The method can quantify the level of positive or negative cross-correlation between nonstationary time series and identifying seasonal components.

Expected Results

It is expected to create a systematic review of the literature regarding the application of ρDCCA since its development in 2011, across the different areas of knowledge, to correlate with the most diverse issues in big cities. This review of the method's applications, including new insights, will be related to the 169 targets developed by the UN, generating a path to achieve the 17 proposed objectives. In this way, we can build a way to identify opportunities in the planning process of government actions that aim to improve the global indicators of the SDGs.

Keywords: SDGs, Cross-Correlation, Challenges

Acknowledgement: I would like to extend my sincere thanks to Marcelo A. Moret, from PPG MCTI of Centro Universitário SENAI CIMATEC.

References:

[1] UN (2015) Transforming our world: the 2030 agenda for sustainable development. United Nations, New York

[2] Bibri, S. E. & Krogstie, J. Smart sustainable cities of the future: an extensive interdisciplinary literature review. Sustain. Cities Soc. **31**, 183–212 (2017). https://doi.org/10.1016/j.scs.2017.02.016

[3] Azevedo, G.A., Sampaio, R.R., Filho, A.S.N. et al. Sustainable urban mobility analysis for elderly and disabled people in São Paulo. Sci Rep **11**, 791 (2021). https://doi.org/10.1038/s41598-020-80906-w

[4] Zebende, G.F. DCCA cross-correlation coefficient: Quantifying level of cross-correlation. Physica A: Statistical Mechanics and its Applications 390 (4), 614-618 (2011). https://doi.org/10.1016/j.physa.2010.10.022

Biography (up to 100 words):

Thiago B. Murari has completed his PhD at the year of 2016 from Centro Universitário SENAI CIMATEC (Brazil). He is a Visiting Professor at the Centro Universitário SENAI CIMATEC. Researcher on topics related to Innovation, Industry 4.0, Complex Systems, Mobility and Sustainability. He is also a Design Engineer at Ford Motor Company. He is responsible for the design of vehicle interior components on global platforms in the Studio Design team. He started at Ford in 2006, where he served in several positions within the Digital Innovation group.

Presenting author details

Full name: Thiago Barros Murari

Organization/Institute/ Company, Country: PPG GETEC, Centro Universitário SENAI CIMATEC, Brazil

Email-address: thiago.murari@ba.docente.senai.br

STEM
Science | Technology | Engineering | Mathematics
International Organization

Online Summit on
Environmental Science and Earth Science

FEB 26, 2021

Preparation of Aerogel Supports for Methane Chemical Looping Combustion (CLC) Process

Nader MAHINPEY* and Davood KARAMI

[a*] Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary, Canada

Abstract

Background
The chemical-looping process is considered widely for the clean combustion of fossil fuels in oil and gas industries and power plants for negative CO_2 emission. The supported metal oxides as potential candidates for oxygen carrier are given much attention due to high oxygen capacity and economical oxygen carrier materials for chemical-looping combustion (CLC). However, the agglomeration and attrition of metal oxide-based oxygen carrier prepared by impregnation is considered a big challenge due to very low surface area of support at high temperatures. Therefore, the type of supporting material probably affects on strength and reactivity of oxygen carriers.

Methods
In this work, a series of novel aerogel supports such as alumina, zirconia and silica were prepared according to our novel patented aerogel synthesis via Sol-Gel and mixed solvents supercritical drying methods. In this novel method, first, support organic precursors were dissolved in the specific alcohol solvents and then the solutions were gelled and aged under the specific conditions. Toluene co-solvent was mixed with the highly dispersed gelled solutions. Finally, the mixed solvents were removed at supercritical conditions at temperatures of over 250°C. The final aerogel supports as a powder or a pellet was impregnated. The perfect dispersion of metal oxide with excellent stability at high temperatures may be achieved using high surface area aerogel supports over 200 m^2/g at 1000°C to prevent the phase separations. The synthesized oxygen carriers were utilized for clean burning methane. The behavior of aerogel supported metal oxides such as copper oxides and nickel oxide and iron oxides as oxygen carriers for a methane CLC process were analyzed in a thermogravimetric analyzer (TGA).

Expected Results/ Conclusion/ Contribution
The effects of carrier composition and preparation methods were investigated to develop metal-based carriers displaying high reduction and oxidation rates without substantial changes in the chemical, structural and mechanical properties for a cyclic operation.

Keywords: Aerogel; Chemical Looping Combustion; Methane; CO_2 emission; Sol-Gel Method; Mixed Solvents Supercritical Drying Method

Acknowledgement:
The authors are grateful to the Natural Sciences and Engineering Research Council (NSERC) of Canada for funding this study through its Industrial Research Chairs (IRC) program.

Biography (up to 100 words):
Professor Mahinpey is currently an Industrial Research Chair in the Department of Chemical Engineering at the University of Calgary, Canada. Energy and environment have become the two paramount themes in his research group. Dr. Mahinpey applies reaction engineering, material/catalyst fabrication, and design principles to find energy and environment solutions. His research is inspired by the idea of promoting green and cost-effective processes for energy production with a specific focus on Greenhouse gas regulation technologies. Professor Mahinpey takes an active role in the promotion of national and international high-calibre research programs in CO_2 capture and conversion area and alternative energy.

Presenting author details
Full name: Prof. Nader Mahinpey
Organization/Institute/ Company, Country: University of Calgary, Calgary, Canada
E-mail address: nader.mahinpey@ucalgary.ca

STEM
Science | Technology | Engineering | Mathematics
International Organization

Thank you

STEM *Grants*

Excellent Opportunity for availing Grant for participation in physical events in 2021

“5 scholarships of $2500 USD each will be awarded to selected students (so called STEM Grants)

Eligibility Criteria for applying

– High School Seniors, Undergraduates, Graduates as well as international students can apply

– Candidate must be enrolled as a participants, undergraduate or post-graduate student at an accredited college or university for the 2021 Fall semester

– Intended major in Science, Technology, Engineering, Mathematics or related fields

– Complete the online S.T.E.M. Majors Scholarship Application

– Complete the application along with a 250 word response on why you have chosen to enter the field of “STEM” and why you should receive the scholarship

– Transcript is not required. Once you’ve been selected as our scholarship recipient, we’ll require a latest copy of your transcript

– Deadline to submit an application is Wednesday December 30th, 2021

Contact : secretary@stemio.org or submit to https://stemio.org/application-submission/

STEM
Science | Technology | Engineering | Mathematics
International Organization

Meet you at the Chapter 2

Conference on Environment and Earth Science (ESES -2021)

January 10-11, 2022| Australia

secretariat@esesummit.com