BOOK OF ABSTRACTS

RESEARCH DAY (8th of Sept 2023)

BRITAE Project Secondment Visit to the University of Central Lancashire

Preston, UK

4th – 15th September 2023

Lead and Partners:

University of Ruhuna, Sri Lanka
(Lead University)

University of Central Lancashire,
UK

University of Huddersfield,
UK

University of Moratuwa,
Sri Lanka

University of Sri Jayewardenepura,
Sri Lanka

University of Colombo,
Sri Lanka

Sabaragamuwa University,
Sri Lanka

Vilnius Gediminas Technical
University, Lithuania

Tallin University of Technology,
Estonia

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FOREWORD

With the implementation of the Building Resilience in Tropical Agroecosystems (BRITAE) project, an innovative master's degree programme will increase the number of people educated in agroecosystems-based ecological resilience and strengthen the capabilities of higher education institutions in tackling the challenges from disasters faced by the World. Contributing towards the fourth Sustainable Development Goal of the United Nations of Quality Education, this work will have a transformative impact in the host country of Sri Lanka where the value of sustainable development is matched by a need to counter the risks posed by natural hazards.

At its outset, the project had further aims to enhance the competencies and skills, management, governance, and innovation capacities of the partners' academic, management, administrative, and technical staff. BRITAE also sought to strengthen relationships and interactions between institutions, developing them as incubators of knowledge and ideas.

Through BRITAE, we have provided opportunities for experts to share their understanding, expanded the horizons of colleagues in producing solutions, and witnessed greater internationalization across partner organisations' research and innovation capacity. This process culminates in our secondment visit here at the University of Central Lancashire from 4 – 15th September 2023 and within that this 8th September Research Day event.

The aim of the Research Day is to present and identify research conducted in BRITAE lead/partner institutions around themes similar to the focus of the project in building resilience in tropical agroecosystems. Five Sri Lankan Universities attended the secondment programme hosted at UCLan, with 15 abstracts being presented during the Research Day on themes encompassing:

1)   addressing issues in industrial/household food production processes
2)   novel agriculture technologies and biochemicals
3)   industrial food supply chains and risks associated with climate change
4)   ecotourism with improvement measures
5)   environmental pollution and associated health hazards with regards to agriculture industry.

It is anticipated that the work presented during the Research Day will lead to fruitful discussions and further research collaborations. This book of abstracts and the Research Day discussions will also form a basis for the Research Retreat to be held on the 10th of Sept in the Lake District, UK. We are looking forward to an exciting two weeks of training, discussions, brainstorming sessions, and capacity building activities during the BRITAE Secondment Programme and thank you for your participation in this event.

Thank you.

Prof. Champika Liyanage
School of Engineering and Computing

Dr. Andrew Carmichael

A study on the application of *Hibiscus rosa-sinensis* flowers and sous vide processing method to reduce residual nitrite content in chicken sausages

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ABSTRACT

The growing interest of consumers in meat products with minimal or no food additives is driven by their perception of such options as more natural and healthier. Therefore, the meat industry is actively seeking alternatives to reduce residual nitrite levels in processed meat products. Hence, this study examined the impact of *Hibiscus rosa-sinensis* (HS) flowers and the sous vide processing (SVP) method to reduce residual nitrite content in chicken sausages. Using standard procedures, chicken sausages were developed by incorporating oven-dried HS flower powder (HSP). For that, six experimental groups were prepared: SVP 100 °C/ 30 min, 0% HSP and 125 ppm Nitrite (C1), SVP 100 °C/ 30 min, 8% HSP and 125 ppm Nitrite (T1), SVP 100 °C/ 30 min, 10% HSP and 125 ppm Nitrite (T2), SVP 100 °C/ 30 min, 0% HSP and 0 ppm Nitrite (C2), SVP 100 °C/ 30 min, 8% HSP and 0 ppm Nitrite (T3), SVP 100 °C/ 30 min, 10% HSP and 0 ppm Nitrite (T4). Then the experimental groups were examined for residual nitrite levels under frozen conditions at -18 ± 5 °C for 28 days. Among all the experimental groups, the T3 group exhibited the lowest levels of residual nitrite at 7.29 mg/kg compared to other experimental groups. The study results revealed a significant decrease ($p<0.05$) in the residual nitrite content with the combination of HS powder and SVP of chicken sausages. The study results demonstrate that the combination of HSP and SVP has the potential to effectively reduce residual nitrite in cured chicken sausages, making it an appealing choice for consumers looking for clean-label products.

Keywords: *Hibiscus rosa-sinensis*; Sous vide processing; Residual Nitrite; Chicken sausages.

Rich Home gardens and Poor meals: Mainstream Home Garden Produce into Household Consumption

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ABSTRACT

Home gardens, especially Kandyan home gardens are unique agricultural systems inherited to Sri Lanka. Structure, crop mixture, diversity, arrangements on maximum utilization of space, sunlight and water, root systems of various structures and lengths, seasonality, socioeconomic returns to the family has created amazing but tiny agricultural system embedded with agro-climate. Our approach was to explore the 100 home gardens of North-Central province of Sri Lanka. Study composed of two main segments, explore the home gardens established in Mahaweli resettlements in North Central province and find out the contribution of home garden products into daily meals and food consumption pattern of the families. Randomly selected 100 home gardens in Mahaweli resettlement area were used to collect primary data through structured questionnaire, meal inventory cards and in-depth interviews with community representatives. Multifunctional home gardens of resettlements were enriching the concept of nature solutions for food and nutrition security, biodiversity conservation, resilience on disaster risk and human wellbeing through sustainable approach. Species wise crop diversity of study locations recorded as 17 underutilized fruits, 16 abundant fruits, 14 abundant vegetable, 3 underutilized vegetables, 6 underutilized green leaves, 4 abundant green leaves, 15 spice and condiments, 5 underutilized yams, 4 abundant yams, 17 medicinal herbs, 6 other food crops, 9 forest trees and 6 ornamental plants. Study explores the meal pattern and diversity of the residents of the home gardens using daily meal cards. Results highlighted that limited number of species from the home garden were recorded in daily meals and notably fruit consumption was low and limited to few commercial species. Families were concern more on convenience rather than the diversity and richness of meals. Mainstreaming home garden products into daily meals are vital in many means.

Keywords: home garden, meal diversity, Sri Lanka

Application of Advanced Hyperspectral Imaging (HSI) Technology in improving the efficiency of the vegetable supply chain in Sri Lanka

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ABSTRACT

High-quality fresh produce has become the primary daily dietary choice of many consumers due to the adoption of a healthier lifestyle. Consequently, focusing on accurate and efficient detection techniques for assessing the quality of agricultural products holds significant importance. This study aims to use a remote sensing tool, Hyperspectral Imaging (HSI) technology to capture detailed information about the chemical composition and quality of selected vegetables in Sri Lanka during the entire supply chain. This real-time approach has been identified to reduce the losses in harvesting, transportation, and handling chains by proving the feasibility of early spoilage detection, quality grading, sorting, non-destructive testing, packaging, real-time monitoring, traceability, and authentication. The applications of HSI technology in vegetable quality analysis have demonstrated its worth such as determining the optimal time for vegetable harvesting by considering their spectral characteristics at the right maturity stage; monitoring the condition of vegetables in real-time by detecting any signs of impact damage, deterioration, bruises, and chilling injury allowing timely interventions to prevent losses and maintain product quality during transit; assessing the firmness, moisture content, soluble solid content, sugar level and pH of vegetables to ensure appropriate post-harvest treatments, storage conditions and handling practices. In conclusion, the proposed technology will control losses throughout the vegetable supply chain in Sri Lanka. As technology advances, HSI technology enables better decision-making throughout the vegetable supply chain to ensure food security and sustainable development.

Keywords: Agro-products, Hyperspectral imaging, Quality analysis, Remote sensing, Vegetable value chain

Benefit of Organic Fertilizer Applications on Banana in Sustainable Agriculture

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ABSTRACT

Banana serves as an ideal and low cost food source for developing countries. In conventional farming, most farmers are engaged in their cultivation using agrochemical. Currently, farmers are moving towards the organic cultivation as inorganic agriculture led to severe environment problem . This study focused to compare the physicochemical properties, yield characteristics, disease severity of Anthracnose, shelf life, antioxidant activity and sensory properties of banana (Variety *'Embul'*) treated with organic and inorganic fertilizer. A field experiment was conducted in two blocks; an organic block fertilized with compost and an inorganic block treated with chemical fertilizers according to the Department of Agriculture recommendation. Except fertilizer application, all the other agronomic practices were done equally in both blocks. The NPK levels of the used compost were 0.98%, 0.38%, 0.42% respectively. The results indicated that there were significant increase ($p<0.05$) in yield parameters resulted from inorganic fertilizer. The application of inorganic fertilizer was recorded significantly higher Total Soluble Solids and Total Titratable Acidity, while organic banana recorded significantly higher pH. The results showed that organically and inorganically grown banana fruits had similar peel color and flesh color during ripening. The disease severity of Anthracnose was higher in the inorganic banana, while shelf life was extended in the organic banana. The organic banana showed the higher antioxidant activity as determined by the DPPH scavenging activity. The results demonstrated that organic manure application had a significant effect on post harvest quality of banana. The banana can grow without harmful agrochemical successfully as sustainable agricultural practice.

 Key words: Banana; Antioxidant; Organic; Disease incidence; Physicochemical properties;

Household Food Insecurity in Rural Pakistan

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ABSTRACT

Background: Food insecurity (FI) is a growing global problem, the prevalence of which has steadily increased since 2014, with approximately 2.3 billion people or 29.3% of the global population either moderately or severely food insecure in 2021[1]. Pakistan has a population of 236 million[2], 36.8% of which face FI nationally[3]. The aim of this research was to determine and compare household FI in a rural, marginalised community over three time points.

Methods: Purposive and convenience sampling was used to recruit 170 households to this study. The mother determined household food insecurity, at three separate timepoints, with the use of the Household Food Insecurity Access Scale (HFIAS)[4]. The HFIAS provides both continuous (FI score between 0-27) and categorical (either food secure or mildly, moderately, or severely food insecure) measures of FI. A one-way repeated measures ANOVA and a two-way pearson's chi-square test was conducted on the continuous and categorical FI data respectively.

Results: FI categorical: FI was reported in 100% of the households at all three time points, however significantly less households reported severe FI at time 1 than at time 2 or 3 ($X^2_{(2)}$=48.2, p<0.001). FI Continuous: The food insecurity score for the households was significantly lower at time 1 than time 2 or 3 ($F_{(1.89, 318.6)}$=11.17, p<0.05, Pη^2=0.06).

Conclusions: FI is highly prevalent in the study area, the severity of which increased over time, and there are potentially pockets of marginalised communities that experience a much greater degree of FI then the national averages.

Keywords: Food insecurity.

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Biostimulants in agriculture

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ABSTRACT

The agriculture industry is facing concomitant challenges of rising the productivity to feed the growing global population and increasing the resources use efficiency, while reducing the environmental impact on the ecosystems and human health. In the last three decades, several technological innovations have been proposed to enhance the sustainability of agricultural production systems, through a significant reduction of synthetic agrochemicals like pesticides and fertilizers.

A promising and environmental-friendly innovation would be the use of plant biostimulants. Plant biostimulants seem as a novel and possible group of agricultural inputs, complementing agrochemicals including synthetic fertilizers, enhancing tolerance to abiotic stresses and along with this increasing the quality of agricultural and horticultural commodities.

Two biostimulants studies in cereals are currently underway under field conditions. The aim of these studies is to investigate the potential role of biostimulants in reducing the amount of synthetic fertilisers use in cereals whilst maintaining crop yield and quality. Biostimulants being studied include Converta NPK, Dynamic and Yokosan and have been applied in various combinations with the standard fertiliser application rates under standard farming practices. The role of these biostimulants in enhancing tolerance to abiotic stresses such as drought will also be assessed. Various plant growth and yield related assessments are being recorded at regular intervals until harvest. Initial findings have, however, indicated that Converta NPK has the potential to substantially reduce the use of synthetic fertilisers in cereals.

Keywords: Biostimulants; agrochemicals, abiotic stresses

The risk associated with upcountry vegetable supply chains due to climate variability and extremes in Sri Lanka

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ABSTRACT

There is a serious concern about the climatic impact on food production, distribution, food security, and livelihoods in Sri Lanka. This study considers food sheds that feed the Colombo City Region (CCR), especially the upcountry vegetable supply chain. The objective is to capture the risks associated with upcountry vegetable supply chains due to climate variability and extremes in upcountry vegetable growing areas. A mixed approach was employed including a comprehensive web-based search of climate change impact-related media coverage over a six-year period (2015-2020), primary and secondary data compilation, literature and document analysis, and expert consultations. The risk assessment approach outlined in the IPCC Fifth Assessment Report (AR5) was the foundation for this study. The upcountry vegetable supply chain has a high propensity for risk while NuwaraEliya and Badulla regions were highly sensitive and lacked the capacity to withstand climate hazards. Consistent with the vulnerability, the risk score was high for the NuwaraEliya and Badulla districts. The overall hazard score, vulnerability score, and risk score were -1.71, -4.35, and -7.12 respectively from 2015 to 2020.

In the Dambulla Dedicated Economic Centre (DEC), a significant percentage of tomatoes, carrots, leeks, and beans were reported damaged by 38%, 23%, 25%, and 47% respectively due to heavy rains in production areas, while 25% of tomatoes and cabbage were reported damaged due to the high temperature. In Keppetipola DEC, 41% of cabbage was damaged due to heavy rains in production areas.

Keywords: Climate variability and extremes, Hazard scores, Risk scores, Upcountry vegetables, Vulnerability score

Climate Change Education: A Bibliometric Analysis

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ABSTRACT

With the increased concern on the consequences of climate change, there is a growing interest in climate change education (CCE) throughout the world. This bibliographic analysis was conducted to assess the current global literature on CCE where records available in the Scopus database for the period of 1990–2022 was assessed. The title, abstract, and keywords search using predetermined terms (not mentioned here) resulted in a total of 11,724 publications of which more than 75% were published during the last decade (2013-2022). Co-authorship analysis revealed that the highest number of publications were reported from the United States of America (3826) followed by the United Kingdom (1492) and Australia (986). More than 100 publications were reported from 34 countries. CCE related publications were distributed among a wide range of subject areas (classified by Scopus) such as medicine, engineering, agricultural and biological sciences, economics/ business management and other on which the highest number of publications were found in social science (24.2%) followed by environmental science (18.4%). The knowledge gaps in CCE were identified through the bibliometric analysis conducted in this study, which can be addressed through further research which will also create several research avenues. Since a higher number of CCE related publications are available in a limited number of developed countries, an opportunity exists to popularise CCE, and identify and replicate them in other regions including Sri Lanka.

Keywords: Bibliometric analysis; CCE; Sustainability education; Pedagogy

Ella, tourist hotspot of central highlands of Sri Lanka: where it is heading towards?

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ABSTRACT

Sustainable ecotourism is a vital aspect of preserving and protecting the environment, promoting local culture, and ensuring the well-being of host communities. Ella, a scenic town surrounded by cloud forests and tea plantations, showcases sustainable ecotourism potential. Unplanned development challenges preserving its pristine environment and scenic beauty. The study's objectives were to assess the changes of land use, built environment and green cover, to evaluate the impact of unplanned development on scenic beauty, and to examine the tourists' perceptions and experiences. Mixed-method approach comprised of filed observations, in-depth interviews with tourism service providers and online survey on tourist reviews. Three decades after its first international appearance, small town of Ella ranked as one of the most visited destinations in Sri Lanka. The topography of Ella had its own limitation for expanding infrastructure and had very limited buildable land area. Homestay concept introduced as a means to accommodate the increasing demand, and the township took it in a big way to cater to the price concern backpackers in large and limited high-end tourists. The town is victim of haphazard land gabbing for construction and contributed to the depletion of the forest cover. Pollution of land and water reached to alarming levels and illegal constructions appeared as high-risk area for tourists. The findings show a reduction in green cover over time, unplanned development negatively impacts the beauty of Ella and exposes it to natural disasters like landslides, along with inadequate wastewater, sewerage and garbage disposal systems. Over tourism added extra pressure on environment, increasing unit use of resources, expansion of city limits and increase the impact of extreme weather events question the status of city as global tourist hub.

Keywords: Ella; Ecotourism; sustainability; Unplanned development

Impacts of the COVID-19 pandemic on formal waste workers: A case study of Boralesgamuwa Urban Council and Dehiwala-Mt. Lavinia Municipal Council in Sri Lanka

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ABSTRACT

The COVID-19 pandemic had a profound impact on various aspects of daily life, including municipal solid waste management. The key objectives of this abstract are to assess the impacts experienced by waste workers of Boralesgamuwa Urban Council (BUC) and Dehiwala-Mt. Lavinia Municipal Council (DMMC) in Sri Lanka during the pandemic, to investigate their coping strategies, and to explore the underlying causes for these impacts. Employing a mixed-methods approach, quantitative data were collected from official records and reports, while qualitative data were obtained through 30 in-depth interviews with officials and waste workers. Thematic analysis was applied to analyze the qualitative data.

Findings revealed waste workers' increased exposure to Covid-19 due to routine interactions with infectious waste. A substantial income reduction led to higher loan reliance. Pandemic-induced labor shortage increased workload, and workers had faced discriminatory treatment from residents and some officials. Waste workers had employed several coping strategies, including the use of sanitizers, protective kits, and adherence to guidelines provided by the local councils. Moreover, the local councils had supported waste workers by providing dry rations, cash donations, and temporary recruitment opportunities. The underlying causes for the challenges experienced by waste workers can be attributed to the lack of disaster preparedness in the municipal waste management system and the discriminatory treatment of waste workers. The local councils should take measures to address these key issues in order to avoid similar impacts in the future.

Keywords: COVID-19 pandemic; Formal waste workers; Municipal solid waste management

Status of Supply Chain Visibility in Tuna Fisheries; a Case from Sri-Lanka

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ABSTRACT

Tuna is a major fishery export from Sri Lanka, and there is a growing demand for traceable and transparently sourced fish in the world market. Hence, the question arises as to whether the Sri-Lankan tuna supply chain is visible enough to cater to the world market. Thus, the objectives of this study were to identify the status and weaknesses of traceability in the tuna supply chain, to identify its transparency, and to understand the overall level of supply chain visibility. The study was conducted during the first quarter of 2023 in three fisheries harbors: Dikkowita North, Dikkowita South, and Beruwala, with the participation of three tiers of supply chain actors: multiday fishing vessel owners (04), crew members (20), agents (02), traders (02), and export processing firms (02). Primary data was gathered via qualitative data collection methods: focus group discussions, non-participatory observation, in-depth interviews, and the analysis of video documentaries on Sri Lankan tuna exports. The NVivo analysis tool was used in coding and analyzing the qualitative data. While traceability is practiced mandatorily for all tuna exports, it is practiced locally, only for high-end restaurants and hotels. The QR code identifier is employed to trace the product attributes (details of catchment and final processing) to the customer. The system is centralized and manual, with exporter dominance in data supervision and handling. As a result, data manipulation issues, risks of single point failure, the inability to prevent IUU fishing, and poor transparency were noted as gaps. Supply chain visibility was recorded under the dimensions of automational, transformational, and informational. Accordingly, the high-end tuna supply chain is translucent in overall visibility, and it has further capacity to strengthen transparency, traceability, and provenance.

Keywords: Supply chain; Tuna; Traceability; Transparency; Visibility

Landscape of Climate Financing for Small -Scale Marine Fisheries in Sri Lanka

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ABSTRACT

Sri Lankan coastal small-scale fisheries industry is often more vulnerable to climate change induced hazards. Climate financing is vital, especially for such most vulnerable communities. Recognizing its importance, this study mainly aimed on identifying the climate finance landscape, financial sources, scope and instruments for the fisheries sector in Sri Lanka as tools of adaptation, risk reduction and resilience building. Literature review helps to identify the gaps and best practices and to develop the climate finance landscape with reference to fisheries sector. In-depth interviews were conducted with the experts representing the government and non-government sector including international agencies. Results emphasize that the country has a growing interest in climate financing to bolster resilience and has set up regional and national channels and funds with different forms and functions, funded by international money and/or domestic budget allocations as well as local sector contributions. Government allocations, international climate financing institutions, commercial banks, and specialized bodies like the Agriculture and Agrarian Board Insurance and the national insurance trust fund are identified as the primary financial sources. Main instruments include government funding, international contributions, bank loans, insurance schemes, and debt instruments. Results highlight that none of the financial instruments is specifically designed to align with the local fishery needs and aims to enhance the resilience of the fisheries communities against climate change. Furthermore, issues related to stakeholder participation and less diversity in climate financing instruments remain pertinent. The study proposes solutions, suggesting innovative financial instruments such as "blue bonds" designed for fisheries. Collaboration between private and public sectors is urged to facilitate effective climate finance delivery. Furthermore, incentivizing community-led initiatives, like restoring the blue carbon ecosystem, is recommended.

Keywords: Climate financing; Financing instruments; Resilience; Small -scale fisheries; Vulnerability

Harnessing the Enigmatic Power of Rice Husk Ash Extracted Silicon Fertilizer: Impacts on Phytolith Stock Accumulation and Cadmium Absorption in Rice Plants

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ABSTRACT

As mankind struggles with the effects of the changing climate and its consequences on food security, novel agricultural practices that improve the resilience of crops and minimize stressors from the environment are critical. Rice husk ash being a major agricultural waste material in Sri Lanka, can be abundantly found, and prior studies have shown that it contains about 10% Silicon (Si). The purpose of this research is to look into how the use of rice husk ash-derived, Si containing organic fertilizer might help climate-resilient agriculture and address food security concerns. Rice being the staple meal in Sri Lanka and for billions of people around the world, improving rice plant resilience is critical for ensuring sustained food supply. Phytoliths, which are silica bodies that form naturally in plant cells, act as barriers, protecting against pests, diseases, and environmental stress. Si fertilizer use has been associated with enhanced phytolith stock formation in plants. This study intends to discover an eco-friendly way to fortify crops by analysing the effects of rice husk ash-derived, Si containing organic fertilizer on phytolith stock development in rice plants. Furthermore, controlling Cadmium (Cd) uptake in rice plants is essential for ensuring food safety because Cd contamination in rice crops poses a significant risk to both human health and the environment. The planned study will look at the ability of an organic Si fertilizer derived from rice husk ash to reduce Cd absorption by rice plants. The study's findings could have far-reaching ramifications for climate-resilient agriculture and food security in rice-producing regions.

Keywords: Food Security, Cd uptake, Phytolith stock, Rice husk ash, Silicon fertilizer

Development of a holistic approach for estimating harmful emissions from open burning of plastic wastes in harbour environments

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ABSTRACT

This research aims to develop a comprehensive approach for the estimation of harmful emissions from open burning of plastic wastes, prevalent in harbour environments. The goal is to create a predictive model to enhance harbour plastic waste management practices. Our method integrates a waste audit, which helps to quantify and identify different types of waste. This information is then used to simulate emissions from burning these plastic-associated wastes. Comparisons between the simulation results and actual measurements aid in the selection of the most effective quantification method, establishing a baseline for the waste audit data. A significant part of our approach is the development of a risk assessment tool, which is crucial for measuring hazardous compound concentrations and predicting associated health risks. Waste composition and burning frequency data are used for emission factor simulation and risk assessment. Furthermore, actual measurements of compound concentrations at burning sites offer a reference method for analysing hazardous compounds using standard analysers. Our study facilitates a deeper understanding of the health risks linked to the open burning of plastic waste. The insights gleaned provide a foundation for developing efficient strategies to mitigate these risks. This research contributes to the theme of a Circular Economy by proposing a solution to monitor and manage pollution from plastic waste burning, thereby strengthening community resilience. The predictive model developed through this research is expected to help manage environmental health risks, and the results have the potential to guide policy development for improved waste management, promoting a more sustainable, circular economy.

Keywords: Plastic Waste; Open Burning; Hazardous Compounds; Health Risk; Harbour Environment.

A study of health impact from road construction on nearby farmers: gaps and recommendations

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ABSTRACT

Road construction has become a top priority of developing countries due to the numerous economic benefits gained from efficient road systems. However, road construction projects have various effects on human health and well-being, with nearby communities beyond the Right of Way (ROW) being particularly vulnerable. While impact assessments (IA) can predict and mitigate negative impacts, public health aspects have often been limited to a few common aspects of the physical environment. Therefore, this study conducted 30 semi-structured interviews and 3 case studies in Sri Lanka to obtain expert opinions on the potential health impacts to the nearby communities during road construction road projects. A thematic analysis was performed to identify the key impacts, vulnerable groups, harmful activities, and barriers to consider public health during the projects. The findings indicated that road construction has adversely impacted the health of nearby communities. Farmers were identified as a major vulnerable group during the projects, surely a key factor would be that they work outside, which increases their exposure to dust, noise, vibration, and heat and water quality impacts. Further, the results revealed the limited inclusion of health impacts without proper consideration on wider health determinants, such as access disruption and employment disruptions. Financial allocations and human resources were revealed as the main barriers to considering public health during the road construction process. These findings reinforce the need to consider including effective preventive measures and assessment instruments during road projects to reduce the negative health impacts associated with the construction process. Further, to address the shortcomings identified, policies regulating IA practices should promote a more comprehensive inclusion of health in IAs during road projects.

Keywords: Farmers; Health; Impact assessments; Nearby community; Road projects