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BOOK OF ABSTRACTS

CONFERENCE THEME
“HALF-WAY THROUGH AGENDA 2030:

ASSESSING THE 5Ps OF SDGs
(PEOPLE, PLANET, PROSPERITY, PEACE AND PARTNERSHIP)”



co-organizer

TRACK 1

Sustainability and Science

1a. Theoretical approaches

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From theory of a transboundary systems provision model to practice for sustainable climate risk-, disaster risk- and crisis management in the flood disaster-damaged Ahr Valley in Germany – Implementing Spree Forest and Lusatia Regions Land and Environmental Systems Model for Operationalizing SDGs and Resilience

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Abstract

Successful implementation of the theoretically-applied, self-developed CA(LU)²WA framework for sustainable climate risk- (CRM), disaster risk- (DRM) and crisis management (CM) is not easy for affected disaster-damaged regions. This case study on Ahr Valley Region acknowledges transboundary systems provisions and its operationalization for enhancing assessment with optimized information and data exchange: if regions, or even one single region, are not lying within same administrative coordination responsibility, the more complex planning is getting. The enhancements for well adjusted planning, data, communication channels within a Transboundary Systems Provision (TSP) must be critically evaluated in case of aiming to strengthen sustainability and resilience. Especially in case of a combined, region-overarching (benchmarking) perspective and planning for a sustainable CRM, DRM and CM, the to be implemented topics of sustainability, land- and environmental systems thinking, and transformative science for enhancing an optimized climate risk and land resilience are aggravating a fluent, transparent and on the ground processing way. Actuator of this research was the flood disaster in mid-July 2021 and simultaneously threatening COVID-19 pandemics in Ahr valley in the states of Rhineland-Palatinate and North Rhine-Westphalia, surrounding regions in Germany, and in Belgium. Topical entrance into this case study was a (short-termed) initiative field and action research about sustainable development, resilience and general planning combined land- and environmental systems processing, leading to constructive solution transferors against challenges in TSP.

A by the author for Lusatia, implied Spree Forest Region, possibly for worldwide regions developed, applied innovative theoretical approach, and verbal-argumentative model was approved for operationalizing TSP into the flood-destroyed Ahr Valley Region. Spatially determining different sustainable and resilient aspects through the landscape scale, regional planning level, and by the help of the operationally implanting „Climate Adaptive Land Use within Landscape Units and Drought and Water Management“ (CA(LU)²WA) proactive landscape meta-model should guide into a chance for TSP.

First results of the research being based on past, long-termed theoretical combined applied research pillars show that the framework with its applied instrumentations such as landscape units and transboundary river basin areas is not only specialized on ideal „prototype region“ of Lusatia and inhabited Spree Forest. Instead, it is able to override risks and needs parallel in diverse regions.

Global SDGs are getting coupled with TSP and the CA(LU)²WA framework, innovative and well known assessment methodologies. As a high-ranged, sustainable, resilient future-saving, capacity-building flagship initiative it gains regional (land) resilience in the flood disaster-, COVID-19-impacted Ahr valley

together with further affected regions to rebuild simultaneously several destroyed regions, reconstructing them. Specific SDGs such as SDG 11, 13 with a combined Climate Smart Planning or SDG 17, 15 with a combined Integrated Drought and Water Management are amplifying Ahr Valley Regions` effective applicability for gaining more regional resilience. This research supports processes around four pillars and possibly also five P`s (people, planet, prosperity, peace and partnership) in sustainable development and resilience transformations on regional level and landscape scale for buffering future climate change-, disaster-, crisis-related pressures, land resilience options while enhancing interdisciplinary sustainability science.

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Disruptive agency dynamics in urban sustainability transformations – A conceptual approach for studying insider-outsider relations in urban mobility systems

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Abstract

Human agency plays an essential role for societal transformations since people are in some perspective fundamentally the initiators and carriers of societal change. Large scale societal change, as urgently moving towards reaching the SDGs requires, is posed with challenging or even disrupting what is currently normal, daily routine and structurally given. This process of disruptive change necessarily has to be started and continually enforced by a variety of agents. These have been diversely studied for example as niche agents, different types of entrepreneurs, activists, intermediaries or just generally as forerunners or change agents.

However, as has been noted regularly in the literature of sustainability transitions and transformations, discussions around conceptualizations of agency are ongoing, still dispersed and partially only vaguely developed. A general, overarching understanding of human agency in these sustainability transformation processes is still missing (as pointed out for example by Fischer & Newig (2016), de Haan & Rotmans (2018) and Koistinen & Terikangas (2021)). However, such an advancement is required for practical applicability of research insights such as for designing specific interventions and policies.

To get closer to such a conceptualization, in this research the insider-outsider dichotomy (first deployed in sustainability transformations by the project “DOUbT” (2022)) is applied to a novel conception of disruptive agency. Disruptive agency is understood as the ability of agents to act with the intention of disrupting a social system in order to transform it purposefully. It is taken the stance that this disruptive agency is performed by a variety of heterogeneous agents who necessarily are in epistemic, behavioural or institutional regard outsiders to the reference system they want to change. This co-constitutive interplay between disruptive agency and the relations on one side between different types of outsiders and on the other side between outsiders and insiders is conceptually explored. Additionally, a spatial perspective is taken to ground the analysis of these relations in the multitude of spatial contexts and the corresponding realities they do unfold in.

This novel theoretical approach is discussed in the context of an ongoing comparative case study examining the different relations between multiple types of outsiders and insiders in the mobility domain in three different German cities, with varying mobility cultures (Holz-Rau et al., 2022). Further, a specific focus is taken in this design to examine the influence of diverse spatial factors on outsider emergence, their relations and impacts.

This research contributes to gain a better understanding of how to reach all of the SDGs indirectly by providing a new perspective of how to analyse the disruptive agency of change agents pushing exactly the reaching of these goals forward. The discussed case study concerns more specifically insights

regarding the SDGs “Sustainable Cities and Communities”, “Climate Action” and “Peace, Justice and Strong Institutions” on a specific municipal level of three different German cities. In this context it is studied how the dynamic relations between varying outsiders and insiders shape transformative processes towards contributing to reaching these goals.

References were removed (above 500 word limits) or else the submission remain incomplete.

Integrated Research on Earth and Societies – A new branch of sustainability science for the Anthropocene

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Abstract

There are visible signs that adverse changes in the Earth system are accelerating despite international efforts to increase sustainability. Ongoing global warming with its impacts, the accumulation of nutrients and pollutants in the air, soils, inland waters and oceans, water stress, the global biodiversity loss and other environmental changes, regardless of their geological traces, are obvious indications of an Anthropocene and have significant societal consequences. While lack of compliance with the SDGs is supposed to be one major reason for these trends, the common operationalisation of sustainability as an optimisation of equally important economic, social and ecological pillars increasingly appears to be another. The authors provide a review of international scientific discourses relevant to Earth system changes, their impacts and governance. In particular, they refer to the Earth system sciences, the global sustainability sciences, the Earth system governance science, and selected others fields of research. Comparing this review with the observed evolution of the Anthropocene reveals research gaps, especially in understanding the Earth system, Earth-societies interrelations, scientific reasoning of societal goals on Earth and societies, as well as their social negotiation, possible effective innovations, transformative capacities and others. Therefore, an 'Integrated Research on Earth and Society' (intRES) is proposed to explicitly and more comprehensively address the interfaces between the natural and societal systems that determine the Anthropocene. We suggest the following dimensions of integration to be examined with an intRES: (i) integration at the interface between the Earth system's geo- and biosphere and societies with their political, social, economic, technological and ecological facets; (ii) integration across world regions (especially the global South and North), political systems and actors (e.g., individuals, social groups, levels); (iii) integration across spatial and temporal scales, including past and projected future dynamics; (iv) integration of descriptive and explanatory empirical findings with normative reasoning contexts; (v) integration of autonomous or self-organised dynamics and control-oriented governance arrangements; and (vi) integration across disciplinary theories, methods and models that also link scientific and societal knowledge. To tackle these dimensions of integrated research, the following main tasks are proposed, taking the literature on sustainability transformations with systems knowledge, target knowledge and transformation knowledge into account: (1) natural and social science holistic approaches that span spatial and temporal scales and societal levels and represent the Earth system and societies with their dynamic interrelations; (2) Science-based reasoning contexts for normative references as well as the analysis of institutional arrangements for negotiating planetary or global goals and for implementing and monitoring them; (3) Transformative approaches for the Anthropocene that promote coherent

knowledge about both the Earth system and societies on the one hand and science-based and societally agreed target knowledge on the other, and from this develop action-oriented knowledge for cross-scale sustainability transformations involving societal actors. The respective research demands are illustrated by examples from current research activities.

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Does Circular Economy care for us? Lets talk about the ethics and aesthetics of care of the Circular Economy

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SANTIAGO PEREZ

Abstract

The limitations of our current production and consumption patterns prompted the development of the Circular Economy (CE), concept that is presented as an economic model capable of balancing economic growth with environmental protection. This new economic model, an alternative to the linear economy, is now incorporated into public policies, socio-ecological, and energy transition strategies in several nations around the globe. However, the scientific community debates extensively not only the clarity of the concept (Corvellec et al, 2022; Kirchherret al, 2017) but also its territorial dimension (Niang et al, 2020; Tapia et al, 2021; Veyssièrre et al, 2022). What are the boundaries of CE in theory and in practice? Where to set the boundaries of the impact of CE? Are those impacts merely technological?

Following the third and fourth industrial revolutions, technology mediates ever-more aspects of everyday life to an unprecedented respect. The shaping of those technologies will significantly impact how we both mediate and act upon our environment and one another. CE is at the centre of technological developments; therefore, it is an inherently cultural development, bounded by human ethical and aesthetic considerations (Pla-Julián & Guevara, 2019). Such considerations are spatially and politically (Millstein, 2017; Rancière, 2010) encoded in how we design, build, interact with, employ, or aestheticize technology. Based on model of the Doughnut proposed by Raworth (2018), this article will discuss the role of the aesthetics of care of the CE: understanding the fulfilling the social foundations and respecting the planetary boundaries as acts of care.

We believe that CE is informed by an understanding of Aesthetics as the “distribution of the sensible” (Rancière, 2013) that is inherently ethical and political in conjunction with our sense experience of everyday life (Saito, 2017). We consider the CE as a practice of care: as restorative, reparative and creative. Interpretation of the CE as an aesthetic act of care opens the potential for new forms of reasoning in relation to justice and democracy in society.

This article aims to discuss the ontological and epistemological boundaries of the CE to understand its practices as acts of care within an Aesthetics of Care (Saito, 2022). Then it will set some spatial boundaries to reflect on CE as a technology inherently bounded in space and time. Lastly, we will discuss how the aesthetics of care of the CE can open new forms of reasoning in relation to more sustainable geographies of circularity.

This article presents preliminary results of an Erasmus+ Action-KA220-HED for the education of Aesthetics and Ecology in TechEd. Discussing the ontological and epistemological boundaries of the CE could broaden its contribution to the SDGs (Schröder et al., 2019; Schroeder et al, 2019-B). Such reflection helps to conceive pedagogical methods focused on understanding the relationship of technology (CE) in society and promote pro-environmental behaviors (SDG4 and 12). Considering CE actions and acts of care (Black, 2018; Thompson, 2015) can help to close its contribution gap to the social sphere (Schroeder et al., 2019) and lay a foundation for a sustainable social transition (SDG 5,9,10,11,16,17).

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Exploring the role of plural values and intersectional diversity in tackling global biodiversity loss: a targeted review of the use of creative, deliberative and behavioural intervention methods in triggering transformative change

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Abstract

Continued loss of biodiversity now threatens both the biosphere and human life. System-wide transformative changes are needed, including altering practices, behaviour and values across a full spectrum of intrapersonal, interpersonal and institutional levels. But, what interventions have the highest transformative potential for societal change? And, what factors serve to shape the extent to which an intervention can trigger transformative change? In addressing these two questions, our particular interest in this paper is in better understanding the role of plural values and intersectionality in shaping our relations with biodiversity, nature, green space and the outdoors (as it is variously referred to) across both urban and rural settings; and in follow on, the contribution of behavioural, creative and deliberative methods for promoting transformative change. Interim findings are presented, drawn from a combination of a targeted literature review and a series of online workshops, which were undertaken towards the beginning of a three-year international project ('PLANET4B'). Both elements involved the participation of a multidisciplinary consortium of academic and practitioner partners with existing knowledge and experience of facilitating co-creative interventions in a range of key sectors as well as socio-cultural and environmental settings. This paper has cross-cutting relevance for a number of SDGs, including 3, 5, 10, 11, 14, 15 and 17.

TRACK 1

Sustainability and Science

1c. Assessing sustainability

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A threefold approach to rescue the 2030 Agenda from failing

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Abstract

Countries are not on track to meet the 2030 Agenda for Sustainable Development which calls for transformative changes to shift the world onto a sustainable and resilient path. The 2030 Agenda comprises 17 Sustainable Development Goals (SDGs) and 169 targets to be achieved by 2030, balancing the three sustainability dimensions – social, economic, and environmental. So far, SDGs have had a limited transformative impact because of their selective implementation without considering their complex interactions. SDGs interact positively (i.e., synergies) or negatively (i.e., trade-offs) depending on context- and location-specific mechanisms. Failing to meet SDGs will negatively affect the lives of billions of people and worsen socioeconomic and environmental crises. Therefore, the next few years are crucial to accelerate SDG progress and adopt a post-2030 Agenda or a follow-up of SDGs. I propose three research avenues with a threefold scientific approach to address these urgent needs. The research avenues are systemic prioritization of SDGs, understanding the impacts of underachieving SDGs, and building a post-2030 Agenda based on scientific evidence. The threefold approach comprises quantitative analysis, qualitative analysis, and knowledge co-creation. Addressing the three research avenues can rescue the 2030 Agenda from failing by generating three novel understandings. The first is understanding mechanisms underlying SDG interactions and transformative actions to resolve the current trade-offs among SDGs, resulting in win-win solutions. The second is understanding the potential and limitations of SDGs in shifting the world towards a sustainable and resilient path. The third is to initiate a process to co-create a science-based post-2030 Agenda for sustainable transformation for building social prosperity and foundations within planetary boundaries. Generating these understandings requires combining quantitative and qualitative analyses with knowledge co-creation, i.e., a broad range of scientific and non-scientific knowledge and understanding.

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Full cost accounting methods for product sustainability assessment: proposing ground rules for an emerging field

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Abstract

Many environmental and social impacts in product's value chains are currently unaccounted for in the price of products. Several methods exist to calculate both the pressures of such impacts, as well as their monetization. In the context of live cycle assessment (LCA), expressing environmental and social impacts in monetary terms allows for aggregation and easier communication. Many methods for monetization exist, with fundamental differences in their underlying monetization approach, accuracy, availability and application. Several scientific and consultancy initiatives have contributed to this development by introducing monetization methods that also use different methodologies. We reflect on the differences between such existing methods. First, we review the foundations of monetization and introduce a new categorization to align terminologies. We briefly put forward a summary of the connections between monetization and life-cycle assessment methods, since both categories of methods can be seen as the building blocks of existing full cost accounting methods. We then sketch the landscape and its challenges, after which we inventory current full cost accounting methods and, through interviews with their developers, provide insights into their underlying monetization philosophy, data sources and quality (monetary valuation methods), scoping, aggregation, and transparency. We find that methods are applying different and at various points conflicting approaches. The scope of the analyses is very diverse, while underlying theoretical and methodological choices are not always transparent. From this review, we will propose four exploratory ground rules for full cost accounting methods in the discussion section.

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Representative Life Cycle Inventory data for agricultural systems: the case of olive production

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Abstract

Despite the fundamental role of the LCA in assessing environmental sustainability, some issues related to its application still exist. Specifically, there is a common consensus among the international scientific community on the need for representative site-specific data to build proper Life Cycle Inventories (LCIs). This is particularly true for agri-food and agricultural products, for which the production processes commonly vary, depending on geographical, technological, biological, and environmental conditions. In this context, the aim of this study is to assess the potential environmental impacts related to the production of olives, through LCA, comparing two systems modelled using, on the one hand, data from Ecoinvent database, on the other, regional data collected through secondary sources. The aim is to understand if differences in terms of results may exist when data obtained from more representative secondary sources are used instead of data from commercial databases. The main findings underscore that using more representative regional data, instead of data from Ecoinvent, results in higher environmental impacts in all the investigated impact categories, except for acidification and photochemical oxidation. The results here presented permit highlighting the importance of using representative data, particularly when LCA is applied in the context of comparative analyses or environmental labels.

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Evaluation of mineral and water resources availability for Life Cycle Assessment

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Abstract

One of the greatest challenges associated with non-renewable natural resources is their finite nature. This characteristic means that eventually the resources may be exhausted if not well managed or conserved. The scarcity of a mineral resource is an important aspect to provide an orientation when procuring alternative resources. In particular, the current climate crisis has put enormous pressure on scarce mineral resources stocks in our attempt to achieve a swift energy transition. To carry out this management it is necessary to evaluate the current and future scarcity of the main raw materials and the environmental impacts of their extraction and transformations, in a circular economy perspective – using life cycle assessment (LCA) as a tool.

Resource use is an important indicator in LCA. Most methods only consider a dichotomy – renewable vs non-renewable. The reality is much more complex, and few methods try to address this problem. One such is method is EcoBlok, developed in NOVA University Lisbon. The goal of this research is to update the EcoBlok indicators “Resource” and “Water” – where resource scarcity is evaluated based on stock duration of mineral and biological resources, and water abstraction is assessed considering water stress. In order to assess global resource scarcity and water stress, it was necessary to compile and systematise a large set of global data drawn from various sources.

The analysis had two parts. The first part studied stock duration of mineral resources with a special focus on those which play or may play a key role in the energy transition, particularly fossil fuels and rare earths and metals. The second part studied water resources, considering water availability, abstraction, ecological and management constraints. The analysis was conducted at global and national levels. This research demonstrated it is possible to compile the global data required by EcoBlok indicators, at least at national level, and, if local information is available, also at subnational level. This approach could provide a potential improvement in global LCA indicators for resource extraction and water abstraction.

Key-words: Resource scarcity; Water stress; Energy transition; Life cycle analysis; Stock duration

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Sustainability Indicator Systems: from families to the regional level

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Abstract

Sustainability indicator systems (SIS) are frameworks that combine multiple indicators to evaluate sustainability achievement in its manifold dimensions. They can be used to assess and report the progress toward Sustainable Development Goals, to monitor and improve sustainability performance and allow decision-makers to make informed decisions. These systems can be applied from an individual or family level to a broader spectrum such as regions or countries. Although they are constructed in these separate levels, they are interrelated and influence each other. Thus, it is needed to find means of integration between them. The aim of this work was to study how sustainability indicator systems are being integrated from families to a regional level. For that purpose, it was conducted a literature review, through a search in the databases of Web of Science, SCOPUS and EBSCO. The search was done in March of 2023 using the following equation of terms: ("sustainable indicator*" or "sustainability indicator*" or "indicator system*" or "sustainability assessment" or "sustainability system*" or "environmental assessment" or "environmental system*" or "environmental indicator*" or "integrated approach") and ("household*" or "housing" or "resident*") and ("scale*") and ("local" or "regional"). The inclusive criterion was the presence of the words in the title or the abstract, full text available and published in academic journals and peer-reviewed. The search found 240 papers. The preliminary results show that sustainability indicator systems rarely integrate different levels but are more often related to specific spaces or delimited groups of people, preferential using aggregation methods. Related to the family level, it can be identified that energy and water consumption as well as waste management are the most prevalent areas. When looking for sustainability integration at the community level, the items are related to access to public services, land use, transportation and community engagement. At the regional level, the methods used are the quantification of the natural resources use, economic development and governance. Further research is needed to develop an integrative framework for sustainability, from families to the regional level.

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Evaluation of Progress for Achieving Sustainable Development Goal 6 Targets in Malaysia

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Abstract

Water resource management has become more complicated and contentious in recent years as a result of water scarcity and pollution. Severe water scarcity has affected over two billion people and lowered quality of life. Thus, Sustainable Development Goal 6 on water and sanitation is fundamentally important and conditional to the achievement of sustainable water resources management. The purpose of this study is to analyze articles published in the subject categories of water research and water resources over a period from 2015 to 2022 in support of SDG6 and each of its targets midway of Agenda 2030 in Malaysia. The water research and water resources are especially related to SDG 6 with its eight global priorities that span the entire water cycle.

We use bibliometric analysis to assess and evaluate the field's scientific performance and report sustainability. The trend of journal from author's keyword, growth trend of the journal, and trend of different affiliations were also investigated to unravel the influence on SDG6 in Malaysia. This includes indicators most used to support management systems and communicate sustainability performance to stakeholders. After seven and half years running of SDG6, current knowledge on water and the trends in water research and water resources based on the Scopus database output using a list of 1057 terms suggested by the United Nations University for the field's scientific performance in relation to Malaysia is investigated. We also focus on the immediate response required to redefine water scarcity and further improve evaluation methods and tools in order to provide insights and actionable recommendations for regional water scarcity reduction.

The findings indicated that additional research should be conducted to address water scarcity and shortages caused by water quality, as this is a critical component of increasing water usage efficiency by optimizing the water quality match between supplies and demands, in addition to saving physical volumes of water.

These findings suggest that more advocacy campaigns and trainings are needed to increase public awareness and capacity building especially for increasing people's engagement in an efficient water resources management. This would in turn support policy development and organizational learning through integration of solution and strategies to balance the 5P of SDG and on how to achieve SDG by the end of 2030.

TRACK 2

Education

2a. Provision, quality of and access to education

CLIMATE-DISPLACED CHILDREN AND THE DEPRIVATION OF THEIR EDUCATION RIGHTS IN MALAYSIA

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Abstract

The mobility crisis caused by climate change jeopardises the development rights of children, including their education. In 2019, weather-related disasters forced 23.9 million people to leave their homes forcibly, outnumbering the 8.5 million people who left their homes forcibly due to the most common causes of migration and displacement, which are conflict and violence. Children displaced by climate change events will face barriers to enrolment in school because Malaysia has a deliberate policy of excluding them from national education systems. Even though access might be accessible, relocation to new regions can result in procedural, financial, and linguistic barriers that frustrate children and, if not resolved, can lead to school dropout. Thus, governments must examine the implications of climate change on the right to education and devise solutions to address this problem. This study will investigate the education rights of climate-displaced children under international and Malaysian law. In addition, the practises of Thailand and the United Kingdom will be observed, as these two countries have received a large number of climate-displaced children and have adequate laws and policies in place to safeguard the educational rights of these children. The work is based on doctrinal and comparative legal research, as related legal concepts, principles, and selected statutory materials are reviewed and compared to implement applicable practises in our country. The data were obtained via library research and analysed using content analysis. The preeminent factors are the child's best interests and the principle of equality. The results demonstrate that Malaysian legislation needs to adhere to international legal standards that recognise children relocated due to climate change as having a right to an education. Therefore, the government must make adjustments to safeguard the developmental potential of every child.

Exploring best practices of teaching delivery methods for new climate change policy and law postgraduate program

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Abstract

It is a truism that law and policy play a vital role in the governance and regulation of climate change issues. Nevertheless, climate change law is seldom taught formally as a program at institutions of higher education. Accordingly, it is unclear as to how climate change law lessons should be delivered. Drawn from ongoing research on development of new climate change policy and law postgraduate program in Malaysia, this paper focuses on the exploration of best practices of teaching delivery methods of the program. The study engaged in purely qualitative methodology, involving interviews with experts in environmental law and climate change from academia and industry partners, as well as environmental law alumni. In total, 10 respondents have been interviewed using focus group discussion. The study found that among the recommended best practices of teaching delivery methods for the program are service learning, global learning, article contributions to newspapers and project-based learning (PBL). Service learning involves implementation of credited projects by the students for the benefit of a targeted community focusing on climate change issues. Meanwhile, global learning involves collaborative events with member institutions within Malaysia or abroad, in which experts, academia and industry practitioners can join and participate for sharing of experiences, skills and knowledge on climate change current issues and challenges. Students can also be encouraged to write their piece of articles to be submitted to newspaper portals, either printed or online sites. Finally, lecturers can prompt specific PBL projects to the students, in which students are to “carry out” climate change-related projects in this innovative and inspiring learning strategy. The findings of the study are expected to be incorporated into the new climate change policy and law postgraduate program soon to be offered. Hopefully, this paper will become a catalyst for future studies on climate change curriculum development, particularly on teaching delivery practices. The findings are highly pertinent to United Nation’s Sustainable Development Goal SDG13 on climate action, focusing on Target 13.3 in improving education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. In the broader context, the findings of the study will be a great contribution towards the attainment of sustainability efforts on climate action, particularly in capacity building of the people on teaching delivery methods of climate change policy and law, protecting the planet, promoting prosperity, maintaining peace and establishing connections and partnerships in the teaching methods, such as global learning.

Keywords: Best practices, teaching delivery methods, climate change, policy and law, SDG13

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Does Smart Indonesia Program Have an Impact on Disabilities?

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Abstract

Background: Disabled people have poorer schooling, labor market, and poverty outcomes than non-disabled people. Only 5.48 percent of disabled people aged 5 or older attend school, and 23.91 percent have never attended. Factor economics makes it difficult for students to fund education, both operational and personal.

Objective: The objective of this study is to analyze the probability of people with disabilities and the impact of government subsidies on school participation.

Method: This study uses logit models to compare people with disabilities with non-disabled in-school participation. The logit model is used to analyze the probability of events.

Result: People with disabilities have a lower probability of school participation around 17.4% compared to people non-disabled. The government program has an impact on disabled people to school participation. The result shows people with disabilities who receive Smart Indonesia Program and Smart Indonesia Card have a positive impact on school participation with outcomes of 6.4% and 9% respectively.

Conclusion: The government education subsidy has a positive effect on increasing school attendance, particularly among low-income families and individuals with disabilities. The government should increase subsidies and encourage disabled individuals to enroll in the Smart Indonesia Program.

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FAIR DEALING IN EDUCATIONAL REPROGRAPHIC RIGHTS IN SINGAPORE, UNITED KINGDOM, AND MALAYSIA TOWARDS SDG 4 AND SDG 10.

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Abstract

The United Nations' Sustainable Development Goals (SDGs), established in 2015, aim to end poverty, protect the environment, and foster prosperity. SDG 4 specifically advocates for lifelong learning and quality education for all, while SDG 10 strives to reduce inequalities within and among nations and ensure equitable access to resources. Access to educational materials is crucial for individuals to realize their full potential. However, many students and educational institutions face financial constraints when acquiring textbooks and academic materials. To address this issue, copyright and reprographic rights laws play a vital role in making educational resources more affordable and accessible. In Malaysia, the Copyright Act of 1987 governs reprographic rights in educational institutions, regulating the use of copyrighted works. Under this Act, educational institutions are permitted to replicate and distribute copyrighted works for research, private study, and teaching purposes. However, fair use principles must be applied, taking into consideration the purpose, amount, and potential impact on the market of the original work. Violations of copyright can result in legal repercussions and reputational damage. To contribute to SDG 4 and SDG 10, Malaysian schools should prioritize raising awareness of reprographic rights and copyright regulations among teachers, staff, and students. By doing so, educational institutions can ensure compliance with copyright laws while providing students and teachers with the necessary materials for their education. Moreover, the promotion of fair dealing in educational reprographic rights should extend beyond Malaysia to include Singapore and the United Kingdom. By aligning with SDG 4 and SDG 10, educational institutions in these countries can foster equality, justice, and the principles of fair use. Raising awareness and educating stakeholders about reprographic rights will further support the achievement of these sustainable development goals.

TRACK 2

Education

2b. Educating for sustainability

Responsible Management Education: The Nordic Approach

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Abstract

Background: To realize a sustainable future, a different paradigm for management and governance of the businesses and new sets of managerial competencies and practices are required. In this regard, the role of business and management education is vital and it should adjust to the new needs. Management education itself should go through a sustainable transition. Business and management educators worldwide are increasingly engaged in integrating ethics, corporate responsibility and sustainability into their programs. This inclusion is called responsible management education (RME).

Problem and Purpose: RME is a broad concept and is still partly undefined. Some initiatives such as the United Nations initiative of Principles for Responsible Management Education (PRME) attempt to develop platforms to promote and guide RME and higher education institutes eagerly attempt to include ERS in their programs. However, there is no comprehensive framework to identify the content (i.e. theories and models) that should be included. Furthermore, the know-how (e.g. through rethinking pedagogy, assessment techniques, research scholarship and engagement with stakeholders) should be developed. Universities are currently experimenting to develop and learn content and methods for RME. Therefore, the purpose of this research is to identify common themes and patterns of RME pedagogy developed by Nordic universities. Nordic countries are not only leaders in sustainable development but also in education and welfare state. Therefore, examining the context of Nordic countries can provide us with the best practices and advances in RME.

Method: To identify pedagogical approaches and competencies targeted by RME, quantitative thematic analysis through conducting textual data mining is used. The texts subject to quantitative thematic analysis include RME reports made by Nordic Universities. University members of PRME (over 800 business schools and management departments) provide self-written reports about their RME plans and activities and regularly share information on their progress in implementing RME. The reports are publicly available via <https://www.unprme.org> and information-rich texts that define the direction and strategies of RME and provide a concise and comprehensive overall picture of RME-related activities at the university level. Reports of 28 Nordic business schools and management departments (11 from Sweden, 9 from Finland, 4 from Norway, and 2 from Denmark and Iceland each) were subjected to analysis by Leximancer software. Leximancer applies data mining algorithms and is able to identify and elaborate themes and their connections. It has been shown that machine-based theme identification is in close agreement with expert judgment. This technique has successfully been used in research related to ethics and business education (e.g. Berti et al. 2021). The reports were published in 2021 or 2022.

Findings: The themes identified include gender equality, environmental economic value, co-producing sustainable knowledge, responsible management competencies, and impact are themes identified. The core concept of each theme, theoretical contribution to sustainability and education research, and practical implications for management and business educators are discussed.

ESD assessment model as enabler for education for sustainable development

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Abstract

In order to shape a more sustainable future for all of us and to create a basis for well-founded and forward-looking decisions, the type, content and location of learning must be designed in a way that is fit for the future. In order for teaching at universities to contribute effectively to education for sustainable development (ESD) in the long term, it is necessary to examine whether the courses offered provide the competencies that are necessary for the societal transformation towards sustainability.

The University of Technology in Chemnitz (TUC) is advancing ESD in a targeted and scientifically sound manner within the framework of its university teaching with diverse, transdisciplinary and numerous projects and teaching offers. The aim of this article is to analyze and systematize selected research and teaching activities of a specific professorship at the TUC to support, raise awareness of and achieve ESD goals. First, a literature review was conducted and the most important sustainable criteria, related to education, were identified. For this purpose, teaching modules and projects are shown, clustered and compared on the basis of a specially created, generic procedure and evaluation model using various ESD criteria. Example network diagrams for each module are then derived from the evaluation, showing strengths and weaknesses with respect to ESD. Pointing out the weaknesses can be used to eliminate them in the future and bring ESD more to the forefront to make students more aware of sustainability. The assessment model has the advantage of being universal and applicable to events at different universities.

The article supports SDG 4, especially SDG 4.7. First, it sensitizes teachers to question their teaching and align with the criteria for ESD. When this has taken place, students can build and implement more knowledge and competencies in the field of sustainable development. The assessment model helps to consider and support the 5 Ps. On the one hand, students acquire more knowledge about the path to sustainability and about sustainable development. On the other hand, teachers are also encouraged to reflect on their teaching activities. These two perspectives contribute to the need to build partnerships, for example among teachers, as well as to increase knowledge about planetary boundaries and social life.

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Preparing Students for the Sustainability Skill Requirements of the Engineering Labour Market

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Abstract

The quality of human capital is a key factor in successfully facing complex problems of our era, such as sustainability and climate change. Identifying and developing the skills, knowledge and attitude required by these complex problems, new technologies, new challenges are fundamental to successfully integrating them into the education systems. Organizations and researchers have long focused on sustainability competencies, seeking to identify and categorize the key skills needed for a sustainable future. Technology is one of the main drivers in the economic transition; therefore, engineering has a crucial role in addressing sustainability challenges and facilitating the sustainability transition. Our research aims to examine the transversal skill requirements of the labour market for engineering positions and see how transversal and sustainable skills are represented among them. The study provides an analysis of the job offerings at the job fair at the Budapest University of Technology and Economics in March 2023. Our results show that the most common transversal skills for engineers are teamwork, communication skills, and independency. The need for specific sustainability skills however is very low. Based on our results, we recommend promoting the concepts of sustainability and transversal skills through educational publications including and collaborating with industrial stakeholders.

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Future Proofing Business Education: the promise of a dialogical teaching approach

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DR OLGA CAM



PROF JOAN BALLANTINE

Abstract

There are no agreed solutions as to how humanity becomes sustainable. Yet, the acknowledged reality is the danger to the planetary and human well-being posed by unsuitable living. Higher business education is vital in enabling sustainable living by educating future business leaders. However, without answers, these solutions cannot be taught in the traditional didactic manner. Education for the future demands a re-think of teaching and assessment strategies. This autoethnographic study contributes to the business education literature concern with seeking ways to educate for the unknown by turning to Paolo Freire's dialogic education ideas. It proposes ways to embed sustainability into the higher education business curriculum by showing how the dialogic education approach can be adapted by looking at the example of bringing dialogic elements into undergraduate accounting education.

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A 5Ps approach to teaching and e-learning sustainability: The case of Universidade Aberta

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PEDRO PEREIRA



JOÃO SIMÃO



JORGE TRINDADE



PAULA VAZ-FERNANDES



SANDRA CAEIRO

Abstract

Education is one of the key transformations needed for achieving Sustainable Development Goals (SDGs) to empower students to tackle social and ecological problems and enable them to put sustainability into practice. In this context, approaches to how students learn to reflect and act on sustainability issues on the scope of UN Agenda 2030 are pivotal and will influence their actions as change agents in society. However, education on sustainability based on the SDGs is still in its early stages at Higher Education Institutions. Recognizing this need, a micro-credential module was developed at Universidade Aberta (UAb), Portugal, which takes a 360-degree approach to teach sustainability in the context of five areas (5Ps) of critical importance for humanity and the planet (People, Planet, Prosperity, Peace, and Partnerships). This module helps students grasp the complexity of the SDGs by highlighting how the SDGs are intertwined frameworks in the context of 5Ps, instead of being perceived as a list of independent goals. This paper aims to present the pedagogical approach and the structure of this newly developed module and assess the outcome of its pilot teaching at UAb.

The full module entitled “Sustainable Development Goals”, comprised 156 study hours, was designed in e-learning mode, and was structured in 6 micro-credential lessons: i) Introduction to Sustainable Development, ii) People, iii) Planet, iv) Prosperity, v) Peace, and vi) Partnerships. Various learning materials were developed ranging from the text and slides to introduction videos for each lesson and narrative presentation. Different individual/collaborative activities were applied by using engaging and captivating tools such as Padlet, WIKI, and Forums. An extra lesson at the beginning of the module welcomed students inside the content and online environment, inviting them to collaboratively build a “Mural of Happiness”, which was later revisited by them, in the last week, in a reflective approach.

Led by 10 educators, the training was offered to all undergraduate students of UAb and 43 students were enrolled. To assess the module, two sets of questionnaires were developed i) a pre-questionnaire to evaluate students' pre-knowledge on Sustainability and SDGs, and ii) a post-questionnaire to evaluate students' perceptions of the training structure, materials, topics, as well as their knowledge improvement. The findings show that 94% of the students were satisfied with the module, rating the “diversified learning resources” as the most qualified aspect of the training. Among those, the narrative presentations and the introduction videos were acknowledged as paramount materials. Within the topics, Peace and Prosperity stand in first and second places. The module was successful in increasing the students' knowledge on both “Sustainability” and “SDGs” issues. The results of the “Mural of Happiness” show that interacting with “nature and family”, by addressing People and Planet, was the main contributor to developing positive-thinking approaches to achieving a sustainable life. The Module is ready for refining to be taught in the next semesters within different courses, thus contributing to the progress toward the 5Ps approach, particularly SDG4, target 4.7.

Raise awareness in day centers and senior universities communities about marine litter

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Abstract

Ocean pollution, particularly marine litter, is a global challenge identified in Agenda 2030. Marine litter can be defined as the processed solid waste accumulated and deposited in the marine and coastal environment and has been acclaimed as an urgent issue to be addressed. Such debris problem is mainly attributed to human activities and behaviors therefore, education and behavioral change actions are presented as tools to tackle it. Considering that education for sustainable development is a lifelong learning process where learners of all ages are empowered with the knowledge and skills necessary to face global challenges, the main goal of this work was to educate and raise awareness in daycare centers and senior universities communities about marine litter. Almost 150 participants from several community centers and senior universities in Funchal (Madeira Island, Portugal) participated in the study. A two-sessions intervention was developed, with an one-hour session per week. Marine litter definition, composition, sources/pathways, impacts, estimated degradation rates, national and regional reality, and prevention measures were explored in the sessions. Moments of oral sharing were privileged, as it was an activity where seniors feel more comfortable. Examples of the past versus the present were presented, where the evolution and greater use of plastic were discussed. Also, was reinforced the necessity of avoiding putting garbage in streams, as streams have been identified as a potential marine litter pathway on the island in previous studies. To assess the interventions, two tools were employed: 1) a flipchart for a question and answer session where the researcher registered participants' perceptions and answers to questions (what marine litter is, its impacts, sources/pathways, and solutions) before and after sessions, 2) interview assessment sheet, whose questions were read and the answers recorded by the researcher with the help of employees of the institutions because some of the seniors had many difficulties in writing. Globally, lack of human civility and nature care, together with animals suffering, were the ideas mostly associated with marine litter. Participants identified plastic, metal, and cigarette butts as common in the marine environment but did not hold the estimated degradation rates of such items. Ocean tides, streams, sewage systems, boats, and human negligence/behaviors were pointed out as responsible for litter accumulation. Referring to old practices, several seniors reported that in the past, goods were packed in paper, glass was used instead of plastic, and when objects got broken they were repaired. Altogether, the results indicated that interventions were positive: seniors become more aware of the subject and understood that human behaviors are essential for sustainable development and ocean conservation. Moreover, as marine litter is a global problem that requires an all-inclusive approach, education for sustainable development must be explored as a lifelong learning process to offer a quality education on the subject. (SDG4/target4.7; SDG6/target6.3; SDG12/target12.5; SDG14/targets14.1/14.2/14.c)

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Circular Economy in Higher Education Curricula: The Portuguese case

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DRA. CARLA FARINHA



PROFESSOR TOMÁS RAMOS

Abstract

The Organisation for Economic Co-operation and Development (OECD) recognizes that Higher Education Institutions (HEI) play a crucial role in promoting economic growth and social development. HEI contributes to knowledge creation and dissemination through research and teaching, respectively, while also engaging with the wider community through outreach activities. Circular Economy (CE) principles in higher education (HE) curricula could be central to the sustainability performance of HEI, in particular in its offer of advanced training. As the current generation of students will be future leaders and decision-makers, it is essential to equip them with the knowledge and skills necessary to understand and implement circular strategies and practices. Integrating CE principles into HE curricula, institutions can prepare students for the challenges and opportunities of the circular economy, such as designing and implementing circular business models, products, and services that are less wasteful, more efficient, and more sustainable, replacing the 'end-of-life' concept. It can also help students understand the systemic nature of sustainability challenges and develop interdisciplinary problem-solving skills. This paper aims to investigate the current state of the Portuguese higher education system in addressing the concept of CE. This research will identify and explore the key topics related to circular economy education in higher education programs in the second cycle within public HEI. A content analysis will be conducted through the analysis of academic programs and courses already assessed and accredited by A3ES, which is the national Agency for Assessment and Accreditation of Higher Education, whose purpose is promoting and ensuring the quality of HE. The findings of this study will provide valuable insights into the current state of the Portuguese higher education system in addressing the CE and may be used to identify areas where the higher education system can improve its offerings and better prepare students for the challenges of a circular economy. A further discussion of the findings concerning the development of CE education and its contribution to the growth of a more sustainable and resilient economy in Portugal and beyond will take place.

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3D models in education

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PAEDDR. DANIEL DANCSEA

Abstract

Sustainability is perhaps one of the most important issues today. This is no different in education. Thanks to developing technological tools, we can incorporate photogrammetry methods into the teaching process. Models have been used in education for a long time and have always facilitated writing. Our aim is to present the possibilities to develop 3D models, specifically defined as arthropod models, and of course to include them in the teaching process. Mobile phones, cameras and other technical devices have reached a level of technology where the photographs they help us to take are of sufficient quality to create 3D textured models. The use of such 3D models in education can be justified not only in online education. It can make the classroom more interesting even for students with possible phobias, as it is possible to study the species without the physical presence of a living animal, which often involves the destruction of the specimen, and without seasonal restrictions. Furthermore, 3D models can have the great advantage that only a single individual is needed to create a model, so that the number of individuals is not reduced, which is a welcome feature for a rare species, as a single individual can be used to create a 3D model that is easily accessible to all and can faithfully represent the characteristics of the species. The 3D models created carry elements of reality and are not just idealised models created in a graphics editor. This allows learning to reach a new visual level. The models we produce can bring students closer to a world and its structure that we do not see every day. It can also alleviate any phobias about arthropods, as what students see up close they are less likely to reject. And in the case of repeated online education, it may be virtually the only way for the teacher to replace the common field or laboratory demonstration. From a sustainability point of view, our achievements are not negligible, as the 3D arthropod models make it easy to access and study even seasonally linked species without destroying individuals. Our results are likely to be welcomed not only by education, as it is also much easier to store a 3D model, so that it can be used in classrooms and possibly museums and lecture halls.

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Education for Sustainability in the University-Society Relationship: possibilities and challenges in the contemporary Brazilian context

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Abstract

Universities face major challenges in contemporary reality. The production of fake news, the questioning of science, and the challenges of producing knowledge capable of leading societies to advance in the transition toward Sustainability are some of these challenges. In this context, the relationship between universities, different civil society groups (social and environmental movements, NGOs, communities, and traditional communities), and market actors (large corporations, small and medium-sized companies, and entrepreneurs) is marked by the difficulty of recognizing knowledge valid, whether formal or informal, scientific or popular and communitarian, for the promotion of Sustainability. The socio-environmental programs and projects that built the relationship between universities and societies are initiatives that can integrate Teaching with Research. They are also the locus of student protagonism, in which the greatness of social justice and the relevance of integral ecology are learned. Currently, in view of the complexity of the socio-environmental problems of our reality, the programs, projects, and actions of interaction between the university and society face renewed challenges linked to the modernization of academic work as one of the places where the university's social function is exercised. Brazilian legislation establishes that activities linked to the interaction between universities and society seek “the construction of collaborative projects, which allows, in an effective way, to materialize an agenda of social inclusion, citizenship, and humanist education, in the perspective of integral development of the human being. In this perspective, the

educational activities beyond the walls, promoted by programs, projects, and actions between the university and society, enable more people to learn the value of equality, freedom, autonomy, plurality, solidarity, and justice, principles adopted by universities and reflected in their community and social projects and programs. Aware of the importance of extension in the integral formation of students in the context of Brazilian higher education, the Brazilian National Council of Education (CNE), through resolution number 7 of 2018, establishes guidelines for the circularization of these interaction activities between universities and society in higher education. They become mandatory and must compose, at least, 10% of the total student curricular workload of undergraduate courses, becoming part of the curricular matrix of the courses. The legal norm came into force in 2023. In this context, academic work began to be developed through the most diverse mechanisms, within which we will seek to analyze in the present study the experience of modernizing its relations with

society developed by a large higher education institution in Brazil. In order to achieve this objective, we developed a case study of a qualitative nature, focusing on the analysis of projects carried out within the scope of a Brazilian university present in seven Brazilian cities and which currently involves eighty thousand students. The results point to possibilities of modernizing the role of the university as one of the relevant actors for the promotion of Sustainability in contemporary societies and the challenges linked to institutional inertia and horizontal, democratic, and participatory articulation between academic and non-academic actors in the production of relevant knowledge for current socio-environmental challenges.

Sustainability Research on Service Design of Art Classroom Teaching Experience in Primary and Middle Schools

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Abstract

As people pay more and more attention to user experience and service systems, service design has begun to be gradually applied in the education field. At a time when aesthetic education is increasingly being valued, fine arts education in primary and secondary schools, as an important part of the practice of aesthetic education in primary and secondary schools, also urgently needs to optimize the teaching experience to adapt to the trends of technological development and educational innovation. This research uses service design methods and tools to provide insights into the teaching experience, cuts into fine arts education from the perspective of experience, explores the current situation of the fine arts education system in primary and secondary schools, and establishes a large framework of teaching experience and an evaluation model of classroom teaching experience. The opportunity points and design strategies of experience design were extended, and classroom teaching experience service system of art in schools was constructed.

This paper adopts a research path that combines theory and practice, focusing on the classroom teaching experience of fine arts education in primary and secondary schools, using research and analysis tools of service design to deconstruct and reconstruct the specific context and abstract structure of fine arts education and classroom experience. Through the desktop research method and document analysis method, the relevant concepts, specific categories, pattern distribution, content scope, and current situation of fine arts education and teaching in primary and secondary schools have been defined, so as to understand the overall appearance of fine arts education in primary and secondary schools; secondly, the author through user research methods such as user interviews and questionnaire surveys, we have made a three-dimensional analysis and structure of the overall experience of fine arts education and teaching. With the help of the service blueprint and the stakeholder map of fine arts education in primary and secondary schools, a basic fine arts education in primary and secondary schools has been established Teaching experience framework; Next, the author cuts into the classroom teaching experience based on the "front-end experience" of the experience framework, reorganizes and visually integrates the information according to the corresponding relationship between the teaching process and content, draws user portraits and experience journey maps, and then discusses classroom teaching The basic composition of experience and an experience evaluation model are proposed.

The author systematically sorted out the problems of classroom teaching experience, analyzed the core crux of the classroom teaching experience and potential design opportunities, proposed three design strategies, and carried out the classroom teaching experience system accordingly. The design practice part is the design of service blueprint, service supply map, art education community platform and its evaluation system. This project aims to optimize the classroom teaching experience of fine arts in primary and secondary schools, and to provide references for the exploration and practice of fine arts teaching and other types of aesthetic education. It hopes to further promote the development and integration of service design in the field of education and even other fields.

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The community-based sustainability education with sensory stimuli: A practical approach

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ADJUNCT LECTURER CHENG HUI LIU



ADJUNCT ASSISTANT PROFESSOR MEI YA LAN

Abstract

The challenge to engage students in sustainability learning in higher education is getting more difficult nowadays due to neoliberalism, credentialism, and slacktivism. Educators must search for new teaching approaches to change it. Community-based learning and the idea of sensory stimuli have shown the potential to improve students' engagement and advance sustainable teaching. This paper describes the process of how we followed the steps of action research to lecture two courses in the field of liberal education, with an emphasis on sensory stimuli and collaboration with people in the communities. It also demonstrates the result of a survey to investigate students' attitudes and learning results of the projects to promote sustainability in the community.

Impact of Environmental Knowledge on Pro-Environmental Behaviour of College Students: Applying the Conservation of Resources Theory

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Abstract

Climate change is a serious global issue. The 2030 Agenda for Sustainable Development provides a comprehensive development framework for all countries in the world to promote and achieve the United Nations sustainable development goals. In response to climate change, the Chinese government has set a clear goal to reach its carbon peak by 2030 and achieve carbon neutrality by 2060, endeavouring to gradually realize net-zero carbon dioxide emissions. Besides, organizations have been held accountable for climate change as they continue to emit carbon dioxide and harmful chemicals into the air and water. Addressing environmental challenges requires action from governments, industry, and organizations, as well as pro-environmental behaviours from individuals. Pro-environmental behaviour is defined as behaviour that minimizes humans' negative environmental consequences. As individuals have relatively fixed and limited amounts of time and energy, they have the motive and motivation to acquire, foster and assimilate more resources from their environment according to the conservation of resources (COR) theory. Following the COR theory, this study aims to explore the influence of environmental knowledge on pro-environmental behaviour among Chinese college students by examining the mediating effect of student relational energy and the moderating role of student self-construal. As college students are one of the main bodies of future employment and consumption, promoting their pro-environmental behaviour plays an important role in protecting the environment. The quantitative research design is applied in this study. And the study would employ a self-administered survey questionnaire to collect data from respondents, to investigate the relationships among variables at the single point of time, which is a cross sectional approach. To be regarded as appropriate for the study, the survey's participants will be required to be Chinese college students, who are from several different universities/college from Qingdao City, Shandong Province, China. The appropriate unit of analysis for this study is individual students.

Recent Trends and A Future Direction of Malaysia's Climate Change Postgraduate Law Program

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ASSOC. PROF. DR. HASLINDA MOHD ANUAR

Abstract

Climate change is a critical global issue that is predominantly caused by human activities. To equip students in higher education institutions (HEIs) with the necessary knowledge and skills to play an active role in mitigating the effects of climate change, HEIs need to incorporate climate change-related programs into their teaching curricula. These programs should emphasize law and policy, enabling students to become environmentally aware and motivated to act. The Climate Change Institute (Institut Perubahan Iklim or IPI) at Universiti Kebangsaan Malaysia is among several (HEIs) in Malaysia offering a Master's program in Climate Change (Coursework), with a specialization in Environmental Science and Earth Science. This paper aims to analyse the structure of existing climate change programs at both public and private HEIs in Malaysia. Desk research is conducted to gather various information from the available structures involving seven public universities and two private universities in Malaysia which offer 23 environmental-related programs both in undergraduate and postgraduate studies. The findings were analysed by a constant comparative approach that is guided by the key themes of the study. The finding shows that all universities that offer law programs do not have climate change postgraduate law programs offered at their faculties. Other faculties, should they have such a similar program, are more related to sciences, engineering, technology and management. This paper concludes by providing insights into the key features of recent trends in the offering of climate change postgraduate law programs in Malaysia. Accordingly, the findings of the study would serve as a significant guide for the development of any new climate change policy and law programs in the future in line with United Nation's Sustainable Development Goal SDG13 on climate action which focus on Target 13.3 in improving education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning. The new climate change postgraduate law program will also contribute to the sustainability of climate action, particularly in capacity building of the people on teaching delivery methods of climate change policy and law, protecting the planet, promoting prosperity, maintaining peace and establishing connections and partnerships in the teaching methods, such as global learning.

Keywords: Trends and direction, climate change, postgraduate law program, policy and law, education, SDG13

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Teachers' Inner changes for sustainability

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Abstract

As a key element in promoting sustainability, many authors emphasize the importance of changing mindsets to reach social transformation. This approach argues that sustainability can be achieved if peoples' mindsets in relation to different spheres of life, especially regarding self-perception, connection with others, and with nature, alter to a more ecologic way of living. In other words, sustainability depends on behavior, which depends on peoples' mindsets – deep leverage points for the necessary behavioral change.

In this scope education is a powerful tool to promote capacity building for sustainability, especially through inner changes fostering, at all education levels, namely at higher education level.

However, many authors have studied the subject field of education for sustainability, regarding sustainability competencies development or mindset changes in student's education, but less have done such research regarding teachers. As agents of change, it is important for teachers to have a sustainability mindset by playing an intervening role in developing students' mindsets as well as in the educational institutions' transformation, considering the need for holistic approaches to sustainability.

This work aims to present an integrative literature review paper regarding teachers' inner changes and its relation to education for sustainability, as it seems to be a relatively new topic that needs a specific framework. The paper lies on the premise that, despite education's transversal character on Agenda 2030, people must acquire the knowledge and skills to live a sustainable life (SDG 4 – target 4.7), which is here explored regarding the importance of peoples' inner dimensions. On the other hand, to deliver efficacy in sustainability learning, teachers must be prepared to promote inner changes, which will allow learners and other stakeholders to deeply engage with sustainability and behave in accordance. In this sense, the authors believe that the presentation addresses the Conference topic especially because it relates to education for sustainability efforts to change attitudes, behaviors, and lifestyles and to develop a more ecological and inclusive self (mainly addressing “people” and “planet” from Agenda 2030).

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How do students feel about the SDGs? Towards better embedding of emotions and the mind-body connection into sustainability learning

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DR. ANTJE DISTERHEFT

Abstract

In the field of Education for Sustainability, scholars and practitioners advocate for a “head – heart – hands”-approach, aiming to integrate holistically our mind and body in our learning design and processes. However, most often rational and cognitive approaches are chosen, particularly in higher education. With the focus on competitive performance, evaluation and comparison, schools and higher education institution today put a lot of pressure on pupils and students, causing fear and exhaustion already in early ages. Additionally, the current multiple crises like the recent pandemic, wars, natural disasters and catastrophes, climate change and global injustices can put extra weight on young people who do not see a bright future ahead. Psychological distress about climate change and worsening environmental conditions – often referred to as eco-anxiety or fear of environmental doom – can be observed increasingly in children, adolescents, and young adults.

This work presents results from a questionnaire survey that was applied to all 2nd year Bachelor students at a Portuguese university about their emotions towards the SDGs, obtaining 244 responses (response rate 25%). Students responded after having completed a 5-weeks-module on sustainability, where they worked in groups on a chosen SDG, developing causal loop diagrams. The survey was developed within the European Erasmus+ project MP4S about Mindfulness in Higher Education, of which the authors are consortium members, and which aims to develop adequate mindfulness programs that can easily be integrated in higher education institutions. Students could choose up to 3 SDGs they felt most familiar with and then use the Plutchik Wheel of Emotions to select respective emotions, adding also personal comments in open text fields. Furthermore, students were asked about the importance of the development of inner skills and whether they do contemplative practices.

The results of the questionnaire were analysed using descriptive statistics and content analysis of open questions.

The top five emotions chosen were (i) interest, (ii) sadness, (iii) trust, (iv) vigilance and (v) grief, and the respondents were divided about the likeliness that the SDGs can be achieved or not. Only a few students (16%) have experience with contemplative practice, but the majority considers the development of inner skills of “high” or of “extremely high importance”. Many students wrote long

personal comments (over 70, 35%) that allowed to understand better their feelings, and of which some indicate pessimistic perceptions about the future.

Scholars call for more consideration of eco-anxiety and related emotions and propose adjustments to educational programmes directed towards sustainability learning. Such adjustments can e.g. encompass nature-connectedness and hope through

- creating more opportunities for expressing emotions (small group discussion, integrating art-based and place-based pedagogies, etc.);

- developing coping strategies, e.g. through mindfulness-related activities, being in nature, embodied experiences;

- offering role models (e.g. people who love and care for nature, and who admit their personal emotional difficulties and how they deal with them).

This work relates to SDG4, target 4.7, and indirectly to SDG3. By strengthening the youth and empowering young people to deal constructively with adversities and uncertainties, also the 5P's are strengthened.

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3D models in education

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Abstract

Thanks to developing technological tools, we can incorporate photogrammetry methods into the teaching process. Models have been used in education for a long time and have always facilitated writing.

Our aim is to present the possibilities to develop 3D models, specifically defined as arthropod models, and of course to include them in the teaching process. Mobile phones, cameras and other technical devices have reached a level of technology where the photographs they help us to take are of sufficient quality to create 3D textured models. It can make the classroom more interesting even for students with possible phobias, as it is possible to study the species without the physical presence of a living animal, which often involves the destruction of the specimen, and without seasonal restrictions. Furthermore, 3D models can have the great advantage that only a single individual is needed to create a model, so that the number of individuals is not reduced, which is a welcome feature for a rare species, as a single individual can be used to create a 3D model that is easily accessible to all and can faithfully represent the characteristics of the species.

TRACK 3

Biodiversity and ecosystem services

3a. Life on land

Cultural Ecosystem Services of Insects and Birds in Urban Residential Areas Towards Young Children's Outdoor Learning

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Abstract

This study explores the cultural ecosystem services (CES) provided by insects and birds in urban residential areas for young children's outdoor learning experiences. These species play a crucial role in urban ecosystems, offering various cultural benefits such as aesthetic enjoyment, sense of place, and connection to nature. However, the value of these benefits to young children's learning has been overlooked in the literature. By reviewing the existing research, this study argues that insects and birds can provide valuable opportunities for young children to engage with nature, develop ecological literacy, and improve their well-being. Through activities such as birdwatching, bug hunts, and habitat creation, children can learn about the diversity and interdependence of urban ecosystems and develop appreciation for the natural world. This study acknowledges the potential challenges associated with incorporating CES into young children's learning experiences, such as limited access to green spaces and safety concerns related to exploring natural habitats. To address these challenges, this study proposes a framework for designing effective outdoor learning experiences that leverage the benefits of CES while minimizing potential risks. This framework emphasizes the importance of creating safe and accessible outdoor learning environments, providing opportunities for children to explore and discover nature, and fostering a sense of wonder and curiosity regarding the natural world. Interdisciplinary collaboration between educators, researchers, and urban planners is essential for the development and implementation of effective outdoor learning programs. This study contributes to the growing discussion about the importance of CES for urban residents and highlights the potential benefits of incorporating insects and birds into young children's outdoor learning experiences. The proposed framework can be a useful tool for educators and researchers to design effective outdoor learning experiences that enhance young children's ecological literacy and well-being. The paper's relevance to the topic of the conference is significant because it focuses on the planet and people aspects of the SDGs. Specifically, the paper explores the cultural ecosystem services provided by insects and birds in urban residential areas for young children's outdoor learning experiences. By emphasizing the role of nature in enhancing children's well-being and ecological literacy, the study aligns with the people and planet goals of the SDGs. The proposed framework for designing effective outdoor learning experiences also underscores the importance of interdisciplinary collaboration among educators, researchers, and urban planners, emphasizing the need for partnership to achieve sustainable development. Overall, the paper provides a practical approach to incorporating nature-based learning into young children's educational experiences, promoting prosperity and peace through environmental awareness and education. Finally, the study relates to the SDGs and targets, including SDG 11: Sustainable Cities and Communities - specifically Target 11.7, which aims to provide universal access to safe, inclusive, and accessible green and public spaces, particularly for women and children, older persons, and persons with disabilities. It also relates to SDG 15: Life on Land - specifically Target 15.1, which aims to ensure the conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems and their services.

TRACK 3

Biodiversity and ecosystem services

3a. Life below Water

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Airborne monitoring of water quality in remote regions

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Abstract

The Intergovernmental Panel on Climate Change (IPCC) points out alpine regions worldwide as climate change hotspots. Expanding and diversifying summer tourism in northern Scandinavian mountains exerts additional severe pressure to these areas and their oligotrophic and sensitive aquatic ecosystems. Previous research at Mid Sweden University has shown that fecal contamination of mountain rivers, indicated by the enumeration of *E. coli*, is frequent in areas that are intensively being used for tourism and reindeer herding. According to the IPCC, climate change is projected to reduce raw water quality, posing risks to drinking water quality even with conventional treatment. Therefore, there is an urgent need for improved monitoring of water quality in such areas to be able to protect the ecosystem as well as the rights of indigenous people, human and animal health and to provide support for water management decision. To be able to monitor the water quality is of great importance for the sustainability of mountain regions and water sources in general. The inaccessibility of the watercourses in remote mountain areas makes it difficult to establish sufficient monitoring programs.

In this research, the use of airborne monitoring systems to assess water quality in remote regions is investigated. Remote monitoring systems based on e.g. drones and satellites have the potential to replace less climate friendly options making use of terrain vehicles, snow mobiles and helicopters. The drones can be equipped with various sensors or sampling equipment, can overcome long transportations as well as time-consuming and expensive field samplings. Drones have great potential to be employed in everyday practices as an essential part of decision support systems for monitoring, evaluation and remediation of contaminated sites. The goal is to use drones to establish water quality monitoring programs in remote regions such as the mountain areas of Northern Sweden. In this research we intend to cover the catchment area of upper parts of river Indalsälven situated in the mountain region on the Swedish/Norwegian border, including the catchment areas of the tributaries Handölan and Enan covering approximately 777km².

One approach in this research is to image large areas of interest by the use of a multispectral camera on a drone and to identify spectral bands or band ratio's which correlate to physicochemical parameters that are related to water quality. Another approach is to further explore the use of drone-based water sampling for laboratory or in-field analysis of microbial and chemical parameters.

Both approaches should eventually lead to the development of a drone-based monitoring program for oligotrophic rivers that can image or measure water pollution with sufficient spatial coverage and time resolution to enable early warning of outbreaks of fecal pollution. Results of this research will contribute to SDG 6, targets 3 and 6 and SDG 14.

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Assessment of Possible Intervention Strategies for the Abatement of Plastic Pollution in Rivers

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Abstract

Plastic waste pollution is posing a mounting problem to humanity. As these stem from various sources across the globe and from different activities, this geographic and sectoral heterogeneity requires complex and carefully designed policies and approaches. Numerous studies discuss the spread of plastics of different densities and physical properties, examining plastic pollution in rivers, riverbeds, beaches, near-shore seabeds and open seas. Beside more efficient prevention techniques, installation of different types of equipment suitable for abatement of microplastic pollution from running water contributes to the fulfilment of strategic environmental goals.

The aim of our research is to compile an assessment framework for future abatement projects or programs including financial and social aspects and increasing the level of sustainability. This framework can be used as a template for intervention projects to improve water quality of our rivers. This research conducted was primarily concerned with the environmental requirements of sustainability. Abatement of microplastic pollution would be evaluated from the effects of greenhouse gas emissions and the level of marginal abatement costs as crucial aspect of sustainability. In general, the shaping of environmental regulation, the selection and appropriate adaptation of the assessment tools can significantly reduce the burden on the environment through the efficient use of resources and decreasing of social costs of pollution. The authors employ the pollution chain model and its corresponding policy approaches in the deliberation of riparian plastic waste pollution. During traditional environmental protection policy planning, the pollution chain is typically monitored in an atomized manner, regardless of the spread of other pollutants and harm. However, in the case of accumulated pollutants, such as PET bottles, this does not lead to the desired goal. While PET bottles in their original form are mostly unpleasant, unaesthetic, and generally make the environment seem degraded and desolate, microplastics accumulate in living organisms, decrease ecosystem services and can even cause serious health damage.

Evaluation methods for identifying financial aspects and social utility would be proposed and assessment of the different types of interventions (for example: collection of plastic using the existing waste management system or collection directly from water) will be given. Intervention options offer solutions of varying cost effectiveness for collection of plastic waste. Comparison of interventions

relies on empirical data on the existing operational practices and on corresponding cost estimates. However, it is important to take into account that the regulatory framework and operational business model may alter the actual costs and efficiencies, even substantially. The theoretical contribution of this research is the assessment framework which provides reliable data for decision makers to be able to evaluate the long-term effects of different intervention strategies targeted for decreasing plastic pollution in our rivers. Possible policy implications and the importance of this problem highlight the relevance of the topic and efficiently contribute to the international discussion at the conference.

TRACK 3

Biodiversity and ecosystem services

3c. Ecosystem Services

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Application of Sentinel-2 data to evaluate the role of mangrove conservation and restoration on aboveground biomass

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MRS. RAHELEH FARZANMANESH

Abstract

Mangroves are forest ecosystems located in the inter-tidal regions of tropical and subtropical coastlines that provide many valuable economic and ecological benefits for millions of people such as preventing coastal erosion, providing breeding and feeding grounds, improving water quality and supporting the well-being of local communities. In addition, mangroves capture and store high amounts of carbon in biomass and soils that play an important role in combating climate change. The decline in mangrove area has prompted government and private sector interest and investment in mangrove conservation and restoration projects to achieving multiple Sustainable Development Goals from reducing poverty to improving life on land. Mangrove aboveground biomass plays an essential role in the global carbon cycle, climate change mitigation and adaptation by reducing CO₂ emissions. So, restoration and management of mangrove forests address SDG13 to mitigate climate change and increase climate resilience for local communities. However, little information is available about the effectiveness of mangrove sustainable management on mangrove change area and aboveground biomass (AGB). Here, we proposed a method for mapping, modeling, and assessing mangrove area and AGB in two Global Environment Facility (GEF) blue forests projects based on Sentinel-2 Level 1C imagery during their conservation lifetime. The SVR regression model was used to estimate AGB in Tahiry Honko project in Madagascar and the Abu Dhabi Blue Carbon Demonstration Project (Abu Dhabi Emirates), then optimized by genetic algorithm (GA) for feature selection. We used the root mean square error and coefficient of determination for accuracy assessment of the model. The results showed that mangrove forests and AGB declined in the Tahiry Honko project, while in the Abu Dhabi project increased after the conservation initiative was established. The results provide important information on the impact of mangrove conservation activities and contribute to the development of remote sensing applications for mapping and assessing mangrove forests in blue carbon initiatives.

TRACK 4

Climate change and energy

*4a. Climate change: Effective response
for energy, water and land use*

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Analysis of Drought and Conflict in Amhara and Afar Regions: Implications to Household Livelihood and Food Security

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DR. DESALEGN AYAL

Abstract

The incidence and economic impact of natural and human-induced hazards have increased at the global level. Ethiopia is vulnerable to hydro-meteorological and human-induced hazards. This paper examines the interplay effect of drought and conflict on household livelihood and food security. For this report data collected using in-depth reports was substantiated using reports, published literature, and case studies. The result revealed that drought and conflict are the most disastrous features eroding the asset background of farmers and pastoralists in the Amhara and Afar regions. The recurring drought causes crop failure, shortage of water, and pasture and disease outbreaks. In the two regions, the war cost billions of dollars, physical injury, and loss of life. Pertinent cultivating and grazing areas become a battlefield, farmers and pastoralists displaced abandoning their mature crops ready for harvesting, and massive destruction of agricultural research institutions. The two mutually reinforcing hazards further worsen the food security situation of farmers and pastoralists. These hazards have exposed children, women, old people, people with disability, people with chronic illnesses, and marginalized communities to diseases that could otherwise be treated. Humanitarian and government assistance for food and medical supplies was not sufficient due to a lack of recognition of the crisis by donor and NGO communities. We argue that comprehensive short-term and long-term disaster risk management measures could help the victims to recover and live with the drought hazard. Likewise, local, national, and international stakeholders should address the root causes of the conflict and hence, build a culture of co-existence.

Keywords: drought, conflict, displacement, food security, resilience, livelihood

Determinants of Companies' Commitment to Climate Change: Evidence Based on European Listed Companies

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Abstract

Climate change is a highly topical issue of global relevance from an environmental, social, and economic perspective. Companies are increasingly required to report on their efforts to reduce the negative environmental impacts and promote mitigation strategies against climate change. In the Sustainable Development Goals Report of 2022, based on the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), the United Nations defines climate change as humanity's code red warning, emphasising the urgency to act to avoid further climate catastrophes and extreme weather events (SDGs, U. N., 2022). The main aim of this study is to assess the influence of different determining factors on companies' commitment towards climate change, focusing on those participating in the CDP questionnaire on climate program. The CDP scoring methodology evaluates the company's awareness of environmental issues, as well as the disclosure, the comprehensiveness of the content, management methods, and progress towards action taken on climate change (CDP, 2022b). Therefore, the CDP Integ Performance Score is employed to investigate the level of companies' commitment to climate change mitigation, adaptation, and transparency. A multiple linear regression analysis is performed on a sample of 3000 European companies collected from the Bloomberg Professional database for the financial year 2021. The results show that the CDP Integ Performance Score is positively related to the following determinants having, thus, a positive impact on companies' commitment to climate change: board size, emission disclosure, firm size, GRI compliance, CSR committee, women on board, and employees. By contrast, assurance and ROE are non-significant variables for our sample of companies. Furthermore, the performing of the multicollinearity test discards the existence of correlation problems between the independent variables of the model. This study contributes to the research available on this subject, and provides some suggestions for future research. Other drivers and determinants of climate change commitment can be identified and tested; the sample could be extended to non-European companies and a multiple-year period. Furthermore, qualitative research approaches, such as case studies, can be applied to integrate the results of the quantitative analysis. This paper is directly related to SDG 13 on Climate Action. The followings are the SDG targets and a brief indication of this study's contribution to the topic of the 29th ISDRS Conference.

a) SDG 13 + Target 13.2: this target can be applied to companies that are expected to protect the environment and mitigate climate change integrating those issues into their strategies and practices. SDG 13 + Target 13.3: Companies can implement actions to mitigate their environmental impacts and improve their mitigation and adaptation towards climate change.

b) Climate Action is a global environmental problem and challenges for businesses and society. The proposed paper contributes to the progress towards the achievement of SDG 13 as this study shows the main determinants affecting the commitment and transparency of companies towards climate change. Therefore, it is directly linked to the assessment of the planet as part of the 5Ps requiring the protection of the environment and taking action on climate change.

Preliminary study-Conceptual framework of Green Premium for Green Certified Building in Malaysia.

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Abstract

Green building receives increasing attention worldwide as a mitigation strategy to climate change. In Malaysia, green building index is the most popular green building certification system with other such as Green RE certification, MyCREST and MyGHI. Additional compliance premium/cost is expected for building owners and developers to opt for green building certification. However, the development of green buildings in Malaysia is very slow because of the increment of compliance costs. Contrary, there are studies proven that the increment cost is insignificant especially, for those lower-grade of green building status and the cost is even lesser if compared to a conventional building. These contradict findings have invited doubts and confusion among building owners and developers. It may demotivate the interest of building owners and developers to opt for green certification if the costs remained uncertain and inaccurate. In this paper, we identify the elements of Green Cost Premium and cost components for Green Certified Building, and to develop the framework of Green Premium for Green Certified Building in Malaysia. Through the empirical analysis, the results prove that there are seven (7) elements of Green Cost Premium and eight (8) cost components of Life Cycle Cost. Therefore, this empirical study to discuss and meet the knowledge gap and focus on the building construction process. On this basic, we put forward relevant framework suggestions.

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Modeling CO₂ cycle and evaluating the long-term effects of climate change in Lake

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Abstract

Currently, many studies have understood that increasing CO₂ concentrations significantly influence the carbon cycle and ecosystems of lakes. However, there are few research of quantitative evaluation for the effects of lakes' carbon cycle and ecosystems caused by increases in CO₂ partial pressure (pCO₂) in future climate scenarios using water quality model and the ecological model. In past studies the medium- and short-term change and transition and those mechanism of lake water quality and carbon cycle were analyzed using a lake ecological model combined with modeling of transport in watershed in representative lakes in lakes. In this study, a submodule of CO₂ dynamics processes in a lake is developed, incorporating the numerical ecological model to evaluate the effect of long-term changes in atmospheric pCO₂ on the carbon cycle and ecosystem in Lake in representative concentration pathway scenarios of IPCC high emission scenario; RCP6.0 and RCP 8.5. By combining the CO₂ flux model between lake water and air, sediments modeled in the lake ecosystem, the transfer of inorganic carbon between lake water, the atmosphere, and sediments is possible. The CO₂ flux between water and the atmosphere is estimated using difference between both partial pressures. The aqueous CO₂ is estimated in consideration of inorganic equilibrium reactions (CO₂/HCO₃⁻/CO₃²⁻). pCO₂ in water was estimated from the aqueous CO₂ based on Henry's law. The CO₂ flux between lake water and sediments is estimated by multiplying the CO₂ concentration difference by the gas exchange coefficient. Thus, it is found that this flux contributes to the carbon cycle in Lake. This study finally addresses the effects of long-term changes of atmospheric pCO₂ on the carbon cycle, finally water quality, and ecosystem in Lake and watershed. This study finally addresses the effects of long-term changes of atmospheric pCO₂ on the carbon cycle, water quality, and ecosystem in Lake, and propose the long-term sustainable management framework for Lake and watershed.

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Understanding the Dilemma and the Cross-Disciplinary Perspectives for University Energy Governance in Taiwan - A Case Study on National Taiwan University

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PHD STUDENT DAWEI WEI-JUNG HO



PROFESSOR KUO-TSANG HUANG

Abstract

Campus energy saving is a crucial issue in Taiwan's energy transition under climate change. However, it is harder for universities to reduce energy consumption due to their complex building types, various user behaviors, and different electricity infrastructures. This study aims to disclose the dilemma of campus energy conservation and reflect on the embedded obstacles through a literature review and case study. This study uses perspectives from architecture, electricity engineering, and mechanical engineering to discuss how different specialties deal with energy-saving issues on campus, including their insights, limitation, blind spots, approaches, and derived problems. This study reviews the policies implemented by the government over the years, including the "Four-Saving Projects" and the "Sustainability Campus Plans," and synthesizes the measures taken to save energy and their limitations. Finally, this study proposes top-down and bottom-up strategies with the findings of two cases, the National Taiwan University General Library and the Department of Sociology and Social Work Building, discussing the aspects of institutional, technological, and stakeholder influence.

Keywords: Campus energy saving, Energy governance, Sustainable campus, Power demand control, Ice storage system, Citizen participation

The Importance of the Water-Energy-Food Nexus in Energy and Sustainable Development

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Abstract

The Water-Energy-Food (WEF) nexus is an integrative approach to analysis and management implemented over the last decades to strengthen the balance between socioeconomic growth and environmental concerns. Implementing the WEF nexus contributes to adapting to the effects of climate change by efficiently using resources that reduce greenhouse gases. The study aims to analyse the importance of the WEF nexus concerning energy developments through a literature review that includes bibliometric analysis to evaluate the nexus's evolution and establish strategies for sustainable development. The methodological framework comprises (i) the definition of the search and processing of information, (ii) an analysis of bibliometric results, and (iii) a literature review of scientific knowledge and its sustainable development strategies. The results verify that the WEF nexus appears in 100 scientific documents in Scopus and Web of Science publications, with applications for sustainable energy development analysis, and has a preponderance in the United States (22%), Germany (21%), China (20%), Malaysia (14%) and the United Kingdom (9%). The relationship of the WEF nexus with a focus on sustainable energy development was analysed between 2013 and 2022. In addition, this work enabled the establishment of strategies that balance economic growth, environmental protection, and a rationale for decision-makers in sustainable energy project proposals. The WEF nexus focusing on sustainable energy development enabled the establishment of strategies that balance economic growth, environmental impact, and a rationale for decision-makers in sustainable energy project proposals. This study links the following sustainable development goals (SDG): SDG #7 - affordable and clean energy, SDG #11 - sustainable cities and communities and SDG #13 - climate action, promoting energy sustainability by harnessing and developing renewable energy technologies such as solar, wind and hydro. Finally, this approach contributes to adaptability and resilience to climate change in different communities worldwide, evidencing research trends in research topics related to a circular economy, carbon footprint, green buildings, and urban sustainability.

Legal Protection for Children Against Climate Change in the Asia-Pacific Region Apropos of Target 13.3 of the Sustainable Development Goals 2030 (SDG 2030)

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Abstract

The impact of climate change on the environment can threaten children's right to safe and healthy development. Approximately one (1) billion children worldwide are exposed to significant environmental hazards, prompting the global community to work assiduously to protect the world from its consequences and prepare the next generation for them. This article seeks to elucidate children's rights to protection from climate-related hazards in the Asia-Pacific region and to highlight the effects of climate change on children's development rights. Further reference is made to Target 13.3 of SDG 2030, which aims to improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning as methods to combat climate change and its impacts. The article finds that climate change can affect children's social status, safety, and health conditions, stunting their life potential and violating their development rights. In conclusion, legal measures in the Asia-Pacific region protect children's rights to a safe, clean, healthy, and sustainable environment by promoting climate change education. The research concludes that these legal protections align with Target 13.3 but must be effectively implemented internationally and nationally. The work is founded on doctrinal legal research because it employs logic to evaluate specific statutory provisions and legal precedents. The data were obtained through library research and analyzed using the content analysis technique. The primary focus is to review related legal concepts, principles, and selected statutory materials. The paramount considerations are the child's best interests and the equality principle. The article concludes by proposing that the global community must continue safeguarding and preparing children for the climate change crisis, as enumerated in the 2030 Sustainable Development Goals, by increasing awareness, securing options, and encouraging participation, mainly through children's education.

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Affordable housing supported by the public funds — Lisbon case study

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FILIPA PACHECO



DR JOÃO JOANAZ DE MELO

Abstract

The growth of the population and impacts from the expansion of urban areas affect the climate and essential ecosystems. This jeopardizes social cohesion.

Housing plays a crucial role in the quality of life for families. Adequate housing is essential for public health, comfort, and energy efficiency, besides a constitutional right. In Portugal more than 70% of families live in houses not complying with modern energy efficiency standards. Housing costs have been steadily rising in the country. For this combination of factors, housing requalification and affordable rents are in urgent demand in Portugal, especially in the fashionable city centres in cities like Lisbon and Oporto. The impact of urban areas on the environment depends both on the available infrastructure and on how we use it.

The current work aims to understand how the funds from the Recovery and Resilience Plan may contribute to develop affordable housing in Lisbon. The methodology comprehends an analysis of current regulations and practice, and the observation of a newly constructed municipal housing project with 128 apartments in Lisbon. Specific goals are (i) to understand how the residents' comfort is affected by the new infrastructure and residents' practice, and (ii) to identify strengths, shortcomings, and best solutions for future projects. Visits were made to vacant apartments and technical areas of the case-study building, and a survey to the residents was conducted. Key findings and recommendations are the following:

- Regarding the infrastructure: (i) the aim should be to support the highest number of families with cost-effective good quality construction (not the best technology at much higher cost); (ii) cost-benefit and life cycle assessment analysis should be performed at the design stage, comparing investment and operating costs for project alternatives; (iii) the use of thermal solar panels should be standard in new or major refitting of housing projects; (iv) a protected open-air clothe-drying space should be mandatory in housing projects, municipal and private; (v) integrated central heating is a good option and should be used when practical; (vi) the building energy certificates should distinguish clearly between energy efficiency and energy generation;

- Regarding the tenants in municipal housing: (i) energy literacy should be actively promoted, starting with guidance on how best to use household equipment; (ii) tenant relations must be close and transparent, with wide dissemination of affordable housing programs, careful review of applications and rents adapted to financial capacity of tenants; (iii) communication and satisfaction questionnaires should be routine.

Municipal affordable housing projects are important for the balance of the urban social environment and should also be used as pilots to improve housing in the city.

Keywords: urban areas, sustainable development, energy efficiency, affordable housing, Lisbon, Recovery and Resilience Plan, rehabilitation.

TRACK 4

Climate change and energy

4b. Affordable and clean energy

Controversial role of household solid fuels in sustainable energy transition: the case of Central and Eastern European countries

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Abstract

While sustainable energy transition and the decoupling of economic growth and energy use are both desirable objectives in the European Union, there are several barriers that slow down their course. Some of these barriers are contradictions and conflicts in energy and climate policy, others are the economic implications of the COVID-19 pandemic and the war in Ukraine. Affordable energy services are interlinked by sustainable and just energy transition, mainly by households' energy efficiency performance and dependence on heating fuels. Our main research objective is to measure the changes in the household energy mix (i.e. electricity, natural gas, solid fuels, district heating) with special regards to solid fuels and natural gas. The nexus of energy affordability and social security policies are significant in Central Easter Europe, therefore we selected six EU Member States in the area for further assessment, which have similar cultural backgrounds and socio-economic structures.

The use of conventional biomass is closely linked to energy poverty, which is no longer a problem only for the lowest income deciles but also for the middle class, as a result of the energy crisis of 2021-2022. To achieve sustainable energy transition, the use of modern renewables should be prioritized instead of traditional fuels to avoid the biomass trap. To quantify the energy affordability of the assessed CEE countries, we determine an indicator that characterizes households' expenditures in fuel-specific dimensions. The Share of Household Energy Expenditure (SHEE) is a households' energy-related welfare index, introduced as a ratio of household energy expenditures and their incomes.

Our results show that while there are no significant, long-lasting trends in the structure of household energy consumption, characteristic tendencies and spatial differences can be observed in the shares of household energy expenditure (SHEE index) for natural gas and solid fuels. The results confirm the dual trap of domestic heating as a significant barrier to a sustainable energy transition and social justice in the Central and Eastern European countries between 2006 and 2020. The priority of getting out of the dual fuel trap is to reduce household heating energy demands by prioritizing energy efficiency and deep renovations. National and municipal level policies supporting a sustainable energy transition should respond to this situation.

We attribute great importance to apply science-based results in policy making, therefore our research intends to assist policymakers in the sustainable development of national energy policies by presenting quantifiable results and policy recommendations. Our study especially relates to SDG7 and SDG13, which aims to ensure universal access to affordable, reliable and modern energy services and increase energy efficiency globally, while combating global climate change.

The use of smart apps to promote energy saving: End-users' response and behavioural change in Hong Kong

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Abstract

It is noticeable that existing government- and power company-led decarbonisation measures will not be enough to meet the 1.50C Paris Agreement target and avoid disastrous climate impacts. More and more cities are shifting their attention away from top-down approaches to engaging households and communities. The Department of Geography (GEOG) of Hong Kong Baptist University (HKBU) has started a large-scale four-year Research Impact Fund (RIF) project about smart low-carbon communities involving 600 households (2021-2024), which aims to motivate energy-saving awareness and behavioural change via bottom-up approaches. The smart apps can monitor real-time electricity consumption, provide energy-saving notifications and deliver incentive rewards for residential electricity end-users. It also acts as a communicative agent to generate, collect and interpret large-scale datasets. We aim to achieve an annual average of 10% electricity consumption reduction for households after the app-based behavioural change intervention (HKBU, 2021). This study is part of the RIF project, aiming to adopt an interdisciplinary multi-methods approach to examine the end-users' response and behavioural change under app-based intervention in Hong Kong. My MPhil research study is a case community of Sai Kung involving 100 households to participate. Meanwhile, Hong Kong is a significant case for studying the role of households in smart energy transitions because of its dense urban environment and smart city transformation (HKSAR, 2020). Sai Kung is a significant community due to its climate resilience capability, diverse housing types and strong community bonding. We propose to recruit 20 households and 100 households to join the Sai Kung pilot study and Smart Energy Envisioning (SEE) project respectively. Interdisciplinary multi-methods with 4 main sources of data, including (i) real-time electricity consumption data derived from smart sensors and smart apps, (ii) household electricity bills, (iii) households pre- and post-interviews and (iv) household sharing workshop would be collected to investigate the energy usage patterns and behavioural change. This study is novel in several aspects. Firstly, we will utilise big data analytics (BDA) and the rich, heterogeneous datasets of smart apps, electricity bills and household interviews to predict energy behavioural patterns. It thus empowers end users' to deliberate electricity consumption routines and energy-saving practices, ultimately demonstrating a community-based approach contributing towards the decarbonisation of Hong Kong. Secondly, we will test the app-based interventions in different housing types, which include village housing, private housing, and public housing in the Sai Kung Community. Our comparative perspective focus on different housing types will make a significant contribution, enabling us to map the variety of different forms of smart low-carbon households in our case community Sai Kung. Thirdly, we would test the end-users' progression in terms of the levels of engagement under app-based intervention in the Sai Kung Pilot Study and SEE Project and assess the smart human-technology interaction. The research outcomes would advance the research frontier of human-centred approaches to using BDA to promote urban low-carbon transitions through and with communities. It also provides useful implications for smart city transformation and decarbonisation measures.

Energy harvesting technologies: a review of environmental assessment methods

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Abstract

In 2019, the International Energy Agency forecasted that global energy consumption would increase by 53% in 2030. Electric energy has been recognised as one that could be affected by the highest growth because it is one of the main driving forces of global economic development. Therefore, the major challenge is finding a reliable and adequate power supply to meet these growing demands that could pressure the energy infrastructures tremendously in future. In this context, one of the aims of the MUR-PNRR project “Innovation Ecosystem - Sicilian MicronanoTech Research And Innovation Center - SAMOTHRACE” (ECS00000022), partially funded by the EU (NextGeneration EU), is to identify and develop innovative and sustainable technologies to harvest energy from the surrounding environment. In fact, these could be promising technologies that can convert the potential energy embodied in different sources into power. The harvesting sources could be classified into two main groups: i) natural and ii) artificial sources. The first refers to sources readily available from the environment (such as sunlight, wind, and geothermal heat), while the second includes the sources generated from human or system activities (such as radiofrequency, vibration, etc.). Although these technologies' theoretical principles have been widely studied, their effective environmental sustainability during their life cycle should still be investigated. Therefore, this paper aims to analyse and classify the existing technologies that are part of the macro group of energy harvesting systems through a systematic literature review, focusing on how their potential environmental impacts have been evaluated. The articles are selected using keywords such as ‘energy harvesting’ and ‘environmental assessment methods’. Then, data on the type of technology investigated and source harvested, the type of study conducted, and the method applied for evaluating environmental sustainability are extracted from the full text. The preliminary results show that high interest exists in this research area. However, only 19 articles (that include both keywords in the title, abstract and keywords) applied environmental assessment methods to energy harvesting technologies, including methods such as life cycle assessment (LCA), footprint-based methods (carbon, water, material and ecological footprint), energy/exergy-based analysis, material/substance/chemical-based analysis and multi-criteria analysis. Regardless, it is worth noting that most of these studies are often focused on evaluating the environmental feasibility of these technologies only through the use of carbon and energy indicators during the use phase, ignoring the impacts linked to the manufacturing and end-of-life phases of these technologies as well as resources depletion indicators. Although this preliminary study sheds light on the methods used to evaluate the environmental sustainability of these emerging energy harvesting devices and their relative gaps, it also identifies additional technological and methodological features that should be investigated in future studies.

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INVESTIGATING RESOURCES ASSESSMENT METHODOLOGIES: A SYSTEMATIC REVIEW

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Abstract

The term "renewable energy resources" refers to natural resources that renew at a rate faster than they are used up. Examples of such resources include sunlight and wind, which are continuously replenished. Various methods have been explored to investigate these renewable energy sources, but there has not been a comprehensive list of these methods available for easy reference. Therefore, this study aims to provide a list of assessment methods for solar, wind, geothermal, bioenergy, hydropower, marine, and hydrokinetic renewable energy sources. A systematic literature review method was used to investigate the objectives. We searched ScienceDirect for keywords like: "solar resource assessment methodologies" OR "solar energy resource assessment", "wind resource assessment methodologies" OR "wind energy resource assessment", "geothermal resource assessment methodologies" OR "geothermal energy resource assessment", "bioenergy resource assessment methodologies" OR "bioenergy resource assessment", "hydropower resource assessment methodologies" OR "hydropower assessment", and "marine and hydrokinetic resource assessment methodologies" OR "marine and hydrokinetic". After screening, 85 of 366 renewable energy papers were deemed eligible. The results suggest that solar, wind and geothermal energy resources could be studied using both GIS and non-GIS methods. Bioenergy and hydropower could usually be studied with GIS and remote sensing. While marine and hydrokinetic energy resources could be assessed using non-GIS methods. The methodologies listed in the current study could save time and resources for those investigating renewable energy resources. The paper's theme relates to SDGs 7, 12, and 15, which pertain to the sustainable use of resources, renewable energy, and land resources. By focusing on renewable energy resources and their assessments, the paper can highlight specific SDG targets, namely 7.a, 12.1, 12.2, 12.a, and 15.a. The paper's contribution aligns with the Conference theme of assessing the 5Ps of SDGs, particularly the "planet" and "prosperity" dimensions, by providing insights into sustainable energy use and land resources. Additionally, the assessment methodologies presented in the paper can be useful for stakeholders implementing Agenda 2030 in ensuring that renewable energy resources are used and managed sustainably.

Keywords: Assessment, Geographic Information System, method, methodology, renewable energy resources

Exploring energy poverty and thermal comfort in upper secondary students: a case study of Lisbon, Portugal

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Abstract

Energy poverty is a growing multidimensional concern worldwide, with children and young people among the groups, particularly vulnerable. This vulnerability is often associated with negative impacts on their physical and mental health. Despite this population group spending a significant amount of time in both their houses and school buildings, there has been little research on the dual vulnerability to inadequate thermal comfort conditions in these two environments. In this work, the chosen case study is Portugal, top-ranked as one of the EU countries with higher levels of energy poverty vulnerability and where the exposure to inadequate thermal comfort in school buildings varies due to disparities in renovation efforts: while some schools have undergone renovations to improve thermal comfort, others have not. This work aims to assess upper secondary school (ages 15–18) students' perception of energy poverty at home and thermal comfort inside classrooms. The study employed two complementary components: 1) surveys of students regarding their dwellings' conditions and thermal comfort at home, classroom thermal comfort, and their coping strategies to deal with thermal discomfort and 2) Interviews and surveys with other stakeholders, such as teachers and parents, to understand their perception of this issue. The results from renovated and non-renovated schools will be compared to determine the impact of renovation on students' thermal comfort. The data collected will be used to propose solutions to tackle energy poverty and mitigate any observed inequalities in non-renovated schools. These solutions will consider the specific characteristics of the study location and incorporate student perspectives in developing proposed improvements. This study provides valuable insights into the issue of energy poverty among young people and suggests the potential for expanding the definition of energy poverty beyond the residential sector. In other words, the factors contributing to energy poverty in the residential sector, such as low energy performance, high energy prices, and external pressure to limit spending on heating and cooling, may also be observed in other sectors, including education.

This study is directly aligned with several Sustainable Development Goals (SDGs), including SDG 3 (Good Health and Well-being), as the proposed measures promote the health and well-being of students by addressing energy poverty and lack of thermal comfort. It also supports SDG 4 (Quality Education), specifically target 4.1, by contributing to the eradication of inequalities in upper secondary education and ensuring access to quality education for all. Additionally, the study supports SDG 7 (Affordable and Clean Energy), targets 7.1 and 7.3, by identifying a vulnerable group to energy poverty and promoting access to modern energy services and improved energy efficiency in both the residential and education sectors. As such, this study represents a valuable contribution to the conference "*Half-way through Agenda 2030: Assessing the 5Ps of SDGs (people, planet, prosperity, peace and partnership)*" through its approach to addressing energy poverty and highlighting an underexplored area of inequality in education.

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The role of Renewable Energy Communities in achieving SDG7 targets: an experimental assessment methodology for the italian inner areas

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Abstract

The transition towards renewable energy sources is crucial in achieving the UN Agenda2030 Sustainable Development Goals (SDGs) and the carbon neutrality of cities and territories. By pursuing this goal, the Renewable Energy Communities (RECs) have emerged as a promising model for sustainable energy production and consumption and they have the potential to contribute significantly in achieving SDG7, which aims to ensure access to “affordable, reliable, sustainable, and modern energy for all”. RECs are defined as locally-based organizations that enable citizens, small businesses and local authorities to participate actively in the development, production, and distribution of renewable energy. The goal of RECs is to increase the share of renewable energy in the overall energy mix, while promoting social and environmental sustainability and community empowerment, especially in territories that suffer phenomena of depopulation, distance from primary services and energy poverty, such as the inner areas. In this article, we propose an experimental methodology to assess the positive impact of RECs in the inner areas through the SDG7, focusing on the help of clean and emerging technologies to achieve that. Assessing the performance of RECs is important to ensure their effectiveness in reducing greenhouse gas emissions and contributing to carbon neutrality; it involves the evaluation of their impact on energy generation, distribution, consumption and storage, as well as their contribution to social and economic development, environmental protection and climate change mitigation; - the alignment with the targets of SDG7; it will be based on the implementation of relevant indicators such as the percentage of renewable energy production and consumption, the share of households with access to electricity from renewable sources, energy efficiency and affordability. The methodology consists of several steps. The first step is to identify the RECs being assessed with a case study approach. The second step is to define, collect and compare data with the baseline values for the SDG7 targets and indicators. The baseline values may be obtained from national or international databases, or from previous assessments. The third step should enlight the strengths and weaknesses of the investigated RECs in inner areas in achieving the SDG7 targets and provide recommendations for improvement, also from a technological point of view. In fact, the results at this step aim to discuss the role of the most widely used renewable technologies, but also the potential of the emerging technologies in monitoring, managing and regulating the energy fluxes and the capability to cover additional targets in the future. This paper is related to the SDG7, targets 7.1, 7.2, 7.3, 7.a and to the strategic "objective and choices" for the areas “Planet”, “People” and “Prosperity” in Agenda 2030 and in the italian National Sustainable Development Strategy. The contribute also highlight the linkages between the SDG7 and other SDGs, such as SDG13 on "climate action" and SDG11 on "sustainable cities and communities".

The authors participate in the Ministerial Table for Sustainable Development and G.Mangano is a Researcher at dArTe UniRC with a "Green-NOP" Research grant on the project of Renewable Energy Communities in the Inner Areas.

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Navigating the Dutch Energy Transition

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Abstract

The phase out of fossil energy and the phase in of renewables are necessary to achieve the goal to become CO₂neutral in 2050 in the Netherlands. Despite attempts to phase out fossil energy and to phase in renewables by developing and adopting policy instruments and creating events, they experience significant delays. The aim of this study is to gain a better understanding of the effectiveness of particular policy instruments and focusing events contributing to the energy transition. Using the Dutch energy transition as a case, this study provides a chronological overview on the development of the energy transition due to policy adoption and focusing events. The results show that the top-down phase out of fossil energy can cause significant delays, because actors lose information about the transition dynamics, experience unexpected opposition, or lack the legibility of social innovation. Simultaneously, the bottom-up adoption of policy instruments and shock events can accelerate transformative change because actors can mobilize and place renewable energy dominant on the political agenda. As top-down phase out policies can delay the energy transition (Hebinck et al., 2022), future research could explore how bottom-up policy instruments can phase out of fossil energy and phase in renewables.

TRACK 4

Climate change and energy

*4c. Climate, tourism and sustainable
development*

Measuring the Carbon Footprint of a sample of accommodation facilities in Italy

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Abstract

Tourism is amongst the fastest growing economic sectors, with the number of international arrivals reaching 1.5 billion in 2019, an increase of almost 53% in the decade 2010-2019. Such a trend was abruptly interrupted by the COVID-19 pandemic, which has affected the entire planet. Indeed, according to the UNWTO, international tourist arrivals decreased by 73% for the year 2020 and by 72% for 2021 (when compared to 2019). However, in this sector an ever-growing attention has been paid to sustainability by various stakeholders over time, e.g., consumers or political decision-makers, as demonstrated also by the great number of financial incentives promoted to support sustainable initiatives. Such attention has been intensified also by the need to meet the United Nations Sustainable Development Goals (SDGs).

Currently, there are systems for labelling and measuring the environmental performance of services, but only few are based on a life cycle perspective; this represents a strong cognitive and communicative limitation of these tools. Online booking platforms have become one of the most common means of booking in the tourism sector, allowing managers to provide targeted information on their "offer package" and users to have an immediate and anticipated idea of the characteristics of the structure and related activities to their stay, and possibly personalise it. Information could be inserted within the platforms to guide the user in choosing ecological or "green" accommodation facilities.

This article explores the inclusion of Carbon Footprint (CF) as a possible life cycle-based indicator to be used in online booking platforms. It builds upon previous research of a literature review on life cycle-based sustainability and circularity indicators for the hospitality sector and addresses the CF of a selected sample of accommodation facilities in Italy. In order to do so, a non-probabilistic sampling strategy of the accommodations has been implemented for exploratory analysis, which is still ongoing. Each identified accommodation profile included its own characteristics and, therefore, peculiarities from a sustainability point of view. The sampled facilities were contacted for the necessary CF data collection and until now three of them agreed to collaborate. The three facilities were then assessed in terms of their CF, by using CF-specific software (CCaLC). The preliminary results so far highlighted the electricity consumption as one of the most impacting for the impact category of "climate change" as well as the necessity for measures towards promoting the importance of sustainability assessment amongst the accommodation facilities owners.

This article relates to the following SDG targets: 8.9, 12B, 13.3, 14.7 and the specific topic of the Conference as it aims at promoting the climate change (and sustainability) awareness not only for online booking platforms users (i.e., tourists) but also for accommodation facilities owners.

Adapting Tourism Development to a Changing Climate: Impacts and Strategies.

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MRS ASHVINI GHATIKAR

Abstract

The tourism industry is highly dependent on natural resources and is therefore highly susceptible to the impacts of climate change. As climate change accelerates, it poses significant challenges to the tourism industry, affecting both natural and built environments. Therefore, it is essential to understand the impacts of climate change on tourism development and explore strategies to adapt to these impacts. This research paper examines the potential impacts of climate change on tourism development and offers strategies for adapting to these impacts. With the increasing awareness of climate change, it is necessary to understand how it affects tourism development in various areas. This study analyzes the potential impacts of climate change on tourism development, including changes in infrastructure, tourism activities, and visitor behaviour. Furthermore, this paper discusses various adaptation strategies that can be implemented to manage the impacts of climate change on tourism development. The findings emphasize the importance of sustainable tourism practices and highlight the need for effective strategies to mitigate the negative impacts of climate change on tourism development. This study concludes with recommendations for policymakers and tourism stakeholders on how to adapt and prepare for the future of tourism in the context of a changing climate. Overall, this paper provides valuable insights into the implications of climate change on tourism development and offers practical strategies to ensure sustainable tourism practices.

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Utilizing synoptic scale climate data within sustainable tourism development

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ASSOCIATE PROFESSOR DAVID PERKINS

Abstract

Tourism has great potential to be used as a tool towards achieving sustainable development. As seen in many communities, the appropriate implementation of sustainable tourism methods helps to establish local economic viability in concert with attentive treatment of both social and environmental systems. Maintaining such environmental and social integrity within a location is often the basis by which tourism demand is generated—drawing tourists from across the world. In light of environmental change within the Anthropocene, and in particular, climate change, special attention needs to be made when assessing both the long-term viability of a tourist destination and the social characteristics stemming from human interaction with local ecology. In this paper, I specifically address the use of climate information within Nepal where tourism in the Himalayas is driven by the human-nature interface and the unique culture which has developed in this alpine environment.

In doing so, I highlight how focusing on a synoptic scale climatological analysis can provide valuable information within a sustainable tourism development context. Proper utilization of weather and climate data at varying scales are of utmost importance for understanding development implications. For example, within tourism, long-term climate/change data can aid in decisions regarding infrastructure improvement and destination branding; shorter-term weather data can assist in forecasting tourist demand and allocating accessory resources. That said, literature has established that tourists operate in ‘realms’ of understood climatic comfort that might be readily described through synoptic-scale atmospheric phenomena. Here, I use geographically-calibrated synoptic scale climate descriptors such as ‘humid cool’ and ‘warm humid’ conditions. Data is obtained from the Spatial Synoptic Classification (SSC, v3) and the Gridded Weather Typing Classification (GWTC-2) and helps describe local climate and climate change.

Reviewing weather types like these helps provide a more complete picture of the interface changing climatic conditions might have within the context of tourists’ interpretations of a location’s weather and climate. In this particular research, I focus more on human (tourist) perceptions than actual environmental outcomes. While environmental systems are finely tuned, and perturbations such as one degree of temperature change can have devastating impacts, tourists react more to overall impressions of weather and climate conditions and are less personally attuned to such anomalies—particularly in shorter-term contexts. Analyzing weather and climate data within a tourist-centric synoptic-scale context provides a new and exciting perspective to more fully understand the weather, climate, and tourism nexus.

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Exploring the accesses to Serra da Estrela

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Abstract

Mountains are geographic and climatic barriers capable of isolating regions. For centuries, humans sought to access or overcome these barriers, building access and communication routes, for commercial reasons or, in modern times, for recreation and leisure.

Serra da Estrela is a granite mountain, a part of the central mountain range crossing the Iberian Peninsula, and is the highest point in mainland Portugal. The Serra da Estrela Natural Park is a protected area classified under the EU Natura 2000 Network. It holds unique natural resources and values.

Despite its great beauty and tourist potential, access to Serra da Estrela is insufficient. There is a road right to the top of the mountain (an uncommon feature in other mountain regions). However, due to the lack of public transport, car is the only practicable transport in the area, creating significant pollution, pressure in natural sensitive areas, and traffic congestion in all seasons; and additional problems in Winter, when roads at higher altitude pose significant risks or are cut due to heavy snowfall. This problems have been confirmed by online research and the results of a questionnaire given to visitors.

The main objective of this work was to study the problem of accessibility in Serra da Estrela and to contribute to its improvement. Methods included the research of similar cases at an international level, analysis of online visitation data, local population and visitor surveys, and interviews with municipalities and civic organizations.

Several initiatives were reviewed to improve accessibility to Serra da Estrela. The common principle was not to open new roads, but to allow better access and experiences to visitors, with less environmental impacts. The initiatives that were considered more viable in the short run were: the creation of a public bus shuttle network, combined with traffic restrictions and tolls on road access to sensitive areas; and the use of pack animals to support visitation. Other projects which merit further study include the creation of a funicular to bypass the most congested roads, and a mountain railway along the beautiful Zêzere river valley.

This study generated significant interest with local organizations and authorities, and is expected to help promote a more sustainable development in the region.

Keywords: accessibility in mountain regions; sustainable tourism

TRACK 5

Production, consumption and innovation

*5a. Corporate Sustainability and Corporate
Social Responsibility*

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Sustainable corporate management models using disruptive technologies in the energy sector

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DR. ISTVAN VOKONY



DR. MARIA SZALMANE CSETE

Abstract

The digital transformation and its effects significantly change the support of the core functions of energy distribution. Nowadays, it is almost impossible to solve any task or complete a simple work phase without a computer or IT device, the location data, the description of the work schedule, the parameters, etc. without obtaining it. The main goal of research to find an answer how is it possible to formulate appropriate company structure, keep the sustainability goals and gain affordable efficiency. First, the transformational steps of corporate structure and operation are under analysis. After that, the focus will be on the efficient planning of resources representing the target state, as well as ensuring the path leading to it, both from the point of view of project management and application and/or infrastructure landscape. In the final stage of the research, the role and significance of digitization is under scope, how much it is a tool or a catalyst of decisive weight in the transformation of large corporate operations, and whether the next development level and state can be projected as a result. I use the synergy of my professional background and my current position when defining the research area. Thanks to my basic education, I am familiar with the operation of electricity systems, and the management and IT strategy of large companies are also well suited to this. The currently ongoing local industrial restructuring, "revolution", if you will, is a great breeding ground for empirical research, and I am building the research plan along these lines, focusing on 3 main topics.

- IT support for corporate transformation - Carve-in vs Integration!
- Agile architecture design in the utility sector
- Digitization in energy: robotics, plant management, work management

It is very likely that no clear correlation can be shown among the triggers, the change can be predicted to be the result of a dynamic interaction. The expected result of the research is the weighting of the interaction in the examined industry and the examined segment, based on the ability of each factor to influence. In a non-negligible way, the decision support function can also be a valuable output as an indirect result, but primarily the exploration of the influencing ability of the factors and the behavioral characteristics of the interactions between them enables the verification and re-validation of the results of the first research topic.

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Business contribution to sustainable development – a stepwise approach by the CapSEM model.

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PROFESSOR ANNIK MAGERHOLM FET

Abstract

The toolbox for helping business transition towards sustainability has been development over a period of about 30 to 40 years. The international United Nation Environmental Program (UNEP) established in the eighties cleaner production centers in many countries at all continents. The main goal of these centers was to build capacity in academia and in research centers, and further use this to train the trainers for implementation of cleaner production processes, cleaner products, and cleaner production strategies in business. Since then, the toolbox for sustainability analyses has been extended with a large set on new tools. For companies it might be difficult to understand when and how these tools best should be applied. The CapSEM model presents how these tools can be used in a systematic way according to the needs in the business community and from the practitioners.

The CapSEM model sorts the toolbox at four levels: production processes, the products and their life cycles, the business organization and the society. Tools for analyzing processes and products are at levels 1 and 2 in the model. Level 3 in the model is concerned with tools for implementation at the strategic level of the company, e.g. environmental management, life cycle management of suppliers, reporting and communication systems, and business models for sustainability are addressed. On this level corporate social responsibility (CSR) is also placed. This leads further to level 4 which can be represented by the society, either as a local community, a region or on a larger system.

Most of the tools presented in the CapSEM model can be linked to SDG number 12 – responsible consumption and production. Responsible production can be evaluated according to the impact the materials used in the production processes have on the environment, and how companies can use CP-strategies to improve the processes on this level. Similarly, LCA-tools enable the producer to provide information about the environmental aspects and impacts of the life cycle of the products so the consumer can consider which products to choose according to the documented impacts. Life cycle management tools can also be used to set requirements to suppliers regarding their responsibility.

The paper will discuss the role of the CapSEM model regarding the contribution to additional SDGs, especially the SDG number 6, 13, 14 and 15 by using tools presented at level 1, and SDG 8, 9 and 10 for level 3.

Start-ups in Sustainability Business: An Exploratory Study

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Abstract

This research paper explores the challenge of balancing sustainability and profitability goals for start-ups in sustainable business. The study focuses on how start-ups align their business models to achieve sustainable outcomes – economic, social and environmental. Sustainable Development Goals (SDGs) provide the background for this study which is undertaken with a qualitative case study approach. The sample cases are purposefully chosen from start-ups across diverse fields of operation.

The study found that start-ups face challenges in balancing economic and social goals due to difficulty in convincing investors to support their social business models, limited financial and human resources, and lack of market awareness. However, such start-ups can overcome these challenges by adopting several alignment strategies.

The first strategy is to incorporate sustainability into the core business. By integrating sustainability into their products, services, and operations, start-ups can improve their competitive position and increase appeal to investors. For example, one of the start-ups in the study, an online booking platform for arranging eco-friendly stays, aligned its business model with SDG 12 (Responsible production and consumption) by providing their lodging and boarding at a place where organic farming, solar power generation, composting of food waste, etc. are done. The second strategy is to leverage partnerships and collaborations (SDG 17). By partnering with other organizations, start-ups can access new markets, resources, and expertise, enabling them to scale up their business. The third strategy was found to be that of innovative financing mechanisms. By using alternative financing options, such as impact investing or crowdfunding, start-ups can attract investors who are committed to sustainability goals and are willing to support their business models.

Overall, this study provides important insights into the challenges and opportunities for entrepreneurs who are in businesses that promote sustainability and contribute to the attainment of some of the SDG goals. These start-ups can balance economic and social goals by incorporating sustainability into their core business activities. Policymakers can make provisions for higher support start-ups in this business, thus, contributing to the achievement of SDGs.

The Coherence of Corporate Social Responsibility Regulations to Achieve the SDGs in Developing Countries: Evidence from Indonesian Textile Companies

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RATNA ARTHA WINDARI

Abstract

Indonesia is a developing country that regulates CSR on a mandatory basis through Law Number 40 of 2007 concerning Limited Liability Companies (hereinafter, the 2007 Company Law). One industry that plays a vital role in Indonesia's economic development and categorized as a strategic and priority industry is the textile industry by its ability to absorb a large number of workers and increase the country's foreign exchange significantly. As a country that has agreed to participate in implementing the Sustainable Development Goals (SDGs), economic development must prioritize sustainability by protecting the earth's resources for future generations due to industrial activities as stated in 6.3 SDGs's targets by 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally. Despite the fact that the core business of textile industry not directly engaged in natural resources, the impact arising from its business activities on environmental pollution and the decline in the quality of natural resources is massive. Therefore, the textile industries are subject to the regulation of CSR obligations as stated in article 74 para (1) of the 2007 Company Law. There are many cases of river pollution due to waste from textile and garment companies in Indonesia, especially in Bandung as the centre of the textile and garment industry. If referring to the provisions of article 66 para (1) letter c the 2007 Company Law, one indicator of the fulfilment of CSR obligations is disclosing the reporting of CSR activities through annual reports. Unfortunately, CSR regulation in Indonesia is ineffective because the provisions are vague and unclear. Based on this, it is essential to explore how the implementation of CSR provisions in Indonesia's textile companies and the coherence of CSR provisions toward achieving the SDGs' targets. This paper is doctrinal research by evaluating the annual reports of textile and garment companies located in Bandung area and listed on the Indonesia Stock Exchange. This paper also analyses the coherence between CSR regulations in Indonesia and indicators in target 6.3 of SDGs. The study finds that many textile companies are more focused on community development, while environmental CSR is still limited. Several legal and formal activities are categorized as obligations that companies must fulfil but are included as CSR activities in the company's annual report. There is lack of detailed and explicit provisions in CSR regulation to achieve the SDGs target, also there are still many cases of environmental pollution due to the disposal of textile industrial waste. A visible recommendation to achieve SDGs in 2030 is to reformulate CSR regulation in Indonesia through a substantial review of CSR provisions to be comprehensive and interlink with SDGs' indicators target.

Social and Environmental Sustainability through Sustainable Banking Practices: A Critical Analysis

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Abstract

Sustainability is a significant global agenda to ensure social equity and a livable planet. Global leaders emphasize businessmen to operate their businesses sustainably. Due to stakeholder pressure and self-responsibility, many banks worldwide have shifted their concentration to sustainable banking (SB) from traditional banking practices. This study aimed at exploring how the banks perform sustainable banking activities to implement the social and environmental sustainability agenda. The library research method was applied to accomplish the study objective as this method supported gathering more relevant information and readings related to the study topic. This study critically analyzed relevant books, articles, periodicals and reports related to sustainable banking practices and sustainability. Based on the institutional theory, this study reveals that banks focus mainly on corporate social responsibility (CSR), green banking (GB) and financial inclusion (FI) as sustainable banking practices. Through CSR practices, banks address some significant social and environmental issues. Considering the countries' socioeconomic contexts, banks focus on health, education, disaster and humanitarian reliefs, women empowerment and poverty alleviation as the CSR for the society. Moreover, banks focus on environmental conservation, environmental social risk management (ESRM), greenwashing, responsible use of natural resources and a homogeneous environment as the CSR for the environment. Banks concentrate on green bank management (GBM) and green financing (GF) as the GB practices. As GBM, banks use renewable energy in their banking operations as much as possible and encourage their customers and employees to adopt paperless banking through online banking and automation. Banks invest as loans and advances in sustainable and green projects as the GF initiatives. The main purposes of the GF are to minimize carbon emissions and control pollution. Through FI, banks take initiatives to provide banking services to the marginal people who are financially insolvent. Socially responsible finance (SRF) and socially responsible investment (SRI) are focused as FI. Though other businesses contribute to sustainability, banks play the role of originators in ensuring social and environmental sustainability through these three initiatives (CSR, GB and FI) related to SB. This study is an important input to the policymakers and researchers related to sustainability as this study opens the horizon of rethinking sustainable banking practices as the source of sustainability.

TRACK 5

Production, consumption and innovation

5b. Design for sustainability

Developing bio-based building elements for sustainable, smart and circular architecture

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Abstract

The interest in low-energy building materials is growing and bio-based materials are a key part of this group. The use of bio-based building materials offers the potential to reduce the amount of greenhouse gases embodied in construction products and even to sequester carbon dioxide. Several research projects around the world have aimed at developing building components using plant aggregates. Previous research has already demonstrated the potential of bio-based materials such as hemp, flax, mycelium, lignin-based fibres, wood waste, sunflower, cork, corn husk, coconut, rice husk, wood, and bamboo particles in inorganic matrices (e.g., lime and limestone).

The aim of the present research is to analyse the environmental, social, and economic impact of bio-based concrete using a regionalised LCA model and to evaluate the results in terms of technical and engineering parameters. The LCA-based studies include the preparation of an environmental LCA, a life cycle costing (LCC) and a social life cycle analysis (SLCA). The research follows methodologically the PCR requirements and standards defined for concrete elements. The biomaterials used for the production of bio-based concrete elements are local products and the technology follows the principles of the circular economy.

In the initial stage of the research, potentially usable natural materials (reed, bamboo, hazelnut, willow cane, grass, hemp) will be examined until they can be incorporated and the environmental, economic and social effects of the materials will be compared, which will include the stages of agricultural production, harvesting and primary processing. The functional unit for this stage is 1kg.

The second stage of the study is the production of the bio-based building element, where the bio-based component is already present in the concrete. The environmental, economic and social impact of bio-based concrete element production will also be assessed and compared on the basis of a matrix of technical and functional parameters. In this case, the functional unit is 1 m². Preliminary studies based on multi criteria testing will contribute greatly to the design of a sustainable product chain.

Key words: LCA, LCC, SLCA, biobased concrete, sustainable product chain

Considering packaging's role in fighting food waste

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Abstract

Food packaging is a significant environmental issue. Yet, the relationship between packaging and food waste, and the impacts that food waste can have on the environment, is underrepresented in sustainability campaigns for consumers. Packaging is often viewed as having a negative environmental impact because it is 'left over' once a product is consumed and must be disposed of. However, often, packaging protects food and prolongs its shelf-life, reducing food waste and the consequent negative environmental impact. Packaging designed with food waste in mind can extend the shelf-life of food products, cater to different-sized households, communicate how to use and store food, and assist households in using date labels to manage their food better.

This project from the Fight Food Waste Cooperative Research Centre in Australia aimed to develop deep and broad insights into consumers' attitudes towards food waste and how it relates to packaging. It also aimed to provide industry with options to develop packaging design alternatives that draw on the knowledge of consumers' use and understanding of packaging to reduce food waste. The project aligns with the Australian Government's commitment to reduce food waste by half by 2030, consistent with United Nations' Sustainable Development Goal 12.

Design thinking and ethnographic approaches, combined with quantifiable validation procedures, were used in this 12-stage multiple-methods project. Consumer and industry participants provided insights across the top five food categories that are wasted in Australia: (1) fresh fruit and vegetables, (2) meat and seafood, (3) dairy and eggs, (4) bakery items, and (5) packaged and processed foods. In turn, packaging design alternatives were developed to prioritise consumers' perceptions and industry priorities.

Key consumer insights were that packaging design should provide short-form information with simple text and symbols, and that consumers will use QR codes if available. Packaging should show thoughtful recipe ideas for leftovers, clearer indications of portion size and serves, and easy-to-understand storage advice. Consumers understood that foods from different categories need different treatments in terms of packaging. One example was that meat and seafood packaging needed more emphasis on

safety cues, while information on repurposing and refreshing fruit and vegetables would be more helpful on those products. Regarding date labelling, the term 'best before' on the packaging is confusing but clearer than other terms like 'eat me' or 'freshest by'. The term 'Eat within X number of days' is helpful for consumers.

Industry participants considered that further consumer education on packaging reuse and recycling is needed, but more thought to portion-controlled packaging is also required. There were also concerns about the costs associated with sustainable packaging and the feasibility of implementing changes without a whole-of-system approach to reducing food waste.

These insights provide industry and government with foundational advice to inform interventions and campaigns to enable consumers to reduce food waste in the home regarding packaging. Further research is needed to use these consumer insights for developing policy and affecting packaging designers' and producers' approaches to using food waste, particularly around date mark labelling and storage advice.

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Definition of design strategies for sustainability for fashion accessories of the Made in Italy footwear sector, through Life Cycle Assessment methodology. The case-study of a brass buckle for footwear by Santoni Srl

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Abstract

The Italian footwear sector is among the pillars of the Made-in-Italy Fashion System, and has always been a leader among high-end and luxury footwear manufacturers. The success of the sector is due to the entrepreneurial ability and typical organization of the industry, which is in the context of a "long production chain", consisting of a system of high-quality sub-suppliers, raw materials, components, accessories, machine manufacturers, pattern makers and stylists. This Italian model has made it possible to develop high quality products and to strengthen the competitiveness of Italian companies compared to their competitors. Today, considered the ever-increasing importance of the issues of environmental sustainability of products and production processes, the long supply chain of the footwear sector creates greater complexity in the sustainable management: from the sourcing of raw materials to the multiple processing and finishing of components. In addition, research conducted by Quantis (2018). showed that more than 60 percent of the emissions of footwear production are generated in the processing phases of components and accessories, thus upstream of the assembly and distribution phase. Recently, several BtoB companies in the footwear production chain have taken a proactive approach to environmental sustainability. The objective is to seek where their greatest environmental impacts reside and how to make improvements to make footwear components and accessories more sustainable and circular (LIFE GreenShoes4All, 2020). Among the most critical products are brass, zinc or steel accessories, which are covered with a thin layer of precious metal; this finishing process generates pollutants that are difficult to recycle and dispose of. Therefore, the case study of Santoni Srl, represents a significant example of a preventive approach to sustainability, which can contribute to understanding the importance of using LCA-Life Cycle Assessment methodology to define ecodesign strategies to improve the environmental performance of both product, and company. The LCA, performed according to ISO 14040, was carried out on one of the company's most representative and best-selling products in recent years: a brass buckle for the Made in Italy footwear sector. The objective of the analysis was to detect the main environmental

criticalities, from cradle to gate, and to identify improvement strategies to improve sustainability and circularity. Finally, the environmental performance of the new product developed according to Design for Sustainability strategies was estimated. The result was an overall reduction in kg CO₂ emissions of up to twenty times, compared to the current model.

The paper relates to the topic of the conference in that it highlights the importance for Made-in-Italy SMEs, to activate Design for Sustainability strategies to accelerate the transition process to the Circular Economy by quantifying the environmental impacts of their products and beginning to affect sustainable supply chain management. In addition, the paper presents a case study of a company in the footwear sector that initiated this approach in line with the "Planet" target and SDG 12: "Responsible Consumption and Production", moving toward more sustainable production processes and consolidating its green reputation.

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Design of sandbags for flood control and water purification based on KJ/FAST/CATIA

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POSTGRADUATE HAORUI TIAN

Abstract

Flood sandbags are emergency products used in emergency disasters to provide water resistance for public facilities, etc. Existing flood sandbags are classified into canvas sandbags, silicone sandbags, etc. depending on the material. Traditional sandbags need to be prepared by tedious filling to use, while the assembly, transportation, and installation of sandbags can be completed with the support of sufficient manpower and heavy machinery, and the whole process is time-consuming and laborious. In the face of sudden flooding, traditional sandbags cannot provide the corresponding protection function in a short time. The use of sand and gravel as the filling material of sandbags leads to their small water absorption capacity and low drainage efficiency. Therefore, the ergonomics, materials, and functions of traditional sandbags need to be updated to meet the basic needs of flood control and to provide the functionality to emotional relief to the affected people, and dual physical and psychological security from disaster to post-disaster. To meet the emergency rescue needs of the affected people under flooding scenarios, we design a flood prevention and water purification sandbag that better meets the physiological and psychological needs of users with the design goal of quick rescue and self-help. Analyze the causes and characteristics of flood disasters, combine the KJ method to investigate user needs in-depth, prioritize the needs systematically, analyze the main functional needs and related technical issues through the black box model, establish the product FAST function tree to derive the main functional module design guidelines for flood sandbags, establish the form matrix of flood sandbags around functional innovation and integration, and then propose a new product innovation model. Finally, the ergonomics module of CATIA software was used to virtually simulate the user's operating posture of sandbag handling and to analyze and evaluate the comfort of the user's posture. The study shows that: KJ/FAST/CATIA model can synthesize the objective needs of users and the subjective initiative of designers to ensure both the core requirements of the product and design innovation and establish a design creation model that unites the subject and the customer. The designer can systematically probe the real needs of users, input the requirements into the FAST model to output the innovative functions of the product and its principle explanation, and establish mapping relationships with relevant design tools to improve the existing flood control sandbags and other problems of functionality and ergonomics. Through the modular design of the appearance and function of the flood control sandbags, it is verified that KJ/FAST/CATIA can propose an innovation path to discover, analyze and solve product problems, realize the functional expansion of the product in terms of modularity and human-machine relationship, build an innovative design of flood control sandbags that meets users' needs such as water purification, and effectively improve the emergency rescue efficiency and use the experience of flood control products. In the future design of emergency, rescue products need to think more deeply about the emotional needs of users, highlighting the humanity and affinity of the product.

Research on the Application of Service Design in the cultivation of rural environmental awareness -- A case study of rural garbage disposal system in eastern coastal areas of China

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Abstract

The cultivation of rural environmental awareness is extremely important for sustainable strategy. Cultivating environmental protection thinking and consciousness can not only implement environmental protection measures better, but also be an important basis for realizing sustainable development. When environmental awareness is developing from bottom to top, villagers will be able to actively participate in the construction of environmental protection in the villages, thus achieving the goal of sustainable development in the future.

Service design is a relatively new design discipline, which meets the needs of technology and economic development in these years. Different from individual design, service design expand the category to social hierarchy, and provides full-cycle and full-coverage design strategies and contents for specific groups or communities.

Aiming at the public service system, the service design creates a human-centered service system by focusing on the connection between users and touchpoints in the service, and at the same time potentially affects people's awareness, consciousness, and behaviors.

The research on the cultivation of environmental awareness from the perspective of service design intervention can enter into the system process from different roles, and evaluate the effect of each touchpoint in the process on the cultivation of environmental awareness more accurately and effectively.

This paper will take the rural garbage disposal system in the eastern coastal areas of China as an example to explore the status of service design in the system and its influence in the cultivation of rural environmental awareness. The eastern coastal area of China, which is one of the three Chinese economically developed deltas, is the earliest area of garbage sorting and recycling in China.

With a large population density, a small gap between urban and rural construction, and an advanced awareness of environmental protection, this region is also the first in China to pilot the reform of the rural garbage disposal system. Therefore, the study on the rural garbage disposal system in the eastern coastal areas of China has a positive and realistic reference value for the vast underdeveloped areas in the central and western parts of China and even some developing countries in Southeast Asia.

This article will be expanded as follows:

First of all, this paper studies the theoretical convergence of service design and sustainable strategy, and explores how service design thinking guides the design of public service systems -- touchpoints, to guide subsequent research.

Secondly, this paper will take the rural garbage disposal system in the eastern coastal areas of China as a case study of public service system design, analyze the touchpoints in the process from the perspective of service design thinking, and qualitatively study the role and significance of these touchpoints in the cultivation of rural environmental awareness through interviews, questionnaires, observation, and other methods.

Finally, from the perspective of cultivation mode, the paper summarizes and analyzes the methods and strategies applied in the cultivation of rural environmental awareness by service design and evaluates the practical effects.

Integrating Life Cycle Thinking in Early Design Phases: A practical case for constructive sustainability assessment of emerging energy storage technologies

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HÜSEYİN ERSOY

Abstract

A transition towards a sustainable energy system enforces many potentially conflicting considerations (e.g., economic, environmental and social aspects) regarding the development of new technologies. In addition to efforts for increasing renewable shares, existence of sustainable storage technologies is vital for an overall transition. In particular for energy storage, many initiatives aim to improve the performance of emerging concepts that are thought to have high potential to contribute to a sustainable energy transition. In this respect, aluminium (Al) as a dense energy carrier is identified as a promising energy storage material for batteries where certain efforts are given for their performance improvement and commercialization. Nevertheless, most of the time sustainability performance of a technology is being considered in detail after it is commercialized. The “Collingridge Dilemma” states that in early technological development stages the technological flexibility and influence on innovations is highest but the knowledge of impacts is the minimum, where it is reversed in the later stages. Thus, the *Constructive Sustainability Assessment (CSA)* is a framework where the sustainability assessment practitioners engage with the technology development activities to broaden the perspective towards sustainability and take part in the decision-making processes using *Life Cycle Sustainability Assessment (LCSA)* methods.

With this motivation, in this research the CSA framework is operationalized using LCSA methods in order to assess the sustainability of an Al-air battery being developed for seasonal energy storage. The research is carried out by integrating LCSA to the technology development starting from the material selection for electrode materials to end-of-life of the proposed system covering the entire life cycle. Initially, fast material screenings of the potential materials for the hotspot analysis is provided. Later, full assessments are provided for the selected materials for optimizing the product sustainability. The followed approach is an empirical procedure supporting the electrochemists in order to increase their awareness on social, economic and environmental impacts caused by made choices in early phases. The impact of the made choices are consequentially presented to the developers on the system level. Considering the made interventions and modifications on the product design, the life cycle stages are planned from cradle to cradle.

As a result, the preliminary results of the ongoing research proved to have an impact on the concept design on economic, environmental and social dimensions as well. Thus, prospective life cycle approaches embedded in the technology development are considered to provide a meaningful contribution for developing more sustainable storage technologies. The achieved progress with its practical relevance to CSA framework will be presented and experience-based recommendations will be given to practitioners for further improvements.

Considering the proposed approach, use and application of sustainability assessment methods the topic demonstrates high relevance to the *SDG 12 Responsible consumption and production*, and particularly to *Task 12.6 Encourage adoption of sustainable practices*. In frame of “Half-way through Agenda 2030”, the conducted assessments and stakeholder engagement directly aim to increase the reliability and environmentally-friendliness of an emerging storage technology together with ensured societal value creation that serves for prosperity, peace and partnership indirectly.

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Making the case to revise the SDGs by creating a truly 'Responsible Living Economy' to resolve global Climate, Species and Inequality crises

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MR GREG CAMPBELL

Abstract

The Sustainable Development Goals (SDGs) must be radically improved and prioritised to reflect the existential challenges to all life on earth. Global feedback and many reports have confirmed that the SDGs need to be better articulated, funded and supported, or they will continue to fail. When the global stakes are so high, can individual countries aim for real sustainability while the world's rich and powerful economies follow selfish agendas? The Paris Agreement overshadowed efforts made by the SDGs to empower global support for the common good. Why was Climate Change not prioritised better? We review more beneficial ideas and options, providing a framework of lenses to develop better strategies to deliver the 5Ps of People, Planet, Prosperity, Peace and Partnership for the long term. While prioritising Goal #13 Climate Action, the United Nations will better meet the world's needs by including the missing Goal #18, 'LifeBEAM RLE, care for all Life in the Biosphere, Earth, Air, and Microbes. When the SDGs are revised using 'Responsible Living Economy' (RLE) principles, they can be better optimised, encouraging environmentally positive shifts in every sector to meet planetary boundaries. Halfway through the UN Agenda 2030 is the perfect time for this revision.

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Sustainable development of plant dyed garment products in the context of digital media

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Abstract

The aim of this study is to analyse the communication value of digital media in the cultural promotion of plant dyed garment products. It also further argues for the sustainability of plant dyed in the textile field and lifestyle by combing through recent research advances in the types of dyeing materials, dyeing properties, additional functions and dyeing techniques in the textile field in China, Japan and the United States. This study applies theories from design and fashion communication. Based on a case study of three types of plant dyed garment brands in the market (plant dyed clothing series under commercial clothing brands, plant dyed independent designer clothing brands and traditional plant dyed non-heritage artisan clothing brands), the study compares the current problems in the development of the three types of brands and the composition of digital media promotion models. The research shows that: 1. plant dyeing meets the requirements of an environmentally friendly and healthy lifestyle, and is also in line with the green and sustainable development trend of the textile and garment industry, in line with the 12.5 target in the SDG; in the development process, plant dyeing should be integrated into the green garment industry chain from big picture view, and solidification standards should be set for this. 2. Based on digital media, the heritage of traditional handicraft skills should go hand in hand with industrial development, in line with the major trends of the Internet industry, to accelerate the digital transformation of plant dyed garment brands. 3. Through digital media, we will accelerate the dissemination of the non-heritage culture of plant dyeing and the concept of sustainable fashion, which is conducive to the healthy development of the plant dyed garment industry, thereby reducing the pollution of the earth's ecological environment by chemical dyes. Bringing the ancient art of plant dyeing to life and vibrancy in a new context.

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Sustainable concept Design Against Expiring Date Food

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Abstract

Sustainable concept Design Against Expiring Date Food

Fan Yang, Baixuan Luo, Fangyuan Yang

Abstract

The food that people waste every year is worth over trillions of dollars. According to statistics from UNEP, in 2019, 931 million tons of food had been wasted, which was 17% of all food consumption expenditure. During 2021, nearly 193 million people in 53 countries or territories still face food problems. That's the highest number in the past 6 years and causes a direct threat to human life. The expiring date food takes an important part in the food waste, caused by the regular and service schedule of supermarkets. The business department provides the expiring food at a lower price or other promotional activities. However, the customers are desired to pick up the freshest vegetables or meats, after the produced date food loses the attraction of the consumers. Therefore, food becomes deposited after the second day when they were produced, it makes the superfluous slaughter become into waste. Exceptionally, many expiring foods go straight to waste without opening the packaging.

There is a lot of poverty existed in the urban social communities, spending on daily necessary food can take up the majority of their incomes.

In this essay, a sustainable design concept according to the expiring food is proposed, which connects the expiring food supply with poverty communities. The product is vending machine design, built-in a countdown system, which decreases the price of expiring food along the time. Working prop of this machine is relying on solar power to make sure the whole operation is eco-friendly. Additionally, a more meaningful guidance is set into the purchase instruction, poverty communities can gain expiring food through the sustainable workforce or these foods will become a sort of reward to support residents to do more efforts on protecting the environment. Rather than directly donating it, these demanded people will become an important part of the sustainability system and even achieve a profound influence on the future environment.

Key Words: Waste of expiry date food, Sustainable communities, Sustainable product design

A Sustainable Cities and Communities, Responsible Consumption and Production, Zero Hunger
Target: 5b Design for Sustainability

B Through the concept of vending machine, the expiring food will turn into resources to help poverty community, the interaction process will design a positive guidance for these customers. It will influence them to contribute to sustainability or environment protection.

Understanding how designing physical data visualisations can influence behaviour change: a case study on consumer food waste reduction in Australia

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Abstract

In Australia, food waste produces 3% of annual greenhouse gas emissions with households accounting for the majority of it. Households comprised of working parents with children have been identified as the key demographic producing the largest amount of food waste. Data visualisations from self-trackers in particular have the potential to enable reflection on behaviour in new ways and have been studied in eco-feedback and personal informatics for their persuasive power to encourage day-to-day actions. This paper describes the preliminary data collected from a longitudinal study consisting of 30 households comprised of working parents with children across Australia engaged in the in their own homes over nine weeks. Based on combination of theories and models from consumer behaviour psychology, interaction design and data humanism, the probe consisted of two parts: 1) visual nudges and informational materials that encouraged all household members to eat leftovers, store food properly and prepare the right quantities of food, and 2) physical, tactile behaviour trackers that allowed participants to create, engage with and share data representations of their food saving behaviours using their own visual fluency. The experiment group (Group A, 46 participants) were given parts 1 and 2, while the control group (Group B, 46 participants) were given only part 1. A third group consisting of couples 55 years and over without children (Group C) were also given parts 1 and 2, to serve as social influencers to the experiment group. The results of the trackers in Groups A and C were then shared amongst each other online. The probe was supported by a survey designed to measure behaviour before the study, after the study and one month after the study. Semi-structured interviews were also conducted to support the probe and survey findings. The results were then triangulated using three methods of analysis: 1) content analysis of probe data and extra information volunteered by the participants. 2) paired samples frequency comparison between Groups A and B using data from the survey, and 3) thematic analysis of semi-structured interviews one month after the probe was completed. The reflective and creative capacity of data visualisation-making process allowed the group with the probe to sustain newly formed habits for longer than the control group. Creating their own methods of encoding data enabled agency, holding them accountable for their own actions and facilitating a deeper understanding of their own unique household dynamics and collective behaviours that lead to food waste. The social and physical aspect of the exercise were found to be the most influential factors in leading to longer term behaviour change. The study addresses Sustainable Development Goal 12 (Responsible Consumption and Production), specifically Target 12.3 which aims to halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains by 2030. Thematically, it intersects with two tracks of the conference: Educating for Sustainability (2b) and Design for Sustainability (5b), since data visualisation is used a tool for communicating complex information and aid decision-making practices around sustainability.

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Sustainable design of a plastic toothbrush: a case study of design for disassembling and materials recycling

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JACOPO MASCITTI



ALESSIO D'ANGELO

Abstract

A toothbrush is one of the most widely used oral care items that help remove debris from the mouth and keep it germ-free. More than 3.5 billion toothbrushes are purchased each year. A market valued at USD 6.90 billion in 2022, with an estimated annual growth rate of 4.1% through 2029. More than 75% of toothbrushes sold are of the traditional manual model [1]. Growing awareness of the environmental implications in the use of disposable toothbrushes has prompted all major manufacturers to develop "eco-friendly" products, whose approach is based on three different strategies: the use of biopolymers; the use of natural materials such as bamboo; or the use of replaceable heads. However, each of these solutions hides critical issues: most bamboo toothbrushes have mechanically anchored nylon bristles that cannot be disassembled and are vulnerable to early aesthetic degradation; biopolymer toothbrushes do not show significant lifecycle environmental benefits when compared to their traditional polymer equivalents; and toothbrushes with replaceable heads are often abandoned in use due to a perception of poor hygiene, which grows with time. Based on previous LCA analyses that highlight the potential environmental benefits of a fully recyclable toothbrush embedded within an economic scheme of recovery and reuse of its materials [2-3], the paper aims to describe the environmental redesign process of one of the most popular and pervasive mass market products: the plastic disposable toothbrush made through the multi-shot injection moulding process. The project, developed within the School of Architecture and Design of the University of Camerino, is characterized by innovative technical and formal solutions that can improve the environmental performance of the product through the strategy of design for disassembling. The developed solution allows the aesthetic and ergonomic qualities of the product to remain the same and, at the same time, allows the end user an easy and intuitive disassembly of the toothbrush at the end of its life, solving the crucial problem of removing the nylon bristles. In conclusion, the paper presents a concept of a product in line with SDG goal 12, as it aims to make the production of a mass market product currently considered critical more rational and responsible.

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Practice and Enlightenment of Built Heritage Conservation and Sustainable Reuse in Singapore

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Abstract

Abstract

Built heritage is important for maintaining the identity of residents, sustaining social cohesion and promoting sustainable urban development. The experience behind Singapore's lack of a hinterland and its late start in heritage conservation is worth learning from its success in the sustainable reuse of built heritage. This study reviews the history of heritage conservation in Singapore since the 1960s, and unpacks its institutional policies, conservation framework and practices. It also uses the NUS ArClab, a built heritage site in the Blair Plains Conservation Area, as a case study to explore its key strategies for sustainable reuse, which include rational transformation of functions, enhancement of residents' identity, new technology-assisted renovation and climate-resilient adaptation. This study argues that the establishment of a multi-party collaborative built heritage management system framework, the promotion of public participation in heritage protection in historic districts, and the integration of tangible and intangible heritage are the keys for Singapore's built heritage to promote sustainable urban development.

Key words: built heritage; Singapore; heritage conservation; sustainable reuse; NUS ArClab

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The Tagus estuary as a fluvial highway

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Abstract

The transport sector is the main responsible for air pollution, including greenhouse gases, in Europe, in Portugal and particularly in the Metropolitan Area of Lisbon, and is also the chief cause of traffic congestion and noise in urban areas. Public transportation is the key solution to mitigate those problem.

Historically there has been a decrease in the use of public transport in the Lisbon Metropolitan Area (LMA). In 2021, three quarters of motorized transport were carried out by individual transport (IT). This predominance of IT congests traffic in the city centre and strangles all accesses to Lisbon, especially across the Tagus estuary and through the 25 Abril bridge.

There is however an alternative, across the Tagus, both to enter Lisbon and to link coastal cities and towns in the wide southern bank of the estuary: the ferryboat.

This paper explores the possibility of creating several new ferryboat routes across the Tagus estuary, both longitudinal and traversing north-south. Allied to this enhanced river transport system, coordination with other transport modes is necessary, namely rail transport, which plays a fundamental role in entering and leaving the capital, but also in traveling to peripheral municipalities.

The research method included the analysis of origin-destination matrixes, transport statistics, interviews with local authorities, and an Internet-based survey targeting current and potential ferryboat users.

The modal transfer predicted upon implementation of this proposal may represent the transfer of 12 000 passengers per day to the ferry, or an emission reduction of approximately 5 kt CO₂/year, and consequently a significant improvement in the congestion and air quality in the city of Lisbon.

In conclusion, river transport plays a key role in crossing the Tagus, contributing to the development of its entire riverside arc, together with rail and other public transport modes. It can also play a significant role reducing pollution and congestion in the most crowded areas of the city.

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Participatory Sound Fiction: Designing a sustainable future through youth engagement in urban sound environments

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Abstract

As the United Nations Act on the Rights of the Child became law in Sweden in 2020, children and youths have the right to form, express and have their own opinions in all matters concerning them, including participation in societal development such as urban design and urban planning processes. Methods used in participatory spatial planning are mostly aimed at well-educated adult audiences and tend to focus on rational argumentation about short term needs, leaving out not only the youth's perspectives, but also the sensory and embodied experiences of our surroundings. As sound is a prevalent element in cities, this work contributes with an analysis of how urban soundscapes can be used in urban design processes with a special interest in the inclusion of children and youth.

The study proposes and evaluates a method called *participatory sound fiction*, based on the intersection of three methodological approaches: participatory design, design fiction and sonic interaction, and how they can be combined to engage youth in urban planning processes. The method is used collaboratively between urban planners, designers, and youth, and consists of three main activities: 1) a workshop with participants, where sound cues are used as a basis for discussions, 2) the design of a "sound fiction" envisioning the future, and finally, 3) a discussion about the sound fictions with the participants. Drawing on participatory design, the method highlights the participants as being experts in their own situation, elaborating on opportunities for empowerment. Design fiction contributes with visions of the future as a means to provoke discussions about current situations and look at everyday life from new perspectives. Sonic interaction here bring to the fore the ability of sound to arouse imagination and emotions.

The method was deployed and tested in a suburban area in Stockholm, characterised by low socioeconomic status, criminality, and low levels of trust for the local government and public institutions. The study included eight youths aged 15-16 years old, recruited through the local youth centre. As part of the process a sound fiction envisioning the area in year 2170 was created. Through the activities, the participants reflected on their current situation and everyday lives in their local neighbourhood, as well as on their visions of the future.

In conclusion, the study shows how the method, participatory sound fiction, could be useful to engage youth in urban planning processes. The results show that through discussions and speculations about the future, important insights were revealed about the youths' reality, which can be of value in spatial planning processes. Furthermore, the study found that sound can broaden youths' perspective on their immediate environment, that participatory sound fiction has the potential to engage youths, and that youths prefer to discuss the present to feel that their voices are being heard.

This abstract is submitted to SDG+Target: 5b, and relates to the conference theme by providing insights on how art and design can be used to encourage sustainable development of young people in their own social and urban environment.

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Potential in service design: engaging with knowledge sharing for sustainable innovation

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Abstract

Service design is a research field has been used into both government and commercial project. The outcomes mostly were based on the actual needs of tangible products and virtual interaction systems. In this paper, we present service design as a sustainable approach to promote change in the mindset within organization demanding that the actors being in a team go through multiple points of views. It also captures user's pain-point and expectation in the service journey, shares with different actors in order to understand empathy further. Methodologies derived from service design method, are discussed through a case study which reveals the advanced activities of transforming sustainable insights to practical service goals, including methods such as interviews, observations and workshops. The research explores the potential of service design and the advantages of using design tools for empathy which figures a knowledge sharing purpose for actors to reach a consensus and image innovative future in holistic picture. The study argues that challenges and limitations of service design approaches and re-thinks the sustainable innovation.

Comprehensive Analysis of the European Digital Passport: Implications for Global Adoption and Sustainable Development.

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Abstract

The challenges and opportunities associated with Digital Product Passports (DPPs) in the context of the circular economy are examined in this study. The DPP can be broadly defined as a data set that summarizes the components and materials in a product, as well as information on reparability, spare parts, and proper disposal instructions. The data contained in the DPP is collected from all phases of the product life cycle and can be used to optimize design, production, use, and disposal. By analysing relevant literature, the role of digitalization and DPPs in promoting circularity is explored. The findings suggest that DPPs have the potential to enhance transparency, standardization, and data sharing throughout the product life cycle, facilitating the transition to a more circular economy. However, challenges related to standardization, collaboration, and regulation must be addressed for effective DPP implementation. In particular, the study evaluates the broader implications of the European Digital Passport on sustainable development, assessing its potential for global adoption and its contribution to the achievement of the Sustainable Development Goals (SDGs). This comprehensive analysis of the European Digital Passport aims to gain a thorough understanding of its components, functionalities, and implementation challenges, offering recommendations for leveraging it as a transformative tool for advancing economic and environmental progress in the future.

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Addressing food waste through design

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Abstract

According to the FAO, an estimated one-third of all food produced globally is lost or goes to waste. Aware that food loss and food waste occur in different phases, this paper mainly focuses on food waste from home as it pertains to consumers and individuals. It investigates the causes of food waste, starting from users with ethnographic research methods [1,2,3] such as fridge studies, fridge stories, shop-along, at-home visits, interviews, food mapping, diaries studies, and the refrigerator in the first place as the object in charge of preserving food [4,5]. In addition, the implication of digitisation on the Circular Economy [6,7] has been considered from the design perspective. Generally, fridges contain foodstuffs with no common features. Consumers have a key role since their food choices and behaviours clearly impact domestic waste production. Major issues deriving from the relation with food are linked to purchase and conservation methods and have an impact on domestic food waste. Although production processes become more sustainable, the quantity of household waste and resource consumption generated in industrial nations continues to rise. Indeed, ecodesign strategies alone were not enough to deal with the sustainability challenges that our society is facing, due to the ever-increasing production and consumption of products [8]. Increasing the knowledge of food characteristics and preservation requirements and accounting for user interaction and its implications on food waste is a significant effort. Designers will thus be able to leverage user tasks and practices in the design phase through guidelines and recommendations for designing meaningful products for the user in order to reduce food waste.

TRACK 5

Production, consumption and innovation

5c. Circular economy

Status quo - Circular business models and their strategies in the manufacturing textile industry in Germany: a survey study

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Abstract

The textile industry is one of the world's biggest environmental polluters. In Germany this industry is the fourth largest cause of ecological damage. Water pollution by pesticides, high water, energy and CO₂ consumption and large quantities of waste are among others some of the major environmental impacts of the German textile industry along the entire value chain. For this reason, the EU strategy for sustainable and recyclable textiles has been initiated since 2022. It calls for recyclable and sustainable materials, most of which should be kept in the material cycle. Consequently, it is necessary to rethink current businesses and establish circular strategies and business models in the textile industry and, if necessary, to amend them towards more digitalization as well. The transition from a linear economy to a circular economy, concrete changes are needed, among others the reorganization of business models. This concerns the three areas of "value proposition", "value creation and delivery" and "value capture". The greatest challenge is usually how to ensure economic added value and thus the continued existence of the company when social and ecological changes are made in the company. However, little is known how circularity is already embedded in German manufacturing textile industries. Thus, the status quo of circularity is investigated.

Therefore, a digital survey study in December 2022 until January 2023 was conducted. The survey was open to all processing companies in the textile industry in Germany, regardless of which textile value-added stage they belong to. In total, the results of 56 German manufacturing textile industries will be presented by applying descriptive statistics.

The sample represents a general understanding of sustainability requirement and potentials as well as circularity and circular strategies in the German textile industry. Yet, there is a lack of sustainable management concepts and knowledge, even of the EU strategy for sustainable textiles. The sample shows companies applying circular business strategies in all three value-added areas "value proposition", "value creation and delivery" and "value capture" like product-as-a-service, repair & reuse, upcycling & recycling and material or process innovation. The systemic strategy closed loop supply chain is not yet embedded. Overall, the majority of the manufacturing textile companies in the sample is not well prepared for a circular transformation. Supportive seems an organized provision of information and intended financial state support.

The survey supports SDG 12, especially 12.1., 12.2 and 12.5., because circular business models offer the opportunity to reduce waste and environmental impact by keeping materials in the material cycle. Consequently, finite resources can also be saved. The survey also offers a significant contribution to the 5 Ps of the SDGs, especially for the textile industry. It first shows the status quo of the mentioned industry, in order to derive research gaps and needs based on it, which lead to closed loop supply chains. When loops are closed, resources can be saved and planetary boundaries can be preserved.

Bioeconomy opportunities and challenges in Nepal: a closer look at biowaste potential at a subnational level

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Abstract

Biowaste makes up the largest fraction of waste generated in developing countries like Nepal. However, its potential is often underutilized due to the lack of proper valorization. Therefore, we assess the biowaste potential at the national and subnational levels for Nepal. The assessment includes all major sources of biowaste including agriculture and forest residues, municipal biowaste, and livestock, poultry, and human waste. Building on the assessed potential, we identify existing biowaste management and consumption practices and analyze the possibilities of a waste-based bioeconomy focusing on fuel, feed, and fertilizers. We estimate an annual biowaste potential of 151.6 metric megatons (Mt) for the whole country. This includes 24.3 and 82.1 Mt from agriculture and forest residues, respectively. Municipal biowaste contributes 1.3 Mt and the remaining 43.9 Mt is from livestock, poultry, and human waste. At the subnational level, Province 1 has the highest share of estimated potential (19%) whereas Province 2 has the lowest (9%). This variation can be attributed to the geography and area of the provinces as well as their land use practices. Currently, the available biowaste potential in Nepal is extremely underutilized. Depending on the source, biowaste can be converted to high-value products such as densified biomass fuel (pellets and briquettes), densified total mixed ration feed blocks, biogas, biofertilizer, and biochar. This conversion and utilization can have significant environmental and economic benefits. The insights into biowaste valorization potential at national and subnational levels offered in this study can help authorities to formulate appropriate policies and entrepreneurs to develop business plans while also opening the door for further research.

Barriers and potential drivers to the utilisation of circular bio-based building materials in Vietnam

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Abstract

Using circular bio-based building materials (C3BMs) offers a viable solution to mitigate the building sector's climate and environmental impacts, yet they are still underused. The barriers that hinder and drivers that promote C3BMs utilisation need detailed investigation. However, few studies have been done on the barriers to and drivers for C3BMs in developing countries such as Vietnam. This study explores perceived barriers and potential drivers for C3BMs with reference to the Vietnamese construction market. Firstly, a literature review is carried out to explore the existing barriers to and drivers for C3BMs both in developed and developing countries. Secondly, data collected from a questionnaire survey with building professionals in Vietnam, including architects, engineers, contractors, etc., were analysed using descriptive methods to identify the critical barriers to and drivers for C3BMs. The results indicate that "building code restriction" and "lack of design guides and tools for projects using C3BMs" are the key obstacles. Meanwhile, "government regulations and policies encouraging the use of C3BMs" and "public incentives and strategies for promoting the use of C3BMs are the most critical drivers. These findings may provide valuable information for scholars, businesses, and policymakers in promoting the utilisation of C3BMs in Vietnam.

Circular economy in the cosmetic industry: a literature review.

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Abstract

Cosmetic industry is involved in finding sustainable solutions to reduce any negative environmental, economic and social impact related to the different stages of cosmetic products' life cycle. Due to this growing interest, the concept of Circular Economy (CE) has started to be observed as a way to develop sustainable solutions, both from companies and scientific community. However, there is still a lack of information regarding how CE principles are implemented by cosmetic companies as well as understanding their connection with sustainability goals. In this context, it is of basic importance to analyse the state of the art of the academic literature in this field with the aim of providing an overview of CE practices and strategies which are or could be applied in the cosmetic industry. A bibliometric and systematic literature review is carried out. The sample of studies has been extracted from Scopus and Web of Science databases. The process identified articles and reviews having a focus on how circular solutions are developed. Results have been classified in: input valorisation, packaging optimisation, output valorisation, management and governance. The main findings highlight that the input valorisation is the most investigated category. In addition, results show a connection with agri-food, chemical and biochemical sectors, and with sustainability .

Critical review of the available tools for assessing Circular Economy and a new guide for action

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Abstract

The measurement of progress towards Circular Economy (CE) in micro level (within a company) is crucial for identifying opportunities and designing circular practices. However, most of the existing tools fail in considering the systemic view and principles of CE. This research aimed at assessing the contributions and limitations of CE assessment tools regarding the key elements: social dimension, stakeholder engagement, R-imperatives and industrial symbiosis. Based on that, we also offered guidance for improvements towards a CE transition. The methodology was an integrative literature review; then based on the critical assessment of tools a guide was created. Thirty-eight tools were thoroughly analysed and our results show that there is a limited number of multidisciplinary tools (only 10), that is including all CE key elements, and in some cases partly. Social dimension is not fully explored; only 6 tools have indicators related to society, local community, customers, and workers. Recommendations for future tools development include to offer training for possible users of the tools. Finally, we conclude that all the key elements of CE are interconnected and we proposed a guide-ACTION (Assessing Circular Transition In Organisations Now)- which includes the key elements, databases, tools, and indicators to help companies in planning and making decisions about circularity issues. The abstract is based on a recent publication by the authors.

Reference:

Chrispim, M. C., Mattsson, M., & Ulvenblad, P. (2023). The underrepresented key elements of Circular Economy: A critical review of assessment tools and a guide for action. *Sustainable Production and Consumption*, 35, 539–558. <https://doi.org/10.1016/j.spc.2022.11.019>

Circular economy practices in the agri-food sector: an exploratory survey regarding Portuguese companies

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Abstract

The circular economy has gained attention as a new sustainable paradigm to promote the protection of the planet and the well-being of the present and future society. One of the sectors that urges the most the transition to circularity is the agri-food sector. The food system represents the connection point of human interactions with the ecosystem, thus generating environmental, economic, and social impacts. Countries are introducing circular principles into their food systems to face such issues. Despite this, several gaps in the literature are present, especially regarding the assessment and monitoring of circularity. Thus, it is urgent to understand how circularity is implemented and monitored in the agri-food sector to spread its knowledge and accelerate the transition. In this sense, Portugal, in the South of Europe where agri-food sector is relevant, has shown great interest in adopting circularity, implementing several projects to identify circular best practices in the agri-food sector. The present study aims to explore the examples of circularity in Portuguese companies of the agri-food sector, focusing on the characteristics of such practices and the assessment and monitoring systems adopted. For this, an online survey from January to February 2023 was conducted on a convenient sample of Portuguese agri-food companies already involved within the circular economy context (being members of Portugal foods, a private non-profit association, that brings together food industry companies and entities from the Portuguese scientific ecosystem or being the participants in the project Alentejo Circular, aimed at identifying examples of circularity in the region). The survey was composed into three parts: i) the general characteristics of the company and the respondent; ii) the level of awareness regarding circularity and sustainability; and iii) the identification, assessment, and monitoring of circular practices. The preliminary results (n=31) show that: i) most of the practices are connected to reduction or re-use strategies (52%), so entail a high level of circularity; ii) they largely involve incrementally innovative processes (77%), with a technological (50%) or socio-organizational (37%) driver; and iii) most of the companies use specific indicators (56%) to assess and monitor circularity, specifically Key Performance Indicators (e.g., to monitor the amount of total waste recovery, the increase of organic matter in the soil, or the reductions in terms of CO₂). The study aims to offer other practitioners a valuable guide for adopting and assessing Circulatory Economy in the food context. This contribution, in line with the Sustainable Development Goals 2.4 and 12.3, aims to make the food system sustainable and resilient and fight food loss and waste along the supply chain.

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Operation Flood 2.0

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Abstract

The growth in milk production of 5.5% on a CAGR basis over last 10-year period from 2009-10 to 2019–2020, seems to be insufficient as indicated by the steady rise in the consumer price, with bare minimum domestic buffer stock, with no surplus for export. The Indian dairy sector has much to thank for the vision of Dr Verghese Kurien envisaging the Operation Flood programme nearly 50 years ago and Governments in power for having given the leeway to go ahead with the implementation of that vision. As a result, India not only became the world's largest milk producer in quick time, but was also able to establish milk processing units by adroit financing and setting up dairy cooperatives across the country with milk collection, processing and marketing system. However, it catered mainly to the needs of consumers of milk in urban centres beginning with the metros. The production system was based on a linear economy, wherein major portion of income from surplus milk sale went out of the village towards the purchase of inputs mainly feed; fully knowing that feeds made from seeds that are clearly unsuitable for digestion by ruminant stomach. Hence, this initiative on enhancing milk production needs a fresh direction both in terms of reduction in cash outflow from villages while creating a market for locally grown fodder and agro waste. The purpose should now be a sustainable rise in profit to individual dairy farmers, in real terms. Profit could be earned, from the consumer through segmentation and targeted marketing and by integrating dairy farming with other livelihoods from agriculture thereby lowering the cost of production, reducing technical and financial risks; inducing higher efficiency and higher value addition to products. Combining dairy animal rearing with the local resources and skills, a circular economy at every household, village and taluka level could be energised through Distributed Autonomous Organisations. This could be a way forward, using the 73 different Indian breeds of cows and buffaloes, the highest genetic diversity for any country, each with high bio-diversity and producing A2 type of milk with limited breed improvement activities till date through pure breeding. India is all geared and on the cusp of taking off in the growth in milk production making India along with its neighbouring countries self-sufficient for milk, bio-fertiliser, bio-gas and the requirement of dairy animals. Further, availability of new cost-effective technologies in digital communication, neural networks and young and skilled manpower from within the country can quicken the reach of economic benefit to every household. Following the principle of economic partnership between people in a peaceful and decentralised manner will bring prosperity to all. This review paper on public policy on milk production in India is an attempt to deliberate on the new strategies required for enhancing milk production through circular economy.

Profiling Circular Economy Practices of Religious Non-profit Organisations

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MRS SUSANA CUNHA TRINDADE

Abstract

Non-profit Organisations (NPOs) have earned increasing visibility in recent years, especially in the current global context which is facing new environmental, health, and socio-economic challenges. NPOs play an important role in several societal areas from health and education to social and community development, helping children, young people, and families, supporting social and community integration, and helping the elderly and disabled. Within this group of social organisations are many religious ones, including Catholic, which also fill several gaps that governments cannot provide to their citizens. The Catholic Church has addressed the environmental crisis by launching in 2015 a papal Encyclic specifically on this matter: *Laudato Si'*: "Praise be to you, my Lord", which demonstrates the Church's concern, but the connection between this high-level document and the actions of Catholic NPOs are relatively unknown. Little research on sustainability and circular practices has been reported in the context of sustainability and Circular Economy (CE) in Catholic NPOs. Consequently, we propose to find out whether and how the CE agenda might be promoted from the sector of Catholic NPOs. In this way, the main aim of this study is to address this research gap by analysing to what extent Catholic NPOs engage with CE and how they are influenced by specific motivations and barriers to CE engagement. The methodological approach is based firstly on an integrative literature review to have the state of the art concerning the application of CE in this specific sector. Following this first step, semi-structured interviews will be conducted with a sample of catholic NPOs representatives, on their internal initiatives regarding CE practices and strategies, to better understand how such practices are implemented in their day-to-day operations. This study aims to contribute to deepening the study of the CE concept at the organisational level, with a special focus on religious NPOs. Extending the knowledge of CE practices beyond the private and government sectors to the non-profit will enable us to have a wider view of what can be the role of the CE in this sector and how to accelerate the CE transition and improve its sustainability performance.

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Perception of Smallholder Farmers on the Adoption of Circular Bioeconomy in the Northern Region of Ghana

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MR IBRAHIM TUZEE ABDUL-RAHEEM

Abstract

The current linear model of resource utilization has been shown to be non-restorative and unsustainable, making it difficult to achieve the United Nations' 2030 agenda of sustainable development goals (SDGs), which aims to end hunger and ensure sustainable production and consumption patterns worldwide. An alternate and more sustainable model of resource utilization is the circular bioeconomy (CBE), which is better suited to achieve these strategic SDGs. However, there is limited research on the factors that influence the adoption of CBE practices, particularly in the setting of smallholder households in Africa. This study aims to assess the knowledge, perception, and willingness of smallholder farmers in Ghana towards CBE, as well as identify the factors that influence the adoption of CBE. The study utilized a qualitative research method to collect data from respondents in order to answer the research questions. The results revealed that smallholder farmers had limited knowledge about CBE, with many farmers being unaware of the concept. However, those who had heard of CBE had a positive perception of it, with many recognizing the potential economic benefits it could bring. Factors that influenced the adoption of CBE included access to finance and credit facilities, access to training and technical support, access to markets, and availability of appropriate technology and infrastructure. The findings of this study highlight the importance of raising awareness about CBE among smallholder farmers in Ghana. Efforts to promote CBE should focus on increasing knowledge and awareness among smallholder farmers, as well as providing access to training, technical support, and financial and credit facilities. In addition, efforts should be made to improve market access for smallholder farmers and provide appropriate technology and infrastructure to support the adoption of CBE practices. The adoption of CBE practices among smallholder farmers in Ghana could lead to significant economic, social, and environmental benefits. CBE practices could help to increase agricultural productivity and improve soil health, leading to increased yields and improved food security. In addition, the adoption of CBE practices could provide new economic opportunities for smallholder farmers, through the production of biofuels, bio-based materials, and other value-added products.

Keywords: Circular bioeconomy, Organic waste, Smallholder farmers, Economic sustainability, Resource reuse.

Circular economy self-assessment tool for households: A collaborative approach

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Abstract

Household daily activities, such as food acquisition, housing, and mobility, are closely linked to sustainability impacts, including climate change, raw material use, quality of life, and waste production. Furthermore, economy growth has been associated with more demanding consumption patterns. However, individuals still don't know how to act to better manage and improve their household sustainability performance, covering sustainable consumption and well-being, among other related aspects. In addition, when associated with circular economy, household/individuals mainly focus on reduction, re-use, and recycling strategies, providing limited attention to other circular economy-based strategies, such as refuse, rethink, or repair. In the context of households, when sustainable consumption is connected with circular economy, financial benefits become a possibility, and a main driver towards a sustainable lifestyle. Multiple studies have been conducted to understand circular economy assessment in products, private or public organizations, eco-industrial parks, and cities. However, there is still a lack of knowledge regarding the assessment of circular economy practices implemented at the household level, including current strategies, and indicators. Thus, the present work aims at developing a self-assessment tool to assess and report the implementation of circular economy-based strategies at the household level, including the definition of consumption activities, and indicators. This study is supported by a two-stage methodology, based on a mix-method procedure, that centers co-creation with residents/ family's representatives in its approach, through the use of questionnaire surveys, and semi-structured interviews with open-ended questions. The developed self-assessment tool will allow individuals and families to assess, communicate, and reflect on their behaviors about sustainability, in the vein of circular economy. It will foster a pro-environmental mindset, social equity, and economic consciousness in everyday decisions. This research contributes to the debate on the role of the household in the transition towards a circular economy, and its inherent assessment, and communication, using circular economy indicators.

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Developing a Framework for National Electrical and Electronic Equipment Waste Management applying Sustainable Circular Economy Stratagem

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DR ANUPAMA SINGH



PROF ARUNADITYA SAHAY

Abstract

Waste Electrical and Electronic Equipment (WEEE) are electrical and electronic equipment (EEE) which cannot be used further and are rejected as waste without any possibility of recycling and reuse processes. With the increasing market demand for EEE, their manufacturing has also correspondingly increased, leading to a substantial rise in WEEE. At the same time, the current formal sectors do not have sufficient expertise to address escalating WEEE. Further, there is a lack of infrastructure, public awareness, policies and technologies required to manage WEEE in an environmentally safe way. Such a scenario has triggered massive environmental and public health threats. There is an urgent need to focus on sustainable circular economy strategies to protect the environment and public health from toxic WEEE. Ellen MacArthur Foundation (2018) has made it evident that circular economic approaches have substantial advantages for EEE industries; it can reduce customer expenditure by 7% and 14% by 2030 and 2040, respectively. This study analyses recent developments and challenges in numerous aspects of WEEE, including collection, treatment, and recycling. It has been found that Europe is the largest producer of WEEE, trailed by Asia, America, Oceania, and Africa. The material recovery from WEEE was worth \$57.0 billion in 2015, out of which only \$10.0 billion has been recycled and recovered sustainably, equipoising 15.0 million tonnes (Mt) of CO₂. Hence the foremost challenges of WEEE management include inhomogeneity of waste that requires sorting and zero emission treatment, low energy density for recycling, sustainable consumer behaviour, and cost-effective operations.

Almost 70% of countries around the globe have WEEE management policies and regulations. Such policies and regulations have not been efficiently implemented in most countries. Developing countries belonging to Asia and Africa have limited or no WEEE policies and regulations. Hence, this research attempts to provide a Sustainable Circular Economy Stratagem (SCES) framework. It has been developed through Sustainable Development Goals (SDGs) synergy with Circular Economy (CE) principles, resulting in a list of policy implications in the current WEEE management. The SCES framework will be validated through a scientific research plan and methodology, including data collection, data analysis by machine learning tools, and final model validation. This research is expected to validate SCES.

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The elephant in the room - the ambiguity of the extended producer responsibility in the Latvian packaging waste management system

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JANA SIMANOVSKA



INGA BELOUSA

Abstract

The notion that the increasing use of natural resources to satisfy human consumption needs and the pollution of the environment with post-consumption waste exceeds the planetary boundaries appears more often in both scientific and applied discourse. The circular economy is seen as a response to this challenge, where no material is wasted but turned back into production, and this concept is integrated into Sustainable Development Goal 12. So far, the conventional, purely market-driven development has led to a linear economy, therefore the shift towards the circular economy requires policymakers and public administration to interfere using various tools and instruments to enforce this transition engaging the stakeholders of the material management ecosystem to close the material loops.

The presented research hereto explores the packaging waste management ecosystem in Latvia, starting with producers of packaging and ending with the waste managing companies and recyclers focussing on separate collection of packaging waste - a precondition for more efficient recycling. We applied qualitative content analysis of the legislation and relevant policy documents defining the responsibilities of various stakeholders and analyzed how the responsibilities of waste management aiming to achieve recycling goals agreed upon within the European Union are transferred. To enhance the recycling of packaging waste, a promising instrument - the extended producer responsibility - is applied in Latvia, entrusting the companies placing packaging on the market to take financial and organizational responsibility for collecting and recycling the packaging waste. However, the waste management system at the national level lags in achieving the European Union's waste recycling goals and, seemingly, the producer responsibility is insufficiently integrated into the regional waste management ecosystem using the metaphor of the elephant in the room. Our research reveals that unclear responsibility definitions and insufficient feedback loops between stakeholders can be the reason for this poor achievement. Also, the research identifies positive legislative developments in this field of waste management.

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The on-going project FLOWTEX (Dynamic FLOW diagrams for circular TEXTile) in the textile district of Prato (Italy): implementation and future perspectives

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DR LEONARDO BORSACCHI



MR GABRIELE FELIGIONI



MR ALESSANDRO FERRINI

Abstract

The textile sector is one of the most impactful at the global level. It is responsible for a significant amount of CO₂ emissions and waste generation, with a strong impact on climate change. The Italian textile district of Prato, is one of the largest Italian industrial districts and one of the most important textile and clothing production centres in the world. Since the post-war period, textile waste management has represented one among the main drivers for textile district development: recovery and recycling of natural fibres from rags and used clothes were the basis for the Prato's yarn and textile industry. Prato has been always a model of innovation in this sector having historically based its industrial fortune on the reuse of waste from the textile process and on the reuse of second-hand clothing from all over the world. The evolution of materials technologies, together with the progressively changing market demands have led to a profound transformation both in industrial processes and in the use of materials and the district is nowadays involved in new paradigms of digitalisation and sustainability. In order to comply with sales specifications and as evidence within certification's schemes, enterprises are carrying out the Life Cycle Assessment of its production process. In many cases, however, these studies could being unrepresentative of the actual environmental impacts associated with the steps in the production process, which is not standardized and involves a great deal of variability in starting materials and in the combination of production steps. This paper presents the preliminary results of an action-research, still in progress, called FLOWTEX (Dynamic FLOW diagrams for circular TEXTile). The project is financed by national and local funds, aiming to support technological transition of the textile sector. The action-research involves four enterprises, dealing with textiling recycling, representing different steps in the chain. The proposed innovation is the creation of an IT platform capable of combining process data in order to: i) adopt digital solutions for data collection and process and product control by enterprises; ii) obtain effective information (i.e. environmental indicators) from the production steps, in order to return flowcharts and to get an inventory database to carried out future LCA. The data acquisition and calculation model is carried out either by dialoguing with the enterprise's ERPs. so that information on

the specific process/product is returned in real time, or by manual input. The pilot platform can be implemented in the future to carry out comprehensive LCA studies that will be able to combine inventory and process data. At the district level, the implementation of the technology along the supply chain, creating industrial symbiosis phenomena, could make it more sustainable, generating good circular practices and reducing environmental impacts. The project covers primarily SDG 12 (Responsible consumption and production), but it contributes also to implementing SDGs 8 and 9. This study will show the critical issues that have emerged and the future prospects that will be addressed and developed in the continuation of the project.

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Practicing more Circular Economy enabling configurations of CE technologies and managerial practices in the manufacturing industry

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Abstract

Although CE literature mainly focuses on technologies contributing to enabling more circular economy, some of these papers also suggest managerial practices associated with CE. Enhancing the understanding of the link between CE and enabling practices, this paper explores enabling configurations of supportive technologies and practices discussed in CE literature using an extensive database of the European Manufacturing Survey on innovation and sustainability practices in the manufacturing industry. Using the QCA methodology, analyses show multiple consistent configurations of technologies and management practices implemented by the 288 manufacturing companies. The results show that a wide range of technologies related to CE in combination with managerial practices can lead to the adoption of more CE in manufacturing companies. While this research adds the configuration-of-practices lens to debates on CE adoption by companies, the outcomes provide production managers with more insight into which configurations technologies and enabling managerial practices contribute to CE adoption.

Circular fashion – choice or necessity? Factors contributing to the adoption of sustainable business models in fashion industry

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Abstract

Fashion industry is responsible for substantial resource consumption and environmental pollution. Coupled with elaborate marketing practices invoking extensive consumption of fashion items and shortening their life cycles fashion industry is a suitable candidate for adoption of circular economy business models and implementation of sustainable practices along the entire value chain. Sustainability in fashion is therefore an area for extensive research, resulting in gaining more insight into circular business models, business model innovation, changes in consumer behavior, challenges and obstacles related to transition to sustainability, born-sustainable companies or frameworks for creation a circular ecosystem. While these studies explore companies and consumers through different lenses an interesting research gap is noticeable. Although it is undeniable that fashion industry should become more sustainable and that consumers' awareness towards conscious consumption is growing, less is known about the drivers, motives and incentives that trigger the adoption of sustainable practices by companies.

Therefore the objective of this study is to detect the drivers of change in fashion companies. Is sustainability a fashion, a new trend that has to be adopted, or is it a necessity for them? This research problem may be investigated through three stage research method. The first stage encompasses literature analysis comprising the relevant academic articles from Web of Science and Scopus databases. The aim of this stage is to discover what reasons for participation in circular economy were mentioned in the studies. The second stage encompasses the analysis of industry reports and journalistic articles with the aim of selecting the companies to concentrate on in the third stage. The third stage aims at screening the websites and materials of the companies in search for their publicly expressed motivations. The findings are then combined and the links between them are established using content and thematic analyses.

The main reason why searching for the true motivations for the decisions of fashion companies going sustainable may encounter difficulties is the social context and the pressure from both consumers and regulators. That is why there may be discrepancies between real and declared reasons. Taking this into account it is still possible to indicate such motivations as: rising competition, threat from ultra-fast fashion, disruptive innovation, business model innovation, COVID 19 pandemic and its consequences in terms of changed consumer habits and expectations, supply chain alterations, slow fashion, laws and regulations, social movements and initiatives.

The subject of reasons, motivations and incentives for transition to circular fashion may be perceived as important especially because of such an extensive environmental impact of fashion industry. To state that fashion companies should be more sustainable may not be enough to actually augment the overall level of sustainability, Discovering the reasons why they do that on the one hand and why not on the other may lead to more conscious and focused initiatives that could significantly contribute to the realization of the sustainability goals. This study relates to SDG+Target 12.6.

Food waste recycling: last frontier or boundary case for the circular economy?

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Abstract

Food waste (FW) is a significant cross-cutting issue for sustainable development with relevance to urbanisation, waste management, food security, climate change, pollution, and loss of biodiversity (UNEP, 2021). Compared to the significant progress seen in CE for non-organic materials, food waste recycling (FWR) lags behind and is largely untapped at scale with much of the innovation spurred by civil society at local scale. There are both temporal and spatial limits to the cost-effective movements of FW across space. Yet to date the geographies of FW have been largely neglected in the more techno-economic CE literature (Zhang et al., 2022). Where geographers have studied the spatial limits of sustainable transitions, their focus has been mainly on Europe and North America largely ignoring rapidly urbanising Asia, a major producer of food and waste (Muchangos, 2022).

In this paper I ask, “What do considerations of place and scale tell us about creating a circular economy for food waste recycling?” To answer this I explore case studies in Malaysia looking at urban FWR in three settings: large corporate FWR in a rapidly developing precinct; community-driven public urban farm in a mature township; and not-for-profit food rescue charity operating across a metropolitan region.

I find that FWR occurs in diverse emerging living labs, and lacks the enabling regulatory environments, infrastructure and capital to scale. The drivers of FWR are primarily social and environmental (echoing Lekan et al. (2021)’s CE drivers); capturing economic value remains difficult. FW cannot easily spatially co-exist with idealised sanitised urban environments, thus closing the loop in urban environments require spatial displacement and an alignment with social and environmental objectives. Yet the relational work associated with urban farms and waste collection are significantly burdensome and subject to frictions. Strong state governance is also required to enable FW to move – this involves translating and coordinating sustainable waste management principles from the international, to national and subnational scales. Nevertheless, despite these spatial, scalar and material limitations, strong local cultures of waste management can be found in recently urbanised environments. They are realised in the unlikely spaces of unproductive infrastructural lands, and in longstanding ethical practices of gifting and care. Overall, my research shows how FWR is a boundary case for CE due to its unique geographies and requires more spatially-nuanced and place-based approaches to succeed. This abstract relates to SDG+Target:12.3. With its attention on socially just, ecologically sustainable and economically viable circular food/waste systems, and the collaborative networks needed to realise them, this paper speaks to all 5Ps and seeks to contribute towards achieving the SDGs.

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Evolution of national Circular Economy and Bioeconomy initiatives: the Italian case

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Abstract

In recent years, the concepts of Circular Economy and Bioeconomy have become increasingly prominent in both academic and political debates for their recognised role in addressing the urgent climate crisis and its social, environmental and economic challenges. In fact, the widespread optimism about the potential sustainability and resilience character of the two narratives has led to the increasingly felt need for their mutual interaction, fostering the elaboration and diffusion of the popular Circular Bioeconomy paradigm. In this sense, it is interesting to observe the year-by-year increase in the number of countries adopting nationally relevant documents in both the Circular Economy and the Bioeconomy. This trend is particularly evident in the old continent, where the European institutions have elected the synergy between the inspiring principles of the two concepts as the driving force behind their own path of ecological transition, as most recently reaffirmed by the Recovery and Resilience Facility, the cornerstone of the NestGenerationEU. Undoubtedly, in this context, Italy is worthy of attention as the promoter of important initiatives aimed at concretising the establishment of a socio-economic context increasingly oriented towards bio-circularity at a national, regional and local level. However, while the academic landscape is characterised by numerous publications dealing separately with national Circular Economy and Bioeconomy strategies, a joint treatment of the two environmental policy perspectives is lacking. Consequently, the study proposed here represents a first attempt in this direction by trying to reconstruct the evolution of the constituent elements of the Circular Economy and the Bioeconomy in the Italian national policy landscape until the most recent National Recovery and Resilience Plan (NRRP). In particular, after having selected the national documents produced by Italian institutions concerning the Circular Economy and Bioeconomy sectors, we proceed to the subsequent qualitative analysis and comparison of their contents, emphasising, among others, the sectors and actors involved, the role of institutions, the proposed measures and their expected impacts in terms of sustainability. The aim is to trace the thematic orientations that characterise these policy initiatives, as well as to clarify their place in the Italian legislative structure, their content relationship with similar documents of European and international origin and, above all, their influence on the drafting of the NRRP. Indeed, implementing the NRRP represents a crucial strategic moment to give an effective, sustainable and regenerative turn to the Italian socio-economic system, enabling the achievement of the climate objectives indicated by the European interlocutors. However, assessing the strengths and weaknesses of the proposed measures through a critical reconstruction of the political-institutional pathway in which they have matured is indispensable for understanding whether Italian institutions can effectively manage the provided economic resources to concretise the expected ecological transition. Therefore, as main results, this research seeks to investigate the Circular Economy and Bioeconomy discourses promoted in the most recent NRRP and to verify the effectiveness of the actions proposed to implement them and their coherence with previous initiatives taken on the subject in the Italian national policy context.

Circular rare earth element in sustainable development

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Abstract

Rare earth elements are becoming increasingly important to the high-technology and low-carbon economy, which is raising living standards around the world. Yet, rare earth elements are not actually rare in terms of their abundance in the earth's crust. However, they are often difficult and expensive to extract and process and the production of rare earth elements is often associated with environmental and social challenges. Traditional linear process is synonym with unsustainable production and consumption patterns. As such, there is a growing need for sustainable practices in the production and use of these critical materials. Initially, rare earth element is a group of 17 chemically related metallic elements that are essential components in a wide range of modern technologies, including smartphones, electric vehicles, wind turbines and many other products. Many of the low-carbon technologies that are vital to combating climate change, rely heavily on rare earth elements for their production. As a result, the demand for rare earth elements has increased rapidly in recent years and there are concerns about the availability and sustainability of the global rare earth elements supply. With a shift to sustainable development that aims to be less fossil fuel dependent, global demand for rare earth element continues to rise, despite their uncertain supply chain and high environmental impact of production. This study intends to revisit the notion of circular economy in the rare earth elements business through a systematic literature review in order to establish if the body of research has progressed beyond concept development and into verified application in the industry. Additionally, the purpose of this research is to examine the critical link between the circular economy in the rare earth industry and sustainable development. The major finding is that the areas have definitely progressed from simply conceptual work to practical studies and research into implementation techniques. Yet, empirical studies often examine the environmental impact of CE practices while ignoring the social and economic elements. Furthermore, a key finding is that industry must take part in all collaboration with government, end-user, universities and research institutes. To summaries, a holistic approach is required to avoid implementing solutions that are portrayed as circular yet ignore the sustainability component.

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How intensive aquaculture is facing the challenge of the transition to a circular economy: evidence from a literature review.

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MARIA COZZOLINO

Abstract

The world population has reached 8 billion in 2022 and is estimated to increase by one billion in the next fifteen years. Providing food for this growing population is the challenge of the coming years. Aquaculture (the farming of aquatic animals and plants) can support the world's food supply, as it has been considered a fast-growing agri-food sector, supplying more than half of the fish consumed by humans in 2020 (up from just 7% in 1974). Aquaculture, however, puts pressure on terrestrial and aquatic resources and ecosystems, threatening biodiversity and climate change. FAO (2022) warns that "more targeted transformations are needed to make aquaculture more sustainable with a view to achieving the UN Sustainable Development Goals". However, current aquaculture production methods are thus not bearable in the long term. Therefore, approaches to promote sustainable growth in aquaculture are needed to reach sufficient production to meet the needs of the human population, while respecting environmental issues and promoting health benefits. Indeed, there is now an indisputable need to evaluate the current aquaculture production systems and move to more environmental-friendly production models. A promising strategy for saving resources and reducing negative environmental impacts, which is also gaining momentum in the agri-food sector, is the circular economy (CE). In this context, a literature review of CE practices adopted in the aquaculture production sector is presented here to shed light on how intensive aquaculture is facing the challenge of transitioning to a CE. The literature analysis used scientific papers from SCOPUS and Web of Science (WoS) from 2015-2022. The Preferred reporting items for Systematic Reviews and Meta-Analysis 2020 (PRISMA) protocol was applied. The final set of 99 was used for this article. The literature review highlights the CE empirical practices/strategies applied in aquaculture farms, which are classified considering: a) area of implementation (e.g., improvement and/or reduction of resource use; treatment and/or reduction of waste; use of by-products); b) type of product studied (micro/macro algae, proteins from terrestrial activities, other microorganisms), c) farmed species for which the product studied is tested; d) geographical area where the CE practice was conducted. Furthermore, referring to the 4Rs framework, the analysis highlights which R(s) is prevalent in the observed CE practices. Finally, the articles reviewed are also analysed, searching for the use of any assessment method or indicator to measure the CE practices, as well as explicit or implicit connection with the dimensions of sustainability (environmental, economic, social). Preliminary results show that the aquaculture sector is already experiencing various CE practices intending to contribute to: i) reducing the pressure on fish stocks (target of the feed industry), ii) reusing resources coming out to form the production phases (wastewater and by-product), iii) recycle used materials (such as marine cage nets, shellfish farming socks, other materials).

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Tracing European plastic waste shipped to Vietnam for recycling – proposal for a just circular economy transition

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Abstract

Exporting waste for recycling to destinations without sound recycling capacity raises questions of fairness and sustainability. As recycling infrastructures in Europe have been inadequate to keep up with growing plastic waste generation, waste is traded, aiming for sound resource recovery in a global value chain with multiple actors. Such trade creates increasing governance and sustainability challenges. In the EU, policies and systems are in place for plastic waste management, which includes separate collection to safeguard against potential harm and reuse resources. Waste handling is outsourced to destinations with cheaper operating and labour costs at the expense of harming other individuals, societies and the environment. Half of the collected European plastic waste for recycling is shipped for recycling outside the EU without accountability. This case study of the EU plastic waste exports for recycling to Vietnam aims to increase our understanding of waste governance, circularity, sustainability and justice implications. We bring a multidisciplinary perspective to understand the challenges of the EU's recycling practices for the broader socio-ecological system. Finally we propose a multidisciplinary framework as an ethical guide for fair future waste shipment practices with strong consideration for the social dimension for a just circular economy transition which can guide emerging policies like the UN treaty on plastic waste pollution. Tracing European plastic waste shipped to Vietnam for recycling – proposal for a just circular economy transition

TRACK 5

Production, consumption and innovation

*5e. Sustainable consumption and
consumers*

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Carbon lock-in trap in low income families: can we make the carbon neutral transformation inclusive?

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PROF. MARIA CSUTORA



PHD GABOR HARANGOZO

Abstract

Household heating is responsible for a large share of energy consumption and carbon emissions in many regions of the world. Technological solutions are widely available to improve efficiency and thus reduce consumption/emissions. However, many household consumers are fallen into the trap of lock-in and are not able to benefit for those solutions. Carbon lock-ins can be manifold (Unruh, 2002, Seto et al., 2016): behavioral (related to habits and norms), deprivation related (lower income consumers simply do not have the financial assets to invest in efficiency), technological (related to the major characteristics of buildings and infrastructure), industrial (dominant standards in the energy industry) or institutional (resistance against phasing out regulation hindering efficiency). Escaping from the carbon lock-in trap could bring triple benefits (environmental, social and economic) (Csutora et al., 2021). Through analyzing comprehensive statistical databases (Eurostat and Odyssee) and the dataset of a representative household-level energy consumption survey (EU Enable project), we detected evidence for different types of lock-ins in many countries, especially for the lower income deciles. In specific cases, this may lead to U-shaped curves when expenditures on heating-related energy is assessed, meaning that lower income consumers pay more compared to middle classes. When carbon footprints of heating-related energy consumption is calculated, this mismatch seem to evaporate in most cases, but other environmental and health issues (as a result of higher share of firewood within the lowest income consumer group, questionable quality many times) arise. Household heating related carbon lock-in is difficult to overcome, however understanding the drivers of different lock-ins may help in developing more specific policy support (e.g. deprivation lock-in may seek for normative subsidies, where even low income consumers have chances to participate; while behavioral lock-in may be overcome by better education). This submission is organically related to several UN SD goals and targets, with a special focus on 7.1., 7.3., 12.2., 12.8., 13.2. and 13.3. It is also closely (actually by definition) related to three key themes and thus the overall goal of the ISDRS 2023 (people, planet, prosperity) as efforts to overcome the household heating related lock-ins among the lower income consumer groups deliver triple dividend (environmental through lower carbon emissions, social and economic through decreased energy bills). The research was supported by the 143542 OTKA project.



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PHENOMENON OF THRIFTING FASHION IN INDONESIA: IS IT A SUSTAINABLE FASHION?

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MURZAL ZAIDAN

Abstract

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Clothing is one of the primary needs of human life which serves to protect the body and beautify the appearance of the body or fashion. Changes in fashion occur more quickly than changes in culture as a whole. For this reason, those who always want to keep up with the latest fashion developments, will always change fashions, with one of their strategies is to buy branded imported used clothes. In Indonesia, imported used clothing is prohibited under its positive law. This research aims to prove that such sustainable fashion can damage the environment. In addition, the purpose of this study is to analyze the regulations that prohibit imported used clothes from entering Indonesian territory. The results of the study show that imported used clothes as illegal goods can damage the environment. This is because not all imported used clothes can be used, and the remaining unsold used imported clothes will become a pile of waste in Indonesia. Thus, it can be said that Indonesia is used as a dumping ground for imported used clothing waste that can pollute the environment. Meanwhile, regulations that prohibit imported used clothes from entering Indonesian territory as illegal goods, in fact, seem do not work. Many imported used clothes are found entering Indonesian territory. The reason is partly because there are so many captivating use imported second-hand clothes. In addition, control from the Government regarding illegally imported used clothes is still weak. For this reason, control of the sale of imported used clothes as illegal goods entering Indonesia needs to be increased by imposing strict sanctions to the parties involved.

Keywords: thrifting; illegal; environment; midden; sustainable fashion

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Does healthy food consumption structure decrease the ecological footprint? The ecological footprint of nutrition in Hungary: reality vs. recommendations

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Abstract

Food consumption provides nutrients for individuals, fulfils daily biophysical needs, thus it has one of the highest environmental impacts of all areas of consumption. The environmental impacts of nutrition include increasing land use and accounts for one-third of total anthropogenic greenhouse gas emissions (FAO, 2022). International research studies on food consumption patterns in developed countries confirm that healthy and low-impact diets may show many similarities with each other (Clark et al., 2019; Aschemann-Witzel et al., 2021).

The research question of the present analysis is to examine to what extent does a healthier diet could reduce the environmental impact of nutrition. The aim of the research was to quantify the ecological footprint of actual Hungarian food consumption as well as the ecological footprint of a healthy diet, based on the dietary recommendations by the Hungarian Dietetic Association. The ecological footprint is an appropriate indicator for measuring the environmental impact of nutrition as it provides a standardized methodology for measuring land use and carbon dioxide emissions. The ecological footprint is a consumption-based indicator, thereby showing the environmental responsibility of consumers regarding their food consumption. The average quantity of actual food consumption per person and the ecological footprint intensities were used to calculate the ecological footprint of the main food consumption categories.

Results showed that consumption of animal origin dominates the ecological footprint of Hungarian residents (67%). Meat products have large ecological footprint intensity thus the reduction of meat consumption could result in advantages both from environmental and health perspectives. Examining the footprint of income deciles showed that middle income level groups use their relatively high incomes to consume more food. Research results confirmed the assumption that the ecological footprint of the recommended healthy diet would be 19% smaller than the footprint of the actual consumption. This highlights that a food consumption pattern which is favourable both from environmental and health perspective is realizable. It offers a great opportunity for instigating a harmonised and integrated environmental and health policy in the future. Sustainable diets play a crucial role in achieving sustainable nutrition and may also reduce health costs in the long run. Present research confirmed that the ecological footprint as a biophysical indicator can be an appropriate tool for drawing the attention of consumers to the environmental load of their diet.

The research is closely related to SDG Goal 12: Responsible consumption and production, sub-target 12.3 and 12.8, and SDG 3: Good health and well-being. Results are closely linked to the topic of the ISDRS conference, showing that double dividend can be achieved through healthy food consumption, contributing to the health and well-being of People and decreasing environmental impact of the Planet.

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Consumer Rights as Citizens in Sustainable Consumption and Production

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DR. TZE CHIN ONG

Abstract

Consumers are active participants and contributors in economic activities, particularly in a circular economy. Consumers' behaviour in consumption patterns on the demand side has a direct effect on production from the supply side of the market. Moving towards a more sustainable global market, consumers should be viewed as citizens in the market economies participating and contributing directly to sustainable consumption and production. However, consumer rights are often considered as private rights in the private law sphere rather than in the public law sphere of human rights. The secondary standard of consumer rights in consumer protection law is often being sidelined by developing countries, having little significance in public policies related to sustainable development. Since consumers are the major active participants and contributors to sustainable consumption and production, consumer rights should be given priority in public policies related to sustainable development. This paper employed qualitative content analysis approach in analysing consumer rights as citizen rights in advancing (Sustainable Development Goals 12) SDG Goal 12. Enhancing consumer protection law aligned with sustainable consumption and production would provide a symbolic advancement in achieving SDG Goal 12 balancing economic, social development, and environmental protection of developing countries.

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Consumption of Natural Health Products – Is it safe and sustainable?

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DR. MAZLINA MOHD SAID

Abstract

Since the outbreak of Covid-19 in 2020, people are more health-conscious and thus felt responsible for taking care of their own health for long-term well-being. The public is more aware and actively looking for better alternatives as awareness of sustainable lifestyles was promoted. Since then, many manufacturers see this opportunity as a way to produce more health supplements from natural bases. Historically, natural products have been used since ancient times for the treatment of many diseases and illnesses. The term “natural” brings a positive image to the product since most consumers perceive natural as safe even though it does not necessarily mean safer or better. There are many reports on natural health products that are adulterated with harmful substances, and many still do not have data on their efficacy, hence it is pivotal that consumers know the safe-use elements of natural health products. It is important for consumers to have the right awareness regarding the safety of natural health products to prevent any adverse effects in the future. The objective of this study is to identify the safe-use elements perceived by consumers for natural health products. A qualitative approach of Focus-Group Discussion (FGD) is employed to elucidate the safe-use elements, and thematic analysis is being done on the qualitative data to explore the objective. From the results, we found that the most frequently mentioned for safe use of natural health products over all age groups was that natural health products must follow the guidelines from the Ministry of Health of Malaysia. There are other elements listed as safe use such as testimonials from other consumers, the product

has a halal certificate, the perceptions of the efficacy, and popular products. Alongside the safe use elements of natural health products from the study, there are also additional on good practices that have been mentioned such as health status monitoring, and consumers must be well informed before taking any natural health products. It is identified that these elements coincide with the guidelines disseminated by the regulators, but the depth of safety elements between these two stakeholders hold a very huge gap in achieving a sustainable ecosystem on the safe use of natural health products. It can be summarized that the safe use of natural health products is very crucial in ensuring healthy lives and promoting well-being for all ages. This list of safe use elements by consumers is pivotal in developing policies for the safe use of natural health products and ensuring effective initiatives are being taken regarding this issue to bring toward a healthy society and environment.

For the final section, we found that SGD 3+Target 3.8 are related to this research topic. The target mentioned above is to achieve universal health coverage, including financial risk protection, access to quality essential healthcare services and access to safe, effective, quality and affordable essential medicines and vaccines for all. This is important as the safety and quality of natural health products are crucial to actually promoting general health and long-term well-being of society.

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The Impact of Green Marketing on Pro-Environmental Purchasing Behavior: Applying the Theory of Planned Behavior Model (Empirical Study on Organic and Recycled Products Consumers in Semarang City)

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MR ANDI TRI HARYONO



MS SINTA PETRI LESTARI



MR ZET ENA



MRS. ALYA ELITA SJIOEN

Abstract

This study aims to analyze the impact of green marketing on pro-environmental behaviour and the theory of planned behaviour. The population of this study is people located in the Semarang City area who have shopped for organic and recycled products, with a total sample of 250 respondents. The sampling method used is random sampling with an online survey method for data collection. The research method used is a descriptive quantitative research design. The data analysis method used Structural Equation Model-Partial Least Square (SEM-PLS). The results show that green marketing dimensions green product (GP), green distribution (GD), and green people (GPO) have not correlated and impacted pro-environmental purchasing behaviour (PEPB) and with the theory of planned behaviour (TPB). However, other green marketing dimensions green price (GPI), green product promotions (GPP), and green physical evidence (GPE) have a positive impact on pro-environmental purchasing behaviour (PEPB) and also have a positive impact on the theory of planned behaviour (TPB). The impact of exogenous variables on the endogenous variables is relatively weak only 33 percent, and 31 percent. The study also provides insights into theoretical and practical perspectives about green marketing strategies and sustainable consumer behaviour.

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ANALYSIS OF CONSUMER PREFERENCES AND ATTITUDES TOWARDS SUSTAINABLE CONSUMPTION OF PLASTIC BEVERAGE PACKAGING IN MALAYSIA

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MISS KHALILULNISHA ABU BAKAR

Abstract

Malaysia is one of the highest plastic packaging consumers per capita in Southeast Asia but lacks the capacity and capability to manage its waste in a sustainable manner. One of the challenges towards promoting plastic packaging sustainability in Malaysia is the lack of awareness on plastic consumption among consumers and the absence of Extended Producer Responsibility (EPR) scheme. Consumers are decision-makers when it comes to purchasing products with plastic packaging therefore, play a significant role in sustainable consumption which includes better management of plastic packaging and behavioural change in their way of consuming products with plastic packaging. Using beverage products as an example, an online survey was carried out among 395 Malaysian consumers on their willingness to participate in an EPR system and to pay for a more sustainable packaging options. Some open-ended questions were also applied to implore further on factors that would encourage consumer participation in sustainable plastic packaging management. A majority of the respondents gave positive responses towards their willingness to participate and indicated their willingness to pay for a more environmentally friendly plastic packaging options. The results also showed that the respondents will be more encouraged to participate if it is convenient for them to do so, such as the close proximity of a collection centre with their residences. Their preferences on using plastic packaging with a higher content of recycled material, even though the product will be on a higher price, is encouraging. However, the respondents raised the need for a better waste management system, infrastructure, mindset, awareness and education to be in place. Without mandatory implementation of EPR nationwide or an efficient collection and recycling system, recovery of plastic packaging for recycling will be challenging and will be counter-productive to achieve plastic circularity in Malaysia. The results provide insights on how policy makers and the fast-moving consumer goods (FMCG) sector can communicate, accommodate and engage with consumers for EPR and plastic packaging. The inputs are also valuable and relevant to determine the way forward for solid waste management in general and plastic policy and management in particular.

Lesson from Malaysian Halal SME firms on Sustainable Food Production

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Abstract

The purpose of this study is to investigate and assess the interactions and links that exist between traditional food production procedures and the concepts of sustainable production. Halal food production is a significant sector in Malaysia, where the majority of the population is Muslim, and there is a growing domestic and global demand for halal-certified items. Small and medium-sized firms play an important part in the Malaysian halal food industry, and there is growing acknowledgment of the need to embrace sustainable food production practises. One of the most important takeaways from Malaysian halal SMEs is the significance of sourcing ingredients locally. Many SMEs are attempting to build stronger partnerships with local farmers and suppliers in order to assure the quality and sustainability of their ingredients. The implementation of environmentally friendly procedures is another key part of sustainable food production for Malaysian halal SMEs. This involves minimising trash, conserving water, and utilising renewable energy whenever possible. Several SMEs are investing in new technology and innovations to improve their sustainability practises and reduce their environmental impact. Furthermore, there is a rising recognition of the importance of social sustainability in halal food production. This involves ensuring that employees are treated fairly and ethically, encouraging community growth and engagement, and advocating for the welfare of animals used in food production. The findings offer comprehensive insights into sustainable food production strategies. As a result, the finding is expected to (1) understand the synergies between standard production practises and sustainable production principles; (2) clarify whether halal food production captures aspects of sustainable development; and (3) identify opportunities for small and medium-sized enterprises to venture into sustainable initiatives at a low cost. Overall, Malaysian halal SMEs recognise the significance of adopting sustainable food production processes to meet the growing demand for halal products while simultaneously supporting environmental and social sustainability. This trend is projected to continue as worldwide demand for sustainable food production develops and consumers demand greater openness and responsibility from the food business.

TRACK 5

Production, consumption and innovation

5f. Food system transformation

5

POLICIES OF GENETICALLY MODIFIED ORGANISMS IN AFRICA

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MR MOSES MUKUI



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Abstract

Genetically Modified Organisms (GMO) are those organisms (crops, microbes and livestock) that have been engineered in the lab to produce the most desirable traits. Their genomes are altered using engineering methods such as Recombinant DNA technology and gene cloning. In Kenya, GMO was adopted recently due to the prevailing drought that hit the country in 2022. According to Kenyan authorities, over 4.35 million Kenyans faced food insecurity and thus prompted the government to adapt GMOs as a solution. GM foods can help fight food insecurity but might have unforeseen consequences and thus proper policies and research should be put in place before adaptation. A lot of debate is currently ongoing about the environmental safety, transfer of DNA material to non-target organisms and loss of biodiversity. There are many people who are against GMO for various and valid reasons. This paper aims to identify whether GMOs can help a country curb food insecurity and identify the policies that govern GMO production, commercialization and consumption across Africa. According to UN about 1 in 10 people worldwide are suffering from hunger and nearly 1 in 3 people lack regular access to adequate food (2020). GMO might be the solution to the droughts and food insecurity experienced by many countries across Africa. Therefore educating the general public and empowering them on facts about GM foods is vital. Implementation of good GMO policies is key in maintaining a sustainable food system in Africa to ensure a more informed decision around GM foods.

According to SDG 2 “End hunger, achieve food security and improved nutrition and promote sustainable agriculture.” GM foods may be the solution we need in Africa to promote food security and curb post-harvest losses. We should strive to implement good GMO policies to ensure food sustainability across Africa

Keywords: Genetically Modified Organisms, Recombinant DNA technology, Gene cloning, SDG (Sustainable Development Goals).

REVIEW OF MANAGEMENT METHODS OF TYPE II DIABETES MELLITUS

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MR FINAGNON TOYI KEVIN FASSINO



DR MARIUS AFFONFERE

Abstract

Non-communicable diseases (NCDs) are a major contributor to the global burden of disease around the world and according to WHO, NCDs count for over 70% of all deaths globally. The majority of these deaths occur in low and middle-income countries (80%) and the major illnesses associated are cardiovascular diseases and diabetes. Diabetes prevalence is increasing and emerging as a global health problem that may reach pandemic levels by 2030 and the most prevalent form is type II diabetes mellitus (T2DM approximately 90%). The International Diabetes Federation estimates that 19.8 million people have T2DM in Africa where approximately 75% remain undiagnosed. Africa is projected to bear the brunt of a 142.9% increase in T2DM compared with 51.2% globally and it has the highest proportion of deaths attributable to T2DM (73.1%). Sub-Saharan African countries especially are more impacted with 15.5% in 2017 and by 2045, this number is expected to increase by 162.5%. Obesity, sedentary lifestyle and genetic components are the most underlined causes of T2DM and are highly connected to physical inactivity and high calorie-food consumption. However, despite many strategies exist such as physical activity, antiobesity drugs, oral hypoglycemic agents, glucose monitoring and calorie restriction, and much research on calorie restriction; the prevalence of T2DM in Africa is still increasing. The present study intends to investigate T2DM management methods and their effectiveness. This study could be useful for researchers and policymakers to design and implement sustainable T2DM management methods in Africa. It will be particularly helpful for food designers to design appropriate diets for diabetics people using local food resources in Africa. A literature review on management methods of T2DM are ongoing. Databases such as Google Scholar, Springer, and ScienceDirect are consulting from November 2022 to now. Data on T2DM prevalence and causes and management methods, and calorie restriction methods for T2DM management are collected. (i) The sustainable strategies that could be used for T2DM management in Africa are collected.

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Experiences of Fulani women in Dairy Business and the implication for Dairy development Efforts in Ibarapa and Iseyin Area of Oyo State

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MS VICTORIA OLUJIMI



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Abstract

Nigeria, with more than 180 million inhabitants has an annual demand for milk and other dairy products estimated at around 1.3 billion tons, which represents a sizable market for locally produced milk. Unfortunately, imports account for 60% of the nation's dairy consumption. The contribution of nomadic and semi-nomadic Fulani women (FW) to the pastoral economy of the nation is pertinent to the livelihood as well as sustainability of the dairy sector. The Fulani's main source of subsistence is raising livestock and the women are responsible for marketing and processing of milk as well as other dairy products. However, the procedure and economic activities still remains local that a dairy firm could not expect to receive products from them. Much effort has not been initiated to make the process modern and technologically-drive in such a way that it will advance wealth. Thus, this study was therefore designed to examine the resources available to FW, to determine the problems encountered and the coping strategies and assess the infrastructure put in place to develop small scale dairy sector. The study will be anchored on the Rational Choice Theory and Social Action Theory. 16 In-depth interviews would be used to elicit narratives from FW in hamlets in Ibarapa and Iseyin Area of Oyo State. Secondary data would be from books, journals and articles. The expectations are that there will be establishment of centres to collect fresh milk from the FW and to supply urban dairy plants. The women would also benefit from more efficient and hygienic methods of small-scale dairying, improved roads and transport services. By so doing, they could do the processing themselves and sell in more lucrative markets which will in turn improve the economy. The study is targeted at SDG 1, No poverty, targets 1a and 1b, SDG 8, decent work and economic growth, targets 8.3, SDG 9, industry, innovation and infrastructure, targets 9.3, 9.a and SDG 12, responsible consumption and production, target 12.3. The result will not only drive the government to provide resources for the FW but it will also generate wealth for the people and the society at large thereby incorporating the 5Ps of the SDGs.

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RETHINKING DISRUPTIVE AGRICULTURAL TECHNOLOGIES FOR IMPROVED PRODUCTIVITY AND PROFITABILITY AMONG SMALLHOLDER FARMERS

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MRS TABITHA AVOGA

Abstract

Rising population, pressure on food systems, food and nutrition insecurity, urbanization, poor value addition, low participation in the global value chains, gender inequity and threats of climate change are megatrends demanding the need for advancement in and adoption of disruptive agricultural technologies. Digitalizing and disrupting agricultural productivity, profitability and sustainability of food systems can help build resilience, be an enabler to economic growth and the overall economic performance across African countries. Disruptive agricultural technologies have the potential to reduce the cost of production, link farmers to buyers, reduce the inequalities of accessing production and market information/technologies to boost farmers' decision making processes. In spite of the benefits, the uptake and utilization of these disruptive technologies is still low, especially among smallholder rural farmers in Africa. The study will assess the role of social cultural barriers, including gender relations and traditional agricultural practices facilitating or constraining the adoption of disruptive agricultural technologies; and understand the challenges, successes and opportunities facing African countries in scaling up disruptive agricultural technologies. Disrupting the existing agricultural production and profitability situation can enable players in the agricultural sector to leapfrog current methods to increase productivity, profitability efficiency and competitiveness.

A meta-analysis of published literature will be conducted to understand the key issues affecting full adoption of disruptive agricultural technologies among smallholder rural farmers in Africa. In the policy area, the study would provide information on possible entry points that would enhance broader adoption of disruptive technologies for improved African food systems.

Keywords:

Disruptive agricultural technologies, digitalizing policies, use and adoption of the technologies.

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Urban agriculture provides multiple benefits besides food

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Abstract

Urban agriculture, including peri-urban farming, can nourish around one billion city dwellers and provide multiple social, economic, and environmental benefits. However, these benefits depend on various factors and are debated. Therefore, we use machine learning to semi-automate a systematic review of the existing literature on urban agriculture, starting from around 76,000 records for initial screening, based on a broad keyword search strategy. We apply the topic modeling approach to systematically understand various aspects related to urban agriculture based on the full text of around 1450 relevant publications. Urban agriculture literature covers 14 topics, clustered into 11 themes, which are related to urban agriculture forms, their multi-functionalities, and their underlying challenges. Promoting urban agriculture requires accounting for its multi-functionalities, besides food provisioning, and encouraging efficient and sustainable practices.

Urban agriculture in China supply >20% of its vegetable needs and emit less GHG than traditional agriculture

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Abstract

Urban agriculture (UA) is multi-functional and thus an essential contributor to net-zero-emission cities and food systems. Previous studies mainly investigate UA practices of limited cases in developed countries. However, the production potential and the comparative carbon emissions relative to traditional agriculture in developing countries remain underexplored. To address this knowledge gap, we construct a new dataset of multi-form planting area in rooftops, community road verge, urban greenspace and residential balcony for 124 mega Chinese cities with dense population larger than 1 million.

The total potential planting area or all the above-mentioned UA forms amounted to 3043.5 km², where rooftop takes a share of 69%. To determine the potential rooftop harvesting area, we identified 13 million buildings with a total rooftop area of 6944 km² using either visual interpretation or existing database. The productive roofs are further limited by four conditions, namely the buildings with flat roofs, less than 30 years-old, less than 40-meters height, non-occupied and buffer zone from the edge, to select areas that are suitable for rooftop planting. As the results, the potential rooftop area takes 36% (ranged from 12-48%) of the total rooftops. For the average level of 124 cities, urban agriculture could provide 20% (4-61%) of the daily vegetable needs of urban residents (i.e., self-sufficiency), given different levels of yield, space usage and vegetable requirement. Under the medium scenario of urban vegetable cultivation, the median GHG emission intensity of all cities is around 0.51 kgCO₂e/kg, which is much larger than 0.29 kgCO₂e/kg, the average life-cycle emission of traditional vegetable cultivation in China. However, the major three system-wide benefits (reduced building energy use, food miles and food loss) will cut 41% of the GHG emission intensity of urban agriculture. Thus, the actual emission intensity of urban vegetable production is about 0.3 kgCO₂e/kg, which is comparable to traditional vegetable production.

Our results show that urban agriculture have a substantial potential to provide fresh vegetables for urban residents, but highly varied across cities due to the different building density. The GHG emission intensity of urban agriculture could be lower than that of traditional agriculture, with accounting other potential benefits.

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HIGH PRESSURE PROCESSING OF AFRICAN INDIGENOUS VEGETABLES FOR FOOD SECURITY

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MISS JENNIFER KAGO



PROF FATUNBI OLUWOLE

Abstract

For the longest time, African Indigenous Vegetables have always been considered as food for the underprivileged. Some examples of such vegetables include amaranth (*Amaranthus* species), cowpeas (*Vigna unguiculata*), African night shade (*Solanum* species), spider plant (*Cleome gynandra*), okro (*Abelmoschus esculentus*), sweet potato (*Ipomoea batatas*) and Ethiopian kale (*Brassica carinata*). People have become much aware of their nutritional value. Not to mention its availability and accessibility. Many underutilized crops have been found to hold benefits for sustainable agriculture. These indigenous vegetables are low input, drought and disease resistant.

Climate change is intensifying food insecurity across Africa. According to World Food Program 2022, as many as 828 million people go to bed hungry every night, the number of those facing acute food insecurity has soared from 135 million to 345 million since 2019. A total of 50 million people in 45 countries are on the edge of famine. With the changing climate change, it is likely that the summers will be hotter and the winters colder. African Indigenous vegetables production is the way to go. There is need for a paradigm shift in the food production and consumption of these vegetables. High Pressure Processing (HPP) is an emerging processing treatment that makes food safer and extends its shelf life, while allowing it to retain many of its original qualities and healthy attributes. HPP also tackles specific product quality and productivity issues without the use of flavor-altering additives or methods. It will meet consumer demand for freshness without the negativity often associated with other methods such as irradiation. It is an interesting alternative to traditional food processing and preservation methods due to its limited effects on covalent bonds resulting in minimal modifications in nutritional and sensory quality.

Keywords: African Indigenous Vegetables, High Pressure Processing, Food security, Ethiopia

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MILK QUALITY SUPPLY CHAIN ANALYSIS AMONG SMALLHOLDER DAIRY ACTORS IN GULU DISTRICT, NORTHERN UGANDA

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MR AHMED ABI ABDI WARSAME

Abstract

Abstract

Milk production in Uganda is as low as 2.81 billion liters annually compared to 124.16 billion liters produced by India, which is the world leading milk-producing country. The causes of low milk production in Uganda are currently not well understood. Currently, it is unclear why milk output is so low in Uganda. Technologies that increase milk production, factors affecting milk production and quality should be understood at different levels of the value chain. Objectives of the study are to: determine the factors affecting the milk quality produced by domestic dairy farmers in Gulu city, northern Uganda; and indicate that farmers in the different locations will produce milk that could potentially experience significant nutrient in the nutrition status of children 6-59 months in developing countries. The study's aim will be to inform academic institutions and interested public sectors on the variables influencing milk production and milk quality marketing among smallholder dairy producers in Gulu city. Milk samples will be collected from different locations; Pece, Bar dege. Laroo and Layibi. Additional samples will be collected along the value chain supply; farmers, milk sellers, and off-takers. Select milk quality parameters; fat, lactose, SNF, density, ts, salt, protein, and added water will be measured using lacto scan device to analyze the milk's somatic cell count. It will discover where significantly higher amounts of milk parameters and how much the Somatic cells compared to the rest. The findings from this study will indicate that farmers in the different locations will produce milk that could potentially experience significant nutrient in the nutrition status of children 6-59 months in developing countries.

Keywords: Dairy Actors, Lactoscan, Milk quality, Milk parameters, Milk supply chain

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Drivers of Consortium Agribusiness Model Performance among Young potato smallholder farmers in Tanzania

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DR. SEMENI NGOZI



PROF SOULEIMANE ADEKAMBI

Abstract

The consortium business model is an innovative model that enables businesses to work together to achieve common goals. Consortia provide a variety of benefits to businesses, including increased efficiency, cost-savings, and collaboration. The consortium business model is based on the concept of shared resources and shared goals. For example, a consortium can increase efficiency by sharing resources such as marketing resources, collective procurement of inputs and expertise. This can save costs such as transport, prices of inputs among others. Agribusinesses work together to achieve a common goal, such as increasing sales, or expanding into new markets. The consortium approach in agribusinesses on the other hand, refers to a collaborative and holistic approach built on a win-win partnership that focuses on closing the gaps of low agricultural productivity and income of smallholder farmers. The approach catalyzes private sector investment, ensuring that smallholder farmers are integrated into value chains in a manner that ensures their capacity is built on good agricultural practices, improved access to inputs, finance, and market. The partners are smallholder, input suppliers, off takers and service providers. Kilimo Trust adopts the consortium approach to value chain development in implementing the Calories and Household Income from Potato Smallholder farmers in Tanzania project. However, little is known about the drivers of performance of the consortium agribusiness model. Understanding the drivers of consortium agribusiness model performance is important as it help stakeholders such as government to develop the supported-policy environment that will facilitate the establishment and strengthening the performance of the model thereby to sustainably engaging and retaining young people in agriculture. Thus, a study was design to therefore, determine the drivers of consortium agribusiness model performance among young potato smallholder farmers. The study employed a multistage sampling technique to select villages for data collection. Then a random sampling technique was employed to collect data from 124 participants and 120 non-participants of the consortium agribusiness model using a semi-structured questionnaire. Additionally, key informant interviews were employed to collect qualitative data from the project focal people. The data collected were analyzed using descriptive statistics, multiple regression model and thematic content approach. The findings reveal that the participation of small holder farmers in consortium agribusiness model is associated with increase in potato yield. A comparison analysis indicates that potato young smallholder farmers who participated in a collaborative procurement of

inputs, marketing of potatoes, and attended trainings performed better than non-participants. The results further show that amount of potato sold, potato price and total number of livestock owned improved the performance of consortium agribusiness model while collection center used to market potatoes and total cost incurred negatively influenced the performance of the model. These findings prove that a well- designed consortium training programs on the functioning of the consortium agribusiness model can be used as an important instrument, and can be used to enlighten young smallholder farmers on the importance and concrete benefits of the model and increase their participation in agriculture.

Keywords: Consortium-Agribusiness Model, Collaborative-Procurement of inputs, Collaborative-marketing of outputs.

Assessing the environmental impact of soilless systems: a literature review.

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Abstract

Agriculture is one of the major contributors to climate change and other environmental impacts. Many solutions have been proposed to hamper emissions from agricultural production: one is given by soilless systems. Soilless systems allow the cultivation of crops without the soil, leading to optimized water and fertilizers consumption and higher yields, as well as lesser space. But impacts from soilless systems can vary depending on the season, crop variety, technology employed and whether the context is urban or rural. Given these considerations, it appears wise to assess the environmental sustainability of these systems from a holistic perspective. However, to the best of our knowledge, there is no review focused on the assessment of the environmental impacts of soilless systems. For this reason, a systematic and bibliometric review has been carried out. First, a review of reviews has been conducted to understand which is the most used method to assess environmental sustainability and Life Cycle Assessment (LCA) turned out to be the most prominent one. Then, the search effort has been focused in analyzing LCA application on soilless systems and 46 articles were finally selected and included in the sample, following the PRISMA protocol and the snowballing method. From the bibliometric analysis, it emerges that the leading research teams are all located in Spain and that the most prominent soilless technique is drip irrigation. The system analyzed in the sample include urban rooftop greenhouses, ground-based greenhouses, and indoor farms. Main purposes of these farms are either commercial or focused on research. Results also point out that there is an increasing interest in soilless systems, and this is mostly due to the increasing attention in urban agriculture, because of their intrinsic applicability to urban environments. Most frequent evaluated crops are tomato and lettuce, as they are the easiest crop to grow in soilless environment and because they are particularly prominent in Mediterranean diets. Future research will deeply investigate the methodological issues emerging when applying LCA for the environmental assessment of soilless systems.

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"Assessing the Relationship between Farm Production Diversity and Women's Dietary Diversity in Rural Bihar and Odisha, India"

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BALRAM KUMAR

Abstract

Nutrient adequacy and positive health outcomes are linked to increased dietary diversity. Farm production can influence the household diet if they consume what they produce, after controlling for income and relative food prices. The study aims at understating the association between farm production diversity and dietary diversity in the Women of the Reproductive Age (WRA) group (15-49 years) and the role of the market. A cross-sectional survey on agriculture and food consumption patterns of a representative sample of 4100 households was conducted in rural Bihar and Odisha, in 2014-15. It uses three measures of production diversity: Farm Production Diversity, Crop Species Count and Animal Species Count. The dietary diversity was assessed by using quantitative 24 hours recall and the Minimum dietary diversity for women (MDD-W) was calculated using 10 food groups (FAO, 2021). Logistic regressions were applied to study the association between variables. The dietary diversity varied across different agroclimatic zones and socioeconomic groups. Purchased foods were found to have a greater impact on dietary diversity than home produced. The median Dietary Diversity (DD) score was 5, with a mean score of 4.75. Only 58% of women achieved minimum dietary diversity and are more likely to have adequate micronutrient intakes. The farm production diversity was associated with higher dietary diversity and higher odds of achieving MDD-W (OR: 1.16). After adjusting for sociodemographic and seasonality, the association becomes weak. Further cereals production did not increase the odds of attaining MDD-W whereas milk production did (OR: 1.44). Access to common property resources positively affected DD only among poor households. The findings suggest that while crop species count and milk was associated positively with dietary diversity, animal species count was negatively associated. Access to the market played a positive role. Factors like the education level of households, wealth index and land are positively associated with DD. There exist significant differences across different social groups as well. The proposed abstract broadly relates to SDGs 2 and 3. Since mothers' health is a necessary precondition for a healthy child therefore this study can relate to SDG 3.2: By 2030, end preventable deaths of new borns and children under 5 years of age. The proposed contribution is relevant to the conference theme of "Assessing the 5Ps of SDGs" as it specifically addresses the "people" aspect of the SDGs by promoting healthy and sustainable food choices by assessing the role of agriculture and purchased food in improving dietary diversity. Additionally, the study also touches upon the "prosperity" aspect of the SDGs by examining the impact of market orientation on the relationship between farming practices and household welfare, the study sheds light on how sustainable agriculture can promote economic prosperity.

TRACK 6

Cities and regions

6a. Urban and regional transformations

Sustainability and circularity in regions – an approach from a regional study in Poland

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PROF. JOANNA KULCZYCKA

Abstract

The monitoring of a country's performance towards achieving UN SDGs or the progress towards a circular economy (CE) is gaining in popularity, thanks to more detailed policies and databases. In EU Member States there are eco-innovation and CE action plans with a number of existing indicators that can help measure performance in several areas that directly, or indirectly contribute to a sustainable development. However, there is not a widely acceptable single measurement index for the CE. Nowadays, many papers and reports are devoted to the assessment and ranking environmental, circular and eco-innovation performance on the country level, i.e.:

- Environmental Performance Index– an international ranking system that measures the environmental health and sustainability of countries, ranks 180 countries on 40 performance indicators across 11 issue categories covering climate change, environmental health and ecosystem vitality.
- Ecopreneur ranking – based on EU Circular Economy Monitoring Framework of the European Commission presented 28 country profiles using a combination of available quantitative data and qualitative information to highlight specific indicators covering various aspects of the CE.
- The Circularity Gap Reporting Initiative – with the individual country reports and including the Circularity Gap Metric for countries provides a deeper understanding of the resource reality of specific countries, in terms of extraction, processing, production, consumption and end-of-use management.
- The EU Eco-innovation Scoreboard gathers data on eco-innovation performance across the EU and beyond, thus helping to monitor and evaluate progress made since 2010. The Eco-Innovation Index measures the environmental innovation performance of EU Member States, on the basis of the 12 indicators included in the measurement framework.[5]

In European Union, most of the Member States have already adopted and implemented CE strategies and launched CE plans. In Poland, the transition towards a CE and implementation of sustainable development goals and eco-innovative activities are in most of the policies and strategies on the central and regional levels. Poland's circularity (10,2%) is higher than the world's average (8,6%), thanks to relatively strong in municipal waste management, but significantly below the EU average in the case of eco-innovation, which is an important enabling factor for the CE. The Polish economy is still among the least resource- and energy-efficient in the EU. To identify the changes and potential in Polish regions the Millennium Eco-index was developed for the first time in 2022. The aim of analysing the potential of eco-innovation should not be to rank regions, but to analyse the process over years and to evaluate the strengths and weaknesses of regions in eco-innovations. It is also aimed at the

tightening of cooperation towards eco-innovation. It was shown that regions with large industrial and academic centres are leaders in both innovation and eco-innovation, but there are noticeable differences in the distribution of accents towards eco-innovation. In the paper, the potential for further transition of regions towards CE using Millennium Eco-index, assessment of regional policy strategy and environmental claims of selected the largest companies in the regions (based on information from EMAS and ESG reports) will be presented.

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Transformation labs for a regenerative built environment: Reflections on design, cross-regional learning, and the role of experimentation

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FRANZISKA SCHREIBER

Abstract

Research on sustainability transitions suggests that addressing grand societal challenges such as climate change or inequality requires system innovation, i.e. a deep transformative changes of socio-technical configurations that shape sectors (Geels, 2002). One of the sectors that is key to achieving sustainable (if not regenerative) development is the built environment (Organschi et al., 2022), which contributes to about 39% of global CO₂ emissions (Hertwich, 2021), while failing to meet the basic needs of billions of urban dwellers who continue to lack dignified and safe dwelling spaces (Schreiber et al., 2022). Given that an additional 2.5 billion people are expected to live in cities by 2050 (UN DESA, 2019) - especially in Asia and sub-Saharan Africa - which will create a huge demand for new housing and infrastructure, the current environmentally devastating and socially inequitable building practices and dynamics must change to rescue the 2030 Agenda for Sustainable Development and the Paris Agreement from failing (Pradhan, 2023). How to initiate and enable systemic change in the built environment is a subject of growing concern. One promising approach that has received growing attention to foster sustainability transitions is experimentation in the form of labs such as urban living labs (von Wirth et al., 2019) real-world labs (Schäpke et al., 2018) or city labs (Scholl & Kemp, 2016). However, compared to other sectors, the built environment remains underrepresented in lab initiatives and knowledge on their impact on system change is limited (Kern & Haupt, 2021). Most labs to date have been conducted in the global North, particularly in European cities and regions, and a better understanding is needed of their potential role and applicability in contexts of the global South (Pareira et al., 2020), where the majority of future construction activities will take place, sustainability challenges already converge, and innovative solutions are being developed. In addition, the strong focus on single case studies has so far made comparisons and generalizations between transition trajectories in different spatial and sectoral contexts (e.g., built environment) difficult (Heilberg et al., 2022), and too little attention has been paid to cross-regional learning related to system innovation. The ReBuilt project seeks to address these gaps by exploring transformation pathways towards a regenerative, circular, and inclusive built environment through Transformation Labs (T-Labs) in four different city-regions in Bhutan, Indonesia, South Africa and Germany. The aim of the T-Labs is to initiate and facilitate multi-actor innovation processes that bring change agents together for a deep engagement about systemic change in the built environment through knowledge co-production, visioning, experimentation, and mutual learning. The paper will share reflections on the cross-regional learning approach and the design of the T-Lab 2.0 format that has been developed based on the lessons learned from the first wave of T-Labs (The Pathways Network, 2018) and insights from other lab approaches that specifically address the built environment. The transformation of the built environment especially relates to 11.1, 11.3, 13.2, 15.1, 15.2, 17.9, 17.16.

An Assessment Framework for Mainstreaming Nature-based Solutions: The Case of Taipei City

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Abstract

In recent years, nature-based solutions (NBS) have been widely promoted as an effective and innovative way to address the challenges of climate change and to accelerate positive urban transformations. While small-scale and community-driven NBS experiments have been tested and demonstrated in many places, there remain knowledge gaps concerning the integration of NBS strategies into mainstream urban policies and practices, and the role of city authorities in upscaling NBS in different local and regional contexts. For this purpose, researchers have called for the evaluation and monitoring of NBS performances to inform evidence-based approaches and actions, and the examination of local governance structure that facilitates NBS adoption and institutionalization. This paper responds to the two-fold research priorities by developing a place-based NBS assessment framework according to the four-stage policy cycle of NBS implementation, and by utilizing this assessment framework to gain a deeper understanding of how different NBS benefits are weighted and/or prioritized in Taipei City. In Taipei, the Department of Public Works is responsible for road construction, flood control, drainage system, and green space management, and now it becomes the leading administration that executes green and blue infrastructure for urban resilience and sustainable transformations. Based on literature review and in-depth qualitative interviews with key actors, our assessment framework is designed to explore how government employees perceived the social, ecological, institutional, and governance dimensions in the different phases of NBS projects. Our research finding shows that engineering safety is a top priority in the phase of policy creation, which must be taken into consideration along with climate change adaptation and ecological restoration. In the phase of planning and design, close partnerships with urban planners and landscape architects, who act as intermediaries between city government and citizen groups, is a key factor. Volunteers and community members, who are willing to participate in monitoring and environmental education, are crucial to the third stage of maintenance and management. Lastly, positive feedback and supports from civil society may strengthen NBS mainstreaming, but the lack of actionable guidelines and regulations may be an obstacle. Our research confirms that there are nuanced differences among government departments and their pathways of mainstreaming NBS, which may help to inform actionable policy recommendations.

Mapping urban sustainability politics in the global city-region: Tensions between social and environmental sustainability and economic development in the Beijing-Tianjin-Hebei region, China

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Abstract

It is widely understood that the emergence of global city-regions represents a formidable challenge to those nation-states interested in fostering governance and planning for urban and regional sustainability (Scott, 2001; Vogel et al. 2010). If the literature on city-regionalism often triumphs the functional and administrative coherence of such city-regions (Glaeser, 2012), this is achieved principally from the standpoint of the ability of urban and regional governments to balance economic competitiveness with environmental sustainability (While et al. 2004). In comparison, less attention has been paid to a corresponding urban politics of social sustainability around the management of distributional inequalities (e.g. housing and income disparities) often found within such city-regions (Jonas, 2012).

Focusing on Beijing-Tianjin-Hebei (BTH) global city-region in China, this paper investigates how uneven geographies of territorial distribution within the BTH maps onto an urban politics of sustainability that exposes the predicament of small towns and cities within the BTH. Drawing on an analysis of policy documents and newspaper articles, the paper examines the recent efforts towards constructing an economically integrated and environmentally sustainable BTH global city-region. It shows how the Chinese national state has encouraged greater regional collaboration around integrated city-regional integrated development and regional environmental sustainability as part of its wider economic internationalisation agenda (Li and Jonas, 2023). In doing so, however, the competitiveness and environmental benefits of sustainable city-regionalism have largely been internalised by the larger (global) cities (in this case, Beijing and Tianjin) at the expense of the surrounding smaller cities and towns. At the same time, smaller cities and towns must accommodate negative spillover effects in terms of population, housing, income and employment disparities generated by the growth of their larger city-regional neighbours.

The paper argues that future research and policy informing sustainable city-regions should pay closer attention to the urban politics of operating within, and often in tension with, the geopolitical orchestration of global city-regions by nation states. The interests of small towns and cities are frequently marginalised in global city-region sustainability policy and discourse; yet such places often bear the costs of the uneven social and territorial distributional effects of city-regional development. In the case of BTH, the under-provision of housing combined with a shortage of land supply has raised the costs of housing and made living in Beijing unaffordable for many, especially recent migrants.

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Construction Material Consumption for Housing and Regional Population Dynamics – Prospective Case Studies

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Abstract

Housing and construction have a significant impact on the consumption of resources of any society. At the same time, on all policy levels strategy documents towards sustainability highlight the importance of improvements in resource efficiency. For the built environment this is most prominently represented by the SDGs 12 (Responsible Consumption and Production) and 11 (Sustainable Cities and Communities). Against this background, this contribution presents results of research on the impact of population dynamics and changing user preferences on the use of resources within the housing sector with a focus on construction materials. The material intensity of different types of housing (in particular detached homes vs. apartment buildings) are quantified for different housing scenarios. For comparative purposes two medium sized German case study municipalities were selected to represent different contexts of stable vs. declining population dynamics. Among other, the results indicate that the stock of construction materials incorporated within the housing sector will under trend conditions further increase despite a stable or even falling population. With respect to alternative housing scenarios, our results show, that in the case of a stable or slightly growing population a sufficiency oriented shift of housing supply from single-family (detached) homes towards a higher share of multi-unit residential buildings can contribute to a more efficient use of materials (stock of construction materials per capita). However, depending on the context, such a shift towards more sufficient individual housing models might nevertheless result in an overall increase of material intensity on the level of the municipality. This is due to potentially increasing vacancy rates in the single family home segment with the respective embodied materials being wasted. An interesting scenario under the context of a declining population is the conversion of a potentially growing number of vacant single-family homes into smaller multi-unit/multi-purpose residential buildings. Such a conversion can help to avoid vacancy and keep otherwise wasted resources in use. This scenario could gain even more practical relevance if future detached housing designs would intrinsically consider the option of a later division into smaller residential units – apartments – e.g. once the children moved out or elderly households wish to downsize their living space and likewise maintenance burden. At the same time and although policy-makers start to question the appropriateness of the resource intensive detached housing model under sustainability considerations, most recently the demand for suburban detached homes is high in many places despite of high prices, among other due to the Covid Pandemic and supported by low real estate mortgage interest rates. Against this background and the presented results all involved actors are well advised to set the course with foresight as increasingly difficult vacancy situations can be expected on the longer term at least in less dynamic regions eventually resulting in a huge amount of resources being wasted. A development, which impacts equally on the planet (depletion of resources), people (compromising living environments) and prosperity (devaluation of real estate property) dimensions.

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Initial discussion of vacant industrial space valid reuse's key factors --- Take Ten Drum cultural and creative park as an example

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STUDENT YU-PING HSU

Abstract

In the context of global industrial transformation, urban areas have shifted from expansion to shrinkage. Industrial areas in and around cities have started to lose their effectiveness and become vacant, which leads to environmental pollution and safety issues. However, traditional urban planning theory was created in response to urban population growth and industrial expansion, and it is worth exploring whether it can cope with the dilemma of contemporary urban shrinkage. Through field investigation and analysis in Taiwan, there are still many industrial vacant spaces that are still ineffectively reused, not only failing to attract people, but also causing the spaces become idle again. Finally, through the analysis and semi-structured interviews with key figures in the development of Ten Drum, that traditional planning theories are no longer able to cope with the rapidly changing social environment. But in Huashan and Ten Drum case study, vacant spaces are gradually being revitalized through the temporary urbanism approach. This paper compares the development experiences of Huashan and Ten Drum. Through semi-structured interviews Experts also clearly pointed out that temporary use can effectively activate industrial idle spaces before officially used, temporary use is one of the most important tools in many urban regeneration strategies.

Developing Climate Change Adaptation Plans under Planning Deficit: The Case of Guandu, Taipei

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Abstract

Urban planning is a process that intervenes in the allocation of spatial resources. However, as wicked problems occur, it often leads to the absence or suspension of planning, which creates the situation of planning deficit. Under such circumstances, how can climate change adaptation plans be carried out? How can they shape strategies for action in the cleavage of political power, and break the deadlock brought about by government inaction? Furthermore, how can the process be theorized through the related concepts of climate governance? This study takes Guandu Plain in Taipei City as a case study, investigating the process of intervention and reshaping of local vision plans through climate adaptation project by the collaboration of university and the NGOs. Guandu Plain is the biggest remaining agricultural area in Taipei. Many development-oriented landowners have put pressure on city government agencies, demanding the conversion of farmland into construction land. Small-scaled farmers with passion for agriculture, on the other hand, are often limited by the production mode and marginalized political voice, being unable to effectively lead in local development. The city government has environmentalist ideals but lacks planning strategies and financial mechanisms to carry out innovative urban agricultural development plan. In the second half of 2022, through collaboration between the National Taiwan University team and Beitou Community College, local communities and farmers were connected, and a community adaptation plan began to take shape. This research examines the process which net-zero city framework was used to guide multiple stakeholders in collaborative planning. It analyzes the characteristics of the process, particularly the role of communicative technologies based on carbon footprint. It aims to evaluate the potential of net-zero policy framework on reshaping the wicked problem and fill the planning deficit. This study is related to “SDG11-Make cities and human settlements inclusive, safe, resilient and sustainable (11.3, 11.4, 11.7 & 11.a)”, “SDG13-Take urgent action to combat climate change and its impacts (13.2)”, “SDG15-Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (15.2, 15.a & 15.b)”, “SDG16-Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels (16.6 & 16.7)”, and “SDG17-Strengthen the means of implementation and revitalize the global partnership for sustainable development (17.14 & 17.18)”. Moreover, this study will contribute ISDRS 2023 through its local practice experience in reshaping the net-zero policy framework on the low-carbon city transformation planning deficit.

Keywords: Net-zero city, climate adaptation plan, citizen science, planning deficit, climate governance, urban transformation

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Breaking down barriers: A decision-support platform for facilitating community-based climate change adaptation.

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SUBHASHREE NATH

Abstract

In the absence of sufficient government support, a transformative community-based adaptation approach that fosters empowerment and agency through the reframing of decision context and decision-making processes offers a pathway for under-resourced communities to adapt to the uncertainties of climate change. For such an approach to be successful, it is crucial to overcome structural barriers related to power relations and societal norms that restrict inclusive and representative participation in adaptation decision-making. Therefore, an online decision-support platform (DSP) is proposed that can break down these barriers by intervening at two deep leverage points. First, by changing the structure of information flow, the DSP acts as a repository of information relevant to the local context of climate adaptation, translated into actionable knowledge through scenario development and simulation of the effects of adaptation measures on their immediate surroundings. Second, it provides a platform for self-organization, interaction with other actors and stakeholders, and reflection on the information provided, thereby providing the power to change the system structure. Third, it takes the decision-making process online, accessible via smartphones and computers. It is argued that a mobile application will increase participation, especially from women, allowing them to participate from their own homes and reducing inhibitions created by socio-cultural norms and consequent power relations. To mobilize these, a list of features for an enabling DSP is derived based on inputs from key informants from five stakeholder groups: community members, researchers and practitioners of community-based adaptation, NGOs working with communities, government officials, and private investors. Based on these, the architecture of the DSP is proposed. Finally, a proof-of-concept is illustrated through the design of the DSP for facilitating community-based adaptation to heat and drought in an informal settlement in Delhi, India. Embedded in the socio-technical context of the community, the proposed DSP facilitates decision-making through a matrix of adaptation measures assessed on criteria like increase in thermal comfort, reduction in surface runoff, cost-benefit analysis, and municipal departments and/or external agencies to be contacted for funding and implementation. Each community member can vote on relevant measures from a portfolio, based on their relevance for short to long-term adaptation, therefore enabling and facilitating participatory, transparent, and accountable climate adaptation decision-making.

Urban Innovation Spaces for Co-creating Sustainability Solutions: The transformation of Shanzhuku Landfill from Wastescape to Eco Energy Park

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Abstract

This study analyzes the changes in Taipei City's Nangang Shanzhuku landfill over the past thirty years from the perspective of sociotechnical and social-ecological systems. We examine the characteristics of the landfill's change over time, explore the factors that influence its transition, and discuss its significance for urban transformation.

Currently, Taipei City has three landfills: Neihu, Fudekeng, and Shanzhuku, with Shanzhuku being the latest established. The landfill was inaugurated in June 1994 and covers an area of 65 hectares. Following Taipei City's zero landfill policy implemented in 2010, part of the site has been used as a waste dismantling and recycling operation, and the other part has changed into the "Shanshuilui (which means mountain water green) Ecological Park", containing multifunctional open spaces such as wetlands, an environmental education area, and a children's playground. In the early days, the landfill site generated methane power, and in recent years, a large number of solar panels have been installed, and experiments on small-scale hydropower generation have been conducted to transform it into a green energy park.

In the mid-1980s, when the Taipei City government announced the plan to turn the Shanzhuku area into a landfill, it faced opposition from community residents and scholars from the nearby Academia Sinica (the highest science research institute in Taiwan), who questioned its potential ecological impact to the area. However, over the past thirty years, through the collaboration and negotiation among multi-stakeholders, the area has successfully established mechanisms for environmental supervision, local feedback, and policy innovation. Therefore, the functions and meanings of the place have been changed accordingly. The transformation process of the landfill site demonstrates the characteristics of incremental and collaborative planning, which is unique in the construction of this type of infrastructure in Asian cities. Therefore, it provides a new perspective for grassroots innovation in sustainability research.

This article mainly responds to the following SDGs:

SDG 9 - 'Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation'; SDG 11 - 'Make cities and human settlements inclusive, safe, resilient and sustainable'.

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Opportunities and Challenges in Transforming into a Locally-oriented Industry-based Tourist Village: A Case Study of Sering Village, Pelalawan, Riau Province, Indonesia

Opportunities and Challenges in Transforming into a Locally-oriented Industry-based Tourist Village: A Case Study of Sering Village, Pelalawan, Riau Province, Indonesia

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OPPORTUNITIES AND CHALLENGES IN TRANSFORMING INTO A LOCALLY-ORIENTED INDUSTRY-BASED TOURIST VILLAGE: A CASE STUDY OF SERING VILLAGE, PELALAWAN, RIAU PROVINCE, INDONESIA
MUHAMMAD SYAFI'I



DINA SYAFLITA

Abstract

The effort to accelerate a region to become a tourist destination has implications for various aspects in the area such as economics, social, culture, education, and so on. If the developed tourist area carries the concept of local wisdom-oriented industry, it can also have an impact on the preservation of nature. The purpose of this study is to identify opportunities and challenges for Sering Village in Pelalawan Regency to transform into a local wisdom-oriented industrial tourism village. This research is a qualitative study with a descriptive design. The data collection methods used were direct observation, interviews, and documentation. Data analysis was carried out through data collection, data reduction, data display, and conclusion stages. The results of this study indicate that Sering Village is located between the Pangkalan Kerinci Bridge, Instana Sayap (Pelalawan Kingdom Heritage), and the industrial center. The location of this village can be accessed by land and river routes. The village still holds strong to the local wisdom of its people. This information presents an opportunity for Sering Village to transform into a local wisdom-oriented industrial tourism village. The challenges in realizing this effort are the low human resources of the community, the lack of awareness among outsiders about the potential of this village, and sanitation. These opportunities and challenges can be used by the government in developing the Sering Village area into a local wisdom-oriented industrial tourism region

TRACK 6

Cities and regions

6b. Urban and regional resilience

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Influence of location and human behaviour on the reduction potential for summer heat stress in buildings in moderate climates using the example of Germany

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DR.-ING. HABIL. REGINE ORTLEPP

Abstract

We are increasingly facing the consequences of climate change, which is also affecting our cities. For example, rising temperatures increase urban heat island effects. This affects people's outdoor comfort, but also indoor comfort in buildings, especially on the upper floors. Excessively high room temperatures lead to various health problems, which is why it is necessary to adapt residential buildings. In order to be able to plan suitable adaptation measures, it is important to know the main factors influencing the indoor climate, such as location, type of construction or user behaviour. In addition to the location in the urban space, the affectedness of a dwelling depends on the location, geometry and orientation of the interior room within the building. For example, rooms on upper floors are the hottest, and rooms facing east and west are the most affected. However, the extent to which buildings are affected also depends on their location in Germany, as local climates differ into so-called summer climate regions. In addition, the urban heat island effect, measured between the city centre and the outskirts of the city, causes a temperature difference of several degrees Celsius. The annual exceedance of the indoor temperature, measured in overtemperature degree hours, serves as an indicator for the assessment of the affectedness. These are times with a temperature exceeding a defined indoor temperature. The unit of measurement is Kelvin hours [Kh]. Simulations show a strong increase in the calculated overtemperature degree hours when the urban heat island effect is taken into account. Assuming a future scenario compared to the status quo, we also see a climate change effect in the calculation results that can no longer be neglected. In moderate climates, heat can be reduced without air-conditioning systems through clever user behaviour. First, we need to reduce heat input during the day. The windows should not be permanently open during the day; instead, fans are suitable for a draught to reduce the perceived temperature. In order to provide fresh air, we should ventilate every 2 hours even when the outside temperature is high. This does not carry in much heat, because the air has a low heat capacity and the walls and ceilings "buffer" the coolness through their storage capacity. Secondly, at night, we have to ventilate the heat out again. For this, opening the windows for several hours is effective, because the solid ceilings and walls only release the heat slowly. In our simulations, we have found out that the ventilation behaviour has an enormous influence on the heat load in the flat. Depending on the location of the room, there were differences in the calculated overtemperature degree hours of up to a factor of 10 or 30. In summary, we can say that in moderate climates, where night cooling of buildings is possible, in addition to structural adaptation measures, behavioural measures in particular are essential for reducing the heat load in the building in order to be able to make optimum use of the effect of the first-mentioned.

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Proposal of smart-sustainable-resilient cities model based on the urban ecology principles

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PROF. JANAINA MACKE

Abstract

Climate change and growing urbanization led governments to adopt increasingly complex initiatives to provide their citizens with a good quality of life, prosperity, and social and environmental well-being. Among these initiatives, improvements in infrastructure and urban services in cities and environmental concerns are the most visible examples of this new reality in several metropolitan areas worldwide. Despite the recognition of the importance of the role of cities, the concepts of smart cities and sustainable cities are still not clearly defined. Discussions about the smart city concept began in the 2000s and its focus has changed. According to academics and urban planners, the smart city concept favors technological products and solutions for building a smart city for end users. Initially, the concern was centered on technologies and infrastructures, that is, challenging, technical, and structural aspects of the concept of smart cities were considered. This focus has already been expanded to include soft aspects, such as the social learning necessary for the adoption of technologies and the impact of these technologies on the different dimensions of citizens' lives.

On the other hand, the definition of sustainable cities has as its main challenge the adoption of sustainable policies that mitigate negative impacts and can become regeneration strategies, in addition to affecting natural ecosystems. These policies must also be simple, integrated, cost-effective, and efficient. They must impact environmental sustainability goals and economic and social issues, such as citizens' quality of life, fostering social capital, and a sense of community. This article aims to build an integrative definition of the concepts of smart city and sustainable city, to enhance both perspectives and their adoption by cities. For a proposal for a smart-sustainable city, it is necessary to start from the concept of the city as a living organism and start studying the ecology of natural systems for the creation of resilient urban systems. A resilient city can adapt and rebuild itself in the face of crises, whether natural (environmental disasters) or social (economic crises, for example). For this reason, this connection between smart and sustainable concepts can only be made with the inclusion of a resilient approach.

The study proposes four dimensions for building a smart-sustainable-resilient city: social, structural, cognitive, and political. These dimensions are grounded in theoretical and empirical studies and in cases of policies and programs already implemented in cities worldwide. The unfolding of these dimensions results in eight principles based on the vital principles of ecology applied to economic systems (CAPRA, 2002) and on the Hanover principles for cities (MCDONOUGH; BRAUNGART, 1992). As a result, the proposed model provides key elements for social researchers, urban planners, and public managers in constructing smart-sustainable-resilient cities and hopes to contribute to academia and public managers.

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RESILIENCY OF 11 EARTHQUAKE-AFFECTED CITIES AND THE REGION, TÜRKİYE, FEBRUARY, 2023

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PROF.DR İLKNUR ÖNER

Abstract

This paper will be focusing on the resiliency of urban and rural studies in general and then focuses on comparative observations of regional resilience and lessons from applied experiences of 11 cities in the aftermath of the 6th February earthquakes in Türkiye.

Resilience is a complex issue related to knowledge, interconnected shocks, and stresses. This issue is connected to different phases of disasters. These phases have been gradually discussed historically. Rio, Yokohama, Hyogo, and Istanbul declarations are some of the important improvements. International, national, and local measurements and applications are important. However, sudden occurring issues bring forwards our mistakes and learning process immediately aftermath of the events.

This study focuses on the analysis of preliminary observations and scrutinization of written texts and visual documents related to 11 cities. These cities are namely, Adana, Adıyaman, Diyarbakır, Gaziantep, Hatay, Kahramanmaraş, Kilis, Malatya, Şanlıurfa, Osmaniye and Elazığ.

The findings reveal that theoretically issued measurements have handicaps in applications in rural-urban divide. Resilience Alliance, synergies, and increasing solidarities cover mishaps of the system's ability to withstand change. Self-organization of NGOs and institutional applications have become important for the complex and adaptive systems. At this moment transformation of unsustainable and unjust systems and behaviors are under discussion.

These findings will be scrutinized in the frame of all of the major 17 Sustainable Development Goals.

Keywords: Türkiye, 6th of February 2023 earthquakes, 11 most affected cities, resiliency, SDGs

Fostering resilience through strategies within small scale rural community in transition: Insights from India

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Abstract

Strengthening global resilience is an essential aspect of sustainable development and it accomplishes the UN's SDG 11.a. According to World Bank it implies that supporting economic, social and environmental links between urban, peri-urban and rural areas is the key element for fostering resilience as a holistic system. This research outlines resilience not only as the ability to withstand shocks but also learning to take the new avenues and/ risks at the intersection of capacity building, empowerment, and building networks. Researchers have been telling many a times that rapid rate of urbanization causes several damages in built environment, climate, and biodiversity as a global multidimensional process. These phenomena result in accelerated rate of interconnected crises and shocks globally, regionally and inter/intra community level which eventually stressing human health and well-being. In this context, well-integrated national-regional-rural (macro-meso-micro level) development planning represents the pragmatism towards building self-reliance community. Planning, strategies and policies acknowledge the population dynamics and ensures equitable, holistic territorial development – which are the two fundamental pillars of community's resilience. Hence, there is a need to examine the process of co-shaping between community's capacity building and efficacy of incumbent strategies and policies at the grassroot level. Present research tries to establish a methodological framework to learn the synergies and trade-offs within the community in transition based on two important queries: i) what are the guiding factors that support communities to build adaptive capacity, enhance community values and identity? ii) how far the central strategies and plans are conducive to strengthen the network among stakeholders' participation at the intersection of community development and community agency? To understand these questions, a small rural community from India, with a rich cultural heritage in transition (in terms of socio-cultural-technical) has been analyzed. The aspirations and perceptions regarding sustainable, resilient development of the selected rural community have also been taken into account. Based on previous investigations, ethnographic research, and semi-structured interviews this paper acknowledges that there exists a latent complementarity in strategies and community's capacity building and adoptability. The methodological framework, proposed by this paper provides a scaffolding for researchers, community management, social innovators, and policy makers to evaluate the co-shaping processes between the community's perceptions/aspirations, adaptations, and the existing policies. It also offers reach learning opportunities on what works well and doesn't to attain self-sustenance within a rural community during the co-shaping process.

Keywords: resilience, strategies and policies, methodological framework, rural community

Synergies and trade-offs for Nature-based Solutions in fostering urban water resilience: Social perceptions and preferences

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Abstract

Nature-based Solutions (NbS) are currently promoted globally as measures for environmental risks and societal challenges through economic benefits. While the lens of resilience is fitting to assess the environmental risks it is critiqued to have lesser normative social inclusion in comparison to institutional processes. Hence, it becomes imperative to explore the bridging points between NbS and its role in fostering urban resilience in socio-spatial perspective. Taking two major urban water risks of drought and flooding (pluvial) the paper explores the social, environmental and economic aspects of NbS taking into account people's perception and their preferences. First, state-of-the-art literature review was conducted to derive applicable NbS strategies along with their social, environmental and economic benefits; secondly, urban water risks were identified at various hotspots where a household survey was undertaken to understand the perception of people towards these risks and their preferences for various types of NbS as identified in the literature review. The variety of NbS included large-scale/ city-level (e.g. urban parks, wetlands, water squares), medium-scale/ neighbourhood-level (e.g. street trees, rain gardens, bio-swales etc) as well as small-scale/ building-level (e.g. rainwater harvesting, green roofs, green walls) interventions. The collected data was then empirically analysed to assess and establish the link between the spatial and social assessments. From the results it was observed that higher income groups chose NbS with higher environmental benefits while poor-income groups had greater preferences for the NbS with economic benefits. The social benefits ranked almost same in all the groups of poor-income, lower-income, middle-income and higher-income groups. However, from the results it is also evident that most of NbS selected tended to be small-scale interventions for identified water risks. Thus, it can be observed that small-scale NbS had better synergies with social perceptions as compared to large-scale solutions. Hence, spatial scales play more significant role in normative inclusion of social dimension in transformative resilience by creating the opportunity in co-production of NbS.

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“Spirit of locality” Socio-spatial characteristics of human settlements, cultural heritage, identity & territorial development

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Abstract

We argue that socio-economic and strategic-security reasons motivated the first permanent settlers, who later became the first city “designers” and builders. One of the most important reasons to create the first permanent settlements were safety and security, in their complex meaning: to be equipped with such socio-spatial characteristics and functions, which provide a protected, safe, convenient – but at the same time quite artificial - life, as compared to the ancestors’ natural living conditions prone to various environmental and other kinds of threats and hazards for millennia. The second reason of appearance of the permanent settlements and later of cities – and city civilizations all around the world - , is a cultural-economic one: the discovery of agriculture itself, which made possible the surplus food production, accumulation of wealth and transferring it to cultural-religious built - made - artifacts, which needed a safe place and could be admired. The first settled rural communities with food surplus wanted to have a place for continuous community life as well as a permanent centre for their ceremonies, which can attract even other people from around, becoming a pilgrimage centre, concentrating and accumulating goods – by voluntary gifts and tributes at the beginning - , myths, ceremonies and power. From our research perspective these later are very important terms, belonging to the intangible – even spiritual – dimension of socio-cultural characteristics of local settlements, – be urban or rural – belonging to the question of local identity and the spirit of the place. We suppose that besides the spatial-natural capital, cultural heritage, especially the intangible cultural capital of local settlements – e.g. in the city centres – have long-lasting effect, providing those socio-cultural characteristics and assets which strengthen their community members’ belonging, attachment and identification with their place of living as well as “cement” their society, determining factors both in regional/urban resilience and in territorial development program/rehabilitation projects.

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Ecological Dimensions on Adaptive Reuse in Urban Heritage Conservation. Case Study: Kampung Cina Bengkulu, Indonesia

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IZAZAYA BINTA



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Abstract

Historic buildings already have an inherent carbon footprint from the building process in the past. These carbon footprints can be utilized to be more effective than demolition and new construction, which can increase carbon emissions. Adaptive reuse in historic buildings is considered the most environmentally friendly conservation strategy and can respond to climate change. Adaptive reuse has the potential to extend the useful life of buildings while providing a variety of functions that can provide significant economic, social, and cultural benefits to communities. Therefore, adaptive reuse can increase the resilience of cultural heritage buildings and their communities. Adaptive reuse will be able to contribute to protecting urban cultural heritage (SDGs 11.4) as a whole by considering dimensions other than economic, social, and cultural. This study aims to identify the various difficulties and opportunities associated with adaptive reuse as a climate change strategy. This article is a qualitative descriptive study that analyzes academic literature regarding the difficulties and opportunities in adaptive reuse. Next is the discussion of data from the Kampung Cina Bengkulu field to determine the main dimensions that need to be considered in adaptive reuse. In the case study of Kampung Cina Bengkulu in Indonesia, it was revealed that the preservation of urban cultural heritage areas is related to humans, buildings, and the environment. Conservation through adaptive reuse requires awareness of local culture and the relationship between humans, buildings, and the environment, known as the ecological dimension. Adaptive reuse in Kampung Cina Bengkulu can be a strategy to promote environmental harmony to achieve a green and sustainable urban heritage by considering the ecological dimension. The ecological dimension is important in proving that adaptive reuse is the greenest conservation effort.

Keywords: Adaptive reuse, urban heritage, climate adaptation, sustainable development goals, Kampung Cina Bengkulu

'Conservation is Development' in Gombak-Hulu Langat Geopark: Sustaining nature and culture heritage for posterity

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Abstract

Conserving heritage is significant because it reflects and builds local community identities, assists in promoting sustainability and provides sense of place. In Malaysia, there are conservation sites that are recognised under UNESCO World Heritage Sites, Man and Biosphere Reserves, and Global Geoparks. The interactions between humans and their natural environment underlie cultural heritage with aesthetic, unique and outstanding universal values (OUVs). As such, there has to be conscious efforts made to protect and conserve these heritage resources, so as to ensure their sustainability for generations to come. The link between natural and cultural heritage is intricate and intertwined, often transcends the object or subject of conservation. Thus, taking into account the need to balance multiple needs and demands of development is crucial, particularly the risks or threats that may lead to its loss or destruction. Gombak-Hulu Langat Geopark, the eight national geopark in November 2022, is situated in rapid urban setting of Selangor. The challenge to ensure sustainability amidst all planned development is imperative as the state of Selangor continues to face rising cases of environmental issues, related to water resources, natural hazards and anthropogenic disturbance. Hence, 'conservation is development' in Gombak-Hulu Langat Geopark was highlighted in reigniting the aspiration of development that meets presents need without compromising future generations. Geopark is an innovative tool that strives for sustainability in integrated heritage conservation, lifelong education and local socio-economic development. In this paper, we will discuss process and justification involved to develop urban geopark in Gombak-Hulu Langat districts in Selangor. As a national geopark, the next step is getting ready to apply to be a member of the UNESCO Global Geopark accreditation. Shifting the mindset and raising awareness of all stakeholders to embracing 'conservation is development' is an on-going initiative in getting local community and relevant authorities support and action. The success of a Gombak-Hulu Langat Geopark not only will make this city a better place to live, but also add on to examples in the world where conservation and human development is no longer an either or proposition, and that there's still hope.

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Toward Sustainability of Ports

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Abstract

Introduction

Ports are critical points in complex multi-modal transport networks and are also vital to all types of supply chains we depend upon. Sound and sustainable design and management practices at ports have a direct impact on economic growth, on response efforts during crises, and on protection of the environment. Proactive measures taken, with support from communities affected, ensures that a long view is taken, with an eye on strategies that are acceptable to the environment, that seek sustainable development on par with economic development, and that are transparent and become shared knowledge – all of this, while still allowing for innovation in technology. In order to ensure that sustainability considerations are central at our ports, there are several issues that need be accounted for. They include: (1) the quality of the environment including in the supporting terrain, the air, the water and noise; (2) considerations for climate change including mitigation and adaptation strategies; (3) safeguarding of ecosystems; (4) diversified stakeholder engagement; (5) fair, innovative and proactive port authority and corporate governance; (5) energy efficiency; and (6) materials and waste management. Even though ports are fundamentally viewed as sites buzzing with economic activity, when environmental protection is complementary in consideration, along with social engagement and justice, a shift toward sustainability becomes easier to realize. Climate change, transitions toward clean energy alternatives, job creation, technology innovations can serve as catalysts in this light. Port authorities and all its stakeholders must manage operations and future growth in plans for how the physical infrastructure harmoniously interacts with nature, and with the city. In such a sustainable port paradigm and with fair and safe environmental permitting and regulation, long-term goals and advances can deliver benefits toward the success and viability of the port itself and they can also serve to attract new market activity and industry innovation. In the context of the various issues, common challenges are identified and strategies to address the issues are offered for selected example ports. Next, the impact to stakeholders is discussed. Sustainable response options are presented to deal with the issue. Resilience will feature prominently in proposed strategies. Overall, the framework demonstrated allows one to incorporate conscious sustainability practices. This framework can simultaneously take into consideration issues affecting the environment, economy, social engagement, management, energy use and choices, climate change, innovation, and planning.

TRACK 6

Cities and regions

6c. The power of art and culture in sustainable cities and communities

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Analyzing the cultural heritage conservation to attain cultural sustainability: Insights from India

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MS NITHYA AYYASWAMY



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Abstract

Cultural heritage is a community's intangible and tangible heritage assets that have been passed through the generations. It encourages the identification, protection, and preservation of cultural (that embraces built and living heritage) and natural heritage and protects exceptional human knowledge. Thus, the preservation of cultural heritage with diverse values is an essential step towards supporting and contributing to sustainable development goals (SDG 11.4) Agenda 2030. SDG (11.4) not only promotes the strengthening of the efforts to protect and safeguard the world's built and natural heritage but also the living heritage sites. Also, the 'Heritage at risk' report of the International Council on Monuments and Sites (ICOMOS 2020) found that 65% of the world's built heritage was neglected and in poor condition – causing them to lose their cultural, artistic, and economic value over time. Research says the participation of the local community in the protection of cultural heritage is exceptionally essential for the cognizance of progress toward sustainable development. It is observed that living heritage-based conservation promotes the idea of long-term conservation and only becomes successful when the community participates and gains the consequential benefits. Furthermore, this helps to preserve the cultural sustainability of living heritage sites and provides resilience towards present climate change. Thus, a culturally sustainable ecosystem can be attained by consolidating ecological consciousness. However, the existing conservation guidelines don't take into account the value of these sites, as are more focused on tourism and economic benefits. This results in the eviction of communities from the heritage sites and leads to the disintegration of the built and living heritage ecosystem. Against this context, the objective of the present paper is how built and living heritage can be conserved together for attaining cultural sustainability that embraces the intersectionality of social, economic, and environmental aspects of any community. This paper tries to explore the vitality of living heritage within a built heritage, based on ethnographic primary research. Through the practices of sketching and photographic documentation, this research further tries to establish ecological consciousness among the stakeholders within the ecosystem as well as the researchers. From 19th century India, Chettinadu's palatial houses (center of Tamil Nadu, in the southern part of India) are examples of such a rich cultural ecosystem. These houses were built by the merchants in a harmonious blend of Southeast Asian and European styles, giving the city its distinctive built heritage, cultural values, and nature-based urban planning. This research tries to design a framework by analyzing the two important aspects, viz. architectural (built) and living heritage of the

Chettinadu region through the lens of cultural sustainability in transition. The application of this framework is not restricted to Global South but also be helpful across world heritages to guide researchers, conservationists, and inter and intra-sectoral stakeholders to put forward, how to address the issues associated with cultural heritage conservation.

Keywords: Cultural heritage, cultural sustainability, ecological consciousness, heritage conservation, eviction of communities

A transition for sustainability: Through the craft of Kaudi.

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Abstract

Indian traditional arts and crafts have sustainability embedded in them through their use of natural materials, local production, preservation of skills and knowledge, support for local economies and communities, and incorporation of reuse and recycling principles. This encompassing virtue of Indian arts and crafts leads to a new perspective and revival of a sustainable lifestyle. The paper identifies one such craft form in the grassroots of North Karnataka - Kaudi, a traditional textile craft. It focuses on proposing a design intervention approached through a framework of transitions that will impact not only the revival of the craft but the impact of a traditional craft on sustainability, waste management, environment, and making.

“Kaudi” means blanket or quilt in Kannada. Thus, Kaudi is the art of quilt-making involves stitching pieces of old clothes and rags to create intricate and colorful patterns. The women artists consider making the quilt with new fabric a sin. Thus, it indicates the revival of the craft as a natural direction for sustainable transitions.

The brightly colored fabric scraps and the thread tying them together tell the tales of their creators and users, frequently preserving intimate, cross-generational narratives in form and texture. Kaudi is the voice of women for whom quilting is a way of life, an art form that allows them to express their aspirations, creativity, and culture.

In contemporary times, the craft has traversed a new language of aesthetics and materiality that shifts its focus from sustainability towards commercialization. The contemporary approaches to the kaudi revival move away from the original kaudi aesthetics and their grassroots voices, resulting in global aesthetics devoid of the distinctive identity of these communities. Furthermore, the paper proposes a framework that will impact the traditional craft through sustainability in conserving fabric waste and reducing fashion waste from landfills.

The fashion industry is one of the most polluting industries in the world and is responsible for a significant amount of waste. The industry produces approximately 92 million tons of waste each year, much of which ends up in landfills. An intervention through Kaudi could have the potential in reducing fabric waste from the fashion industry. It can be made from clothing waste, diverting these materials

from landfill and creating new value for them. It will aid in upcycling overproduction; design for longevity and prove as a sustainable model for women and the environment.

Through participatory design processes and in-depth narrative interviews of Kaudi practitioners, many of the concerns, challenges, as well as original visions and desires of this community, were studied. The paper proposes an intervention to reduce fabric waste from the fashion industry through the production of meaningful art by the Kaudi community. We propose an intervention grounded in the values of the craft and the community. Through a participatory process with the community, we suggest an intervention grounded in the beliefs and values of this traditional form rooted in sustainability towards adapting their craft to design sustainable transitions with and through the fashion industry waste.

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Creative Placemaking Key Contribution on Thematic District: An Exploratory Review

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Abstract

The process of creative placemaking is fostered by inventive individuals, including makers and initiators. It begins when people simultaneously create and experience space. In this study, creative placemaking intersects with various trajectories, including economic growth, art and cultural experiences, participatory stakeholder, and management with a similar orientation. This suggests that creativity reinforcement made the key contributions of creative placemaking less important because the creative placemaking process affected different people's interests. Despite the fact that a large number of studies have demonstrated the process of creative placemaking, little is known about its capacity to elaborate an expansive mechanism of subject, location, and individual creativity. This paper's goal is to explain how creative placemaking contributes to sustainable development in a specific or themed setting, like a historical or protected site. This study will focus on creative placemaking strategies as an important part of significant socio-spatial concept to a specific geography, including their distinct natural features. A systematic literature review was conducted using the PRISMA 2020 instrument as the guideline to examine research on creative placemaking from around the world and throughout the year from the three largest database platforms, namely Scopus, WOS and Science Direct. The searching process undergoes identification, screening, and eligibility steps for selected articles, referred to an established review guideline for an SLR procedure. During the review process, five thematical studies has been discovered under creative placemaking: (1) community well-being; (2) revenue generate; (3) cross-sector inclusivity; (4) art and creative endeavour; and (5) special subject setting.

Keywords: creative placemaking; key contribution; thematic district; systematic literature review

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ARCHITECTURAL UNIQUENESS AND ITS BENEFITS TO THE RESIDENT IN THE TRADISIONAL SETTLEMENT

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Abstract

In general, architecture encompasses more than simply stone and wood structures; it also represents the local culture and traditions, particularly in traditional settlements. Buildings with distinctive architecture and design can be regarded as national emblems and cultural heritage. In traditional settlements, the architectural structure of buildings constructed with timber parts is dwindling and is regarded as desolate by the community. So, it's important to celebrate and make use of the fact that some settlements have managed to preserve at least some of their original, traditional architecture. This is due to the perception that the preservation of traditional architecture is intrinsically linked to community-wide conservation measures. Considering these benefits, the purpose of this study is to examine the uniqueness of architecture based on different typologies and the advantages acquired by residents of traditional settlements that have preserved the bulk of their architecture. A traditional village known as Kampung Pulau Sekati (KPS) in Kuala Terengganu has been chosen as a research area due to its age and physical characteristics, which have been conserved despite the threat of urbanisation in this study. Furthermore, the Trengganu State Structure Plan 2050 has nominated this village as a heritage village. This qualitative study employs observation and interviews with 24 people of KPS who have lived there for at least 30 years. Observation, meantime, is conducted using a structured survey based on a check-list separated into building type, building environment, demarcation, accessibility, natural components, and social and cultural area. Seven architectural typologies have been recognised in KPS, including residential dwellings, mosques, wooden bridges, community halls, jetties, gazebo, and retail outlets. In the context of residential houses, this study identifies five categories of uniqueness, namely the use of wood as a building material, construction of structures by the occupants, the variety of spatial functions, the presence of mature plants, and the ease of access to food and water sources. According to the survey, the usage of eco-friendly building materials such as wood creates a serene environment in the home. In summary, this distinctiveness has offered different social, cultural, economic, and environmental benefits to the community. In fact, each type of this architecture is discovered to give occupants with a variety of advantages. In the

context of residential houses, this study revealed five categories of uniqueness, namely the use of wood as a building material, the construction of structures by the occupants, the variety of spatial functions, the presence of mature plants, and the ease of access to food and water sources. According to the survey, the usage of eco-friendly building materials such as wood creates a serene environment in the home. In conclusion, this distinctiveness has offered different social, cultural, economic, and environmental benefits to the inhabitants. In addition, the distinctiveness of architecture in traditional settlements can establish a distinct identity for the village and a desire to conserve residential architecture for future generations. This study demonstrates that architectural preservation programmes encourage the participation of neighbouring villagers and have a favourable effect on social sustainability and local tourism.

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Design of digital entrepreneurial mode of Chinese Traditional Fragrance culture —— Technological innovation and cultural sustainable development

Design of digital entrepreneurial mode of Chinese Traditional Fragrance culture —— Technological innovation and cultural sustainable development 冰清 徐, Design of digital entrepreneurial mode of Chinese Traditional Fragrance culture —— Technological innovation and cultural sustainable development 琳琳 谢

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DESIGN OF DIGITAL ENTREPRENEURIAL MODE OF CHINESE TRADITIONAL FRAGRANCE CULTURE —— TECHNOLOGICAL INNOVATION AND CULTURAL SUSTAINABLE DEVELOPMENT 冰清 徐



DESIGN OF DIGITAL ENTREPRENEURIAL MODE OF CHINESE TRADITIONAL FRAGRANCE CULTURE —— TECHNOLOGICAL INNOVATION AND CULTURAL SUSTAINABLE DEVELOPMENT 琳琳 谢

Abstract

With the concept of cultural sustainability proposed by people and the progress of science and technology in recent years, cultural creative industry has become a new driving force of regional economy. Digital technology brings multiple opportunities for traditional cultural innovation. Digital creative industry is a new form of business produced by the integration of new digital technology and cultural creative industry. The inheritance and development of fragrance culture has a long history in China. Under the tuyen of olfactory economy, the world fragrance field has ushered in a big explosion in the past two years. Fragrance has gradually integrated into the daily life of the new generation of consumers and become an important medium to express personal style. In today's social media communication environment, the pursuit of life style by the young generation of consumers and the life mode assisted by digital technology have increased people's new demand for the function and value dissemination of fragrance products. Using modern digital technology means to electronize and materialize fragrance, and deconstructing digital fragrance with Chinese cultural concepts, the participation of digital tools will subvert the way of creating fragrance products. This comprehensive innovative interaction design, which combines traditional fragrance culture and modern digital technology, is of innovative value to the study of cultural sustainability communication. This paper aims to comprehensively explore the function and value of fragrance culture in the current digital media environment, dig the sustainable cultural core of fragrance traditional heritage, and carry out in-depth discussion on the digital entrepreneurial mode of fragrance culture, in order to promote the sustainable development of traditional culture represented by fragrance.

Key words: digital technology, culture, sustainable fragrance, culture, innovation and development

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Research on Digital Design Strategy of Macau historic District based on VR

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Abstract

The development of VR technology provides more opportunities for the dissemination of architectural cultural heritage. As a cultural heritage of the integration of Chinese and Western cultures for more than 400 years, the historic City of Macao is centered on the Old City of Macao, with more than 20 historical buildings connected, which are densely distributed in strips, showing the historical context of Macao. Three-dimensional scanner equipment is used to scan the texture (such as walls, floors, patterns and colors) of Macao's historic buildings, classify, analyze and identify relevant data, extract the main texture features of Macao's historic blocks, transform them into digital situations through three-dimensional modeling, and take VR as the carrier to propose a digital narrative strategy and feasibility centered on tourists' perspective. This study will provide cross-innovation ideas of design for the development of digital experience of architectural cultural heritage.

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Implementation of Mapping as a Historic Town Conservation Effort in Chukai Town, Kemaman

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Abstract

Mapping is an early step in the conservation efforts of the historic town. It serves to identify the details of the local heritage in full. Without good mapping data, the survival and effectiveness of conservation work will be affected. In contrast to large-sized historical town, mapping data on small-sized historic town is often incomplete to the detriment of conservation development. To the detriment of the heritage and morphological image of the town. Thus, this study was carried out to look at the development of mapping and its implications for conservation work in small-sized historical towns. This study has chosen Chukai Town as a study site as it has an important historical background as one of the administrative locations of the colonial parties in Terengganu a long time ago. Analysis of map documents that have been carried out and semi-structured interviews on stakeholders are methodologies applied to achieve the results of the study. This study refers to the implementation process of the Historic Urban Landscape approach as a guideline analyzing conservation actions that have been carried out. As a result, there was a delirium in the implementation of the mapping resulting in the neglect of the existing heritage by the local authorities themselves. However, there is no denying that significant conservation efforts have been undertaken by this party. This study concludes that mapping should be a mainstay in the implementation of urban conservation as emphasized through the Historic Urban Landscape approach.

Keywords: Mapping, historic town, historic building, Historic Urban Landscape.

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Environmental interactions as the primary determinant of the viability of museums in historic site

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Abstract

This study begins with the notion that the difficulty of maintaining the sustainability and functionality of local museums can be circumvented by enhancing the quality of the museum environment. However, in the context of this study, the historical element, old city landmarks, and natural environment, as well as their impact on the attention of tourists and the sociocultural community, will be analysed in more depth so that the role of the museum can be strengthened. Even though many research on the sustainability of museums have been undertaken, however these studies have primarily focused on management and marketing. Insufficient and scant research has been conducted on the topic of empowering museums located on historic site. As a preliminary step, a study of four local museums located in heritage sites was done to determine whether their implementation is consistent with the strategy of museums that have successfully been preserved, notably Borobudur and Angkor Wat. To achieve this aim, two main objectives were developed: to identify how museums in heritage sites are empowered from the perspective of the of spatial planning and facilities that support the role of the museum; and ii) to examine the issues and obstacles faced by four local heritage-site museums. Using document analysis techniques and articles on the strategies and sustainability of museums in Borobudur and Angkor Wat, this study highlighted three primary strategies that might potentially be implemented to the four analysed local museums. The study's findings indicate that the three primary strategies are closely tied to complete infrastructure facilities, preservation of the original physical landscape character, and involvement of the local community. In accordance with the third core listed by the National Cultural Policy (DAKEN); cultural heritage must be preserved through preservation and conservation efforts to ensure the high aesthetic value of national treasures, it is anticipated that this study will serve as a reference for addressing the problem of maintaining the physical sustainability of museums as one of important cultural hub.

Keywords: museum in heritage sites, heritage sites, environmental relations, role and function of museums



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Integrating Sustainability into Art and Design Education: Curriculum Development

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Abstract

Sustainability is an important factor in art education. Several artists, in line with the UN Agenda 2030, have embraced the idea of art for sustainability in different ways to reflect the protection of natural landscapes, the consequences of industrialization and the growth of cities, and the use of resources. However, these topics are rarely taught to art students in higher education, considering belonging to science subjects. On the other hand, to change art students' attitudes toward sustainability, it is essential that social conscience and responsibility emerge from both knowledge and values. In this context, the ERASMUS+ ARDES project - Short Learning Programme (SLP) for ART and Dsign and Sustainability with special focus on environment and climate change (CC) (2022-2024)- has been set up through a strategic partnership among 5 European partners: MyDocumenta (Spain), European University Cyprus (Cyprus), Universidade Aberta (Portugal), EINA (Spain) and the associated partner LABA Valencia (Spain). The project intends to provide open educational resources for art students by integrating knowledge and values associated with sustainability and CC through art activities, design techniques, and digital solutions. This paper aims to present the initial results of the curriculum

development of this SLP through formal learning modules and extracurricular community work concerning sustainability and CC.

The SLP, made of 156 academic hours plus an extracurricular community activity, consists of 3 main modules: i) Module 1- Art, Design, Sustainability, and CC within historical and contemporary contexts; aiming to introduce the concepts of sustainability, the link with art and design, and sustainability assessment methods in art and design context; ii) Module 2- Art and Design for Communicating Sustainability and CC; aiming to use art and design as strategic tools for utilization of visual communication, thus helping students to compile design projects concerning sustainability and CC; and iii) Module 3- Digital tools for the interactive engagement of audiences with Art and Design; aiming to introduce the concepts and application of big data and the principles of audience engagement.

Two learning plans were developed: 1) a "Module Plan" containing the modules objectives, competencies, essential questions, resources, and assessment methods, and 2) a "Lesson Plan" covering the details of the educational materials and activities in each lesson. Various learning materials were developed, including text, slides, videos, and engaging tools. Also, diverse individual/collaborative activities were designed, classified from project-based activities, reflection on existing art productions, designing artwork, working with European and local databases, and live performance, all in the concept of sustainability and CC.

In the next step (Oct 2023), the SLP will be piloted in partner Universities, targeting postgraduate students in art studies. The effectiveness of the training will be later assessed through a questionnaire. It is expected that by the end of the training, the students will be able to recognize how sustainability and CC integrate into the concepts of art and design, to later enhance their motivation, opportunity, and ability for sustainable actions in society, thus contribute to SDG 13, target 13.3 and SDG4, target 4.7.

Keywords: Sustainability, Climate Change, Art, Design.

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Murals and the peace process in Northern Ireland: evidence from the City of Derry.

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DR ILONA HUNEK

Abstract

Building sustainable peace in a society divided by violent conflict for many years is complex. Peace theorist Johan Galtung brought forward the concept of positive peace (1969) – a relationship between parties characterised by harmony and coexistence despite differences (in contrast to negative peace, which is merely an absence of violence). According to Galtung, culture and art is a vital element of both creating violence and peace. In this study, I examine the murals in the City of Derry, Northern Ireland, from 2001 to 2022. Since the Good Friday agreement in 1998, the country has been considered in transition to peace. Observing the transition process made me ask the question: how do the murals reflect (and contribute to) the peace process? Murals are uniquely positioned in Northern Ireland's culture and the sectarian conflict. They are a particular art form: created organically by muralists in working-class areas on both sides of the conflict, they are shaping the urban space. Painting murals was a political act, and the murals themselves were political statements, showing the aspirations of the two communities. Murals served many roles: segregating space, displaying resistance, breaking boundaries, voicing opposition, and commemorating the dead. They also became a tourist attraction providing a 'simple insight' into a conflict for the outsiders (Jarman, 1998). During the peace process, the state art establishment made some efforts (and provided funding) to replace the most violent and offensive murals with pieces of public wall art. This resulted in the creation of new and different murals in Northern Irish cities; however, these efforts brought mixed feelings – as they are seen as a form of watering down the difference between communities and silencing the political voice (Rolston, 2012). The data used for this study includes photographic evidence of murals in the City of Derry taken between 2001 and 2022 (published and unpublished – taken by the author), interviews with the artists painting the murals (published and taken by the author in 2022) and interviews with community members. Murals are studied from three perspectives: the content, the context (murals as an element of urban space) and the process of creating, involving three key actors: the artist, the recipient (community) and the sponsor (who commissioned the mural). The evidence shows the changes in the content: less violent, less political, and more neutral images, but it also indicates that merely changing the content is not enough to build sustainable peace, as there is a perception of silencing of part of the community voice. At the same time, there is evidence of the positive impact of new murals on the community – especially in engaging young people in the act of creation. This study contributes to the conference theme by examining the role of wall art in the process of building peace. It contributes to SDG 16 "Peace, justice and strong institutions", section 16.1 "Reduce any form of violence".

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Artful Expressions of Urban Communities

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Abstract

In the urban space there are several different types of artful expressions such as public art or street art. At times, these expressions are closely aligned with urban planning and visions expressions of contemporary expressions of actors responsible for or involved with the construction of urban infrastructure, housing etc. But there are also artful expressions that can rather be seen as responses to urban constructions and contemporary society. Street art, or even Artivism, are examples of such expressions. In this paper, we explore artful expressions in the urban community Flemingsberg and Fittja; two suburban areas in the outskirts of Stockholm. These places were built in the late 1960's and 1970's as the urban region of Stockholm expanded due to demographic growth. They were built in a time characterized by 'social engineering' and a modern rationality. Today they are rather characterized by places with socio economic challenges, segregation, high crime rates etc, but they are also subjects for great investments due to ambitions to develop the region to a new regional city center. We compare these expressions with artivism present in the Muranów district of Warsaw, Poland, which has been constructed in the early 1950s and is an area known for its community spirit, as well as abandoned industrial areas of Sheffield, UK, famous for its' strong cooperative artistic engagement. Empirically, we map different types of artful expressions in these three places in suburban Stockholm, urban Warsaw and Sheffield. We will then analyse different types of artful expressions and relate those to contemporary debate on urban community and societal development. We will map through digital exploration, walks and interviews with experts in the field (including some artists). The aim is to map and reflect, but also to design next step in a more thorough study and analysis. Findings are related to different types of public art as well as street art such as graffiti, knitgraffiti, street music or artivism initiatives. This abstract relates to a number of SDGs and we lean on UNESCO's thematic indicators for culture in the 2030 agenda; culture and participation (SDG 9, 10, 11, 16), knowledge and skills (SDG 4, 8, 9, 12, 13), prosperity and livelihoods (8, 10, 11), environment and resilience (2, 6, 9, 11, 12, 13, 14, 15, 16). Discussions will also be related to the conference theme "Half-way through Agenda 2030: Assessing the 5Ps of SDGs (people, planet, prosperity, peace and partnership)" through a structured reflection on that current status and transformation direction.

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Balancing The Development and Heritage Using the Heritage Impact Assessment: Case Study Of Melaka Coast

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YASMIN AMIRAH



AMIR HUSAINI



ASSOCIATE PROFESSOR DR. ASYAARI MUHAMAD

Abstract

Under the principle of sustainable development, in meeting the needs of the present, the ability of future generations to meet their own needs must never be compromised. Hence, balancing between urban development and conservation, be it for natural or cultural heritage, is a must and should always be observed. Criticism towards development and urbanization, especially in the coastal areas, is expected to take place, especially after the strategic development planning of Melakaku Maju Jaya 2035 (PSMJ 2035) was introduced by the State Government of Melaka in the plan to boost the state's economy and further increase its competitiveness in attracting foreign investors. The coastal area development involved approximately 10,117 hectares of shore in the Central Melaka district through the Melaka-Waterfront Economic Zone (M-WEZ) project. One of the main issues in the Melaka development project M-WEZ is the existence of the Malaysian National Heritage Department's Protected Maritime Zone within the state's coastal and maritime area which makes any further modern development in the state's water area becoming more sensitive, and a lot of aspects and considerations need to be looked and studied at through many agencies. Through UNESCO's 17 Sustainable Development Goals (17 SDGs) number 8 which promotes sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all, this article is going to depict how Heritage Impact Assessment (HIA) which was formed through the ICOMOS guidelines can be used as a tool for balancing both heritage and development aspects in Melaka coastal region. While the economy in Melaka can be preserved and sustained through coastal tourism, heritage management can be further upheld and enhanced. HIA can also provide recommendations and mitigations for the developers that need to take place in any area that is being developed in order to maintain well-balanced heritage management with the development.

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Image coopetition of artists and cultural organizations in achieving sustainable development goals

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Abstract

Activity in the field of culture has not only an artistic dimension, but also often affects social development. Instrumental treatment of culture is part of the scope of public management and is conducive to persuade societies to adopt specific attitudes and behaviors required to achieve objectives consistent with the public interest. Organizations operating in the culture area are beginning to adapt their activities to them, while trying to maintain their artistic goals. Entities from the cultural sector often build their image and brand based on the personal branding of the artists associated with them. This build a coherent image of the artist and the organization. It has been embedded in a specific system of values, striving to achieve socially significant goals, and the artist himself, at a conscious or subconscious level, participates in the implementation of goals set by both organizations and sustainable development strategies. The topic results from the research carried out by the authors on the management of artistic career. For its needs, a component concerning cooperation between cultural organizations and artists was separated from them, limited to the Polish market. In the name of the public interest, image coopetition between artists and organizations is an important tool in building pro-social attitudes, even at the cost of losing artistic freedom. The fundamental question was: does the public interest create the phenomenon of coopetition of artist's personal branding and cultural organization? In order to obtain a greater saturation of the data and obtain their better representativeness, qualitative research was carried out. To collect the research material, triangulation of data obtained from various sources was used - collected in the years 2019-2023, in different locations (large and smaller towns in Poland), among various interlocutors (artists and cultural managers). The research techniques included: a) secondary qualitative data analysis - 20 interviews with artists and representatives of cultural organizations; b) analysis of 10 semi-structured interviews with persons representing cultural organizations and artists (purposive selection); c) analysis of the content of press materials (based on keywords) - deepening knowledge on the topics discussed during the interviews. Activities undertaken in culture areas can support communities in tackling global challenges with the use of tools and techniques. Artists represent a potential that is not always noticed. Mechanisms for implementing sustainable development strategies in public management generate both ideas for a career - from the artist's perspective, as well as activities on the part of the organization. The potential resulting from the symbiosis in the approach to understanding socially important issues builds new perspectives for cooperation, inclusive solutions and practices aimed at building resilience among the global society. Coopetition should be perceived as an innovative way of activating artists and public institutions, motivating them to take risks in important matters. In the global dimension, it is a forum for cooperation between organizations. In relation to individuals, an attempt to find a balance between the constant pressure of the environment and the artist's personal beliefs, choices between ego and omnes.

TRACK 7

Social-economic aspects of sustainability

7a. Global inequality and poverty

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“We need to try harder one more time”: challenges in the transition of work of waste pickers from a dumping ground to a cooperative

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MISS DIJANA HELENA DINIZ COSTA VIEIRA



MISTER ARMINDO DOS SANTOS DE SOUSA TEODÓSIO

Abstract

The destruction of the environment to ensure the culture of exacerbated consumption in contemporary societies has led public and private actors to create initiatives to mitigate the impacts caused by man on nature. Among these actions is the closure of open-air dumping grounds. It is a measure that is beneficial to the environment and that directly affects the waste pickers who work in this space. Faced with the vulnerability of this group and the importance of keeping a close eye on them, this work aimed to analyze the challenges of the transition from the work of waste pickers in a dumping ground to a cooperative organization in the Esmeraldas, a municipality of Minas Gerais State in Brazil. We adopted in our research the action-research through not-extractivist and participative methodologies such as social cartography and in-depth semi-structured interviews in a case study with a holistic approach. The data collection methods used were document analysis, participant observation, and participatory mapping. As for the results, there were numerous challenges that the waste-pickers faced in their transition to the shed, such as, for example, the lack of knowledge about how to manage an association, the absence of a selective collection program in the municipality, the resistance of the collectors to work as a team and government barriers to the cooperative run as an organization in the chain of urban waste residuals system. To overcome these challenges, especially those related to technical and administrative issues, the association had the support of external actors such as social movements, civil society organizations, and some local business and religious leaders. This research contributed to the field of Sustainability as it reported the scenario experienced by Brazilian waste pickers after the closure of the dumping ground, detailing how this group has done to strengthen the association and guarantee their source of income; this scenario will be repeated in several Brazilian municipalities, given that there are still a large number of open dumps in operation in the country. Our research tries to bring new highlights over the inequality dimensions of Sustainability issues in countries marked by later development and incomplete access to citizenship as Brazil.

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AN INVESTIGATION OF THE IMPACT OF HOUSEHOLD UPLIFTING PROGRAMME ON HOUSEHOLD CONSUMPTION AND ASSET ACQUISITION IN OYO STATE, NIGERIA: IMPLICATIONS ON SDGs 1

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DR TOLULOPE GBADAMOSI



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Abstract

Previous development intervention programmes have not succeeded due to poor implementation. However, the present government, in its efforts to reduce poverty among the vulnerable groups, recently introduced the Household Uplifting Programme (HUP). Previous studies have addressed needs assessment and the mode of implementation of the programme. While it seems little have been done to determine if the objectives of the programme are being achieved, Therefore, this study was designed to assess if the HUP is improving household consumption and expanding asset acquisition among its beneficiaries in Oyo State, Nigeria, or not. Two research questions were raised and answered in this study. Two validated instruments, the household's consumption pattern questionnaire ($r = 0.76$) and the household asset acquisition checklist ($r = 0.83$), were used to collect the data. The data collected was analysed using descriptive statistics of frequency counts and percentages. The findings of the study revealed that the introduction of HUP has significantly improved household consumption among the beneficiaries. The result also showed that, among the beneficiaries of the programme, there was a clear-cut difference between their household asset acquisition before and during the programme. It is therefore concluded that HUP is a potent means of eliminating poverty among households. It is therefore recommended that if there will be an end to poverty in all its forms everywhere, HUP should be extended to all indigent people in Oyo State and should be legislative backing among others.

Environmental Injustice: An Unsustainable Development

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Abstract

Thirty six years ago, the Brundtland Commission published a groundbreaking report entitled *Our Common Future*. It has not only influenced but has framed much of the environmental discourse around the world since. One of the many fruits of that work is the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs). The agenda and the goals reflect international cooperation and agreements around how to meet the needs of the present without compromising the ability of future generations to meet their own needs—a concise definition of sustainable development provided by the commission. The report and the subsequent goals share a core principle of sustainability—social equity. *Our Common Future* made clear why equity is essential for sustainability, “A world in which poverty and inequity are endemic will always be prone to ecological and other crises.” The historic and contemporary examples of this are legion. Despite that fact, in the United States and around the globe, environmental organizations and institutions pay far too little attention to social inequities in the environmental context. The creation of sustainable—and therefore just—societies is inconsistent with the environmental injustices that marginalized and disadvantaged social groups experience. Through an examination of the inequitable vulnerabilities to climate based harms, pollution exposure, and natural resource extraction in the United States and around the world, this paper argues that reaching the SDGs requires special attention to understanding environmental injustices and the best legal mechanisms to eliminate them. The paper proposes the use of Social Dominance Theory as a valuable tool for examining the persistence of group based inequality and the creation of effective legal mechanisms to end it. As a theory of relations between and among groups, Social Dominance Theory combines social analysis with examinations of human psychology. It stands out among theories examining social inequality because of its success in explaining the processes that produce and maintain prejudice and discrimination at multiple levels. When considered in its totality, the theory insightfully describes how societal myths and ideologies reflected in individual attitudes and beliefs undergird institutional practices that perpetuate group based inequalities across diverse countries, cultures, and contexts. This paper applies the theory as a lens for understanding the prevalence and persistence of environmental injustices in the United States, primarily, but with broader implications for nations across the globe. Successfully reaching global SDG goals for 2030 requires that we better understand the persistence of group based inequality and adjust our approaches accordingly. Today, the threats and harms of climate change, pollution, and exposure to emerging contaminants in useful products fall unequally across and within nations. Ethnicity, religion, class, race, clan, geographic region, and other identity constructs shape individuals' experiences and relationships to environmental benefits and harms. This paper connects group identity with access to a clean and safe environment and the role that law can play in ensuring that all people can fulfil their potential in dignity and equality in a healthy environment.

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Will mankind achieve a just and equitable sharing of benefits of the high seas? Connecting the SDGs to the new "UN Treaty of the high seas."

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DR STELLA EMERY SANTANA



PEDRO PULINO MELATTE

Abstract

On March 4th, 2023, the new "Treaty of the high seas" was approved by delegates from almost 200 countries after nearly 20 years of UN-facilitated talks about marine biodiversity of areas beyond national jurisdictions. The main goal of this new multilateral environmental agreement is to ensure the conservation and sustainable use of marine biological diversity. The agreement still needs to be signed and ratified by countries, but it already represents a significant achievement. Since 1982, when the United Nations Convention on the Law of the Sea (UNCLOS) was adopted, there has been the prediction to conserve and develop management tools for the living resources of the "High Seas." Additionally, the same agreement refers to the "Area" as "the seabed and ocean floor and subsoil beyond the limits of national jurisdiction." As a general term, the same agreement defines the concept of marine pollution. Regarding humanity and the seas, the preamble of UNCLOS affirms that through this convention, there will be the realization of a "just and equitable international economic order," considering the "needs of mankind as a whole." In the same direction, it affirms that the "Area" and its resources are considered the common heritage of mankind and, therefore, "the exploration and exploitation of which shall be carried out for the benefit of mankind as a whole, irrespective of the geographical location of States." The question here is how humankind would share this benefit. In practical ways, how can an agreement establish rules that will have just and equitable meanings for all humanity? These questions have crossed a scholar in this field before and during the negotiations of the first "Treaty of the high seas." The agreement of this treaty comes after the COP 15 UN Biodiversity summit that occurred in Montreal, Canada, at the end of 2022. In this meeting, the global goal is to protect 30% of the world's oceans by 2030. This paper aims to analyze the new "Treaty of the High Seas" and its promises to contribute to the "realization of a just and equitable international economic order," taking into consideration the "interests and needs of humankind as a whole and, in particular, the special interests and needs of developing States, whether coastal or landlocked." To analyze the paper's primary goal, it will have an environmental justice approach. This analysis will be guided by SDG 1, no poverty; SDG 9, industry, innovation, and infrastructure; SDG 10, reduced inequalities; SDG 13, climate action and; SDG 14, life below water. In the end, the text of the treaty will provide if the goals described in the previous paragraph were reached or not and if the SDGs listed may or may not be connected to achieving the sharing of benefits for mankind.

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The Toll of Disproportionate Impact: Africatown's Fight for Environmental Equality

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KENADI MITCHELL

Abstract

This paper discusses environmental justice concerns in Africatown, Alabama, with a focus on transportation development disparities and the United Nations' Sustainable Development Goal 11. In particular, this paper examines how the Bay Bridge Alternative, chosen by the Alabama Department of Transportation (ALDOT), will disproportionately affect Africatown, which holds the only toll-free alternative for hazardous trucks. Africatown's bridge is currently the only path for hazardous trucks and will subject the community to more pollution, while the rest of Mobile, Alabama will benefit from the \$125 million dollar Infrastructure for Rebuilding America (INFRA) discretionary grant. The community was founded by descendants of the last known illegal shipment of slaves to the US and was once home to a thriving Black-owned business district. However, the construction of an interstate highway in the 1960s divided the community and surrounded the remaining homes with factories and chemical plants, leading to Africatown being home to three of the five largest industrial polluters in Mobile County.

This paper analyzes Africatown in relation to the 14th Amendment to the US Constitution and the Title VI Civil Rights Act to discuss the current transportation and urban planning trends in the United States. The paper examines how group identity relates to environmental experiences and what injustices can be linked to land use, zoning practices, and political climate. It highlights the overall inequalities of environmental experiences based on poverty and race.

This paper relies on both primary and secondary sources to examine these inequities from a legal standpoint. Primary sources include the text of the 14th Amendment and Title VI of the Civil Rights Act, as well as relevant case law and legal scholarship. Secondary sources include historical accounts, academic literature, and policy reports that contextualize the legal frameworks in their historical and contemporary contexts.

This paper concludes that ALDOT most likely did not violate the Equal Protection clause of the Fourteenth Amendment because Africatown is unlikely to meet the heavy burden of evidence required to find that ALDOT invidiously discriminated against African American people. However, when examined in conjunction with the constitutional claim, ALDOT's facially neutral action of requiring Africatown to be the only toll-free bridge alternative for hazardous trucks likely does violate Title VI as the action creates a disproportionate, adverse, and disparate impact on African Americans.

This proposal directly addresses SDG-11, specifically SDG Target 11.2, by examining the deep disparities in the distribution of the benefits of pollution control and the environmental decision-making process. The paper underscores the importance of fostering peaceful partnerships between community members and local and federal officials to address such disparities to promote sustainable development. The research on the deeply intertwined relationship between racial inequities and transport development systems in urban planning is highly relevant to the "Halfway through Agenda 2030" Conference, as Africatown serves as a prime example of how transport decisions can significantly impact people's well-being and health.

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Environmental Justice in Houston; How Houston has failed the Manchester/Harrisburg neighborhood

Environmental Justice in Houston Wesley Davis

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Abstract

Environmental justice is an important topic because it is a fundamental human right, and every person should be able to live in a safe environment. Without Environmental justice, certain groups of people would become the victims of the ambition of others. Low-income and minority communities have a long history of being disproportionately burdened with many environmental hazards. Specific characteristics of a community determine whether those communities will house these environmental hazards, and the two most significant reasons are race and income. Manchester/Harrisburg is a community located in Houston's East Side, disproportionately burdened with pollution-creating sources. As Houston has become known as the "Energy Capital of the World," it has forgotten this neighborhood in its efforts to grow the Houston Ship Channel. With a population of 90% Hispanic and 40% below the poverty rate, this community sits in one of the most air-polluted areas in America. This paper explores a more fitting definition of environmental justice that sufficiently understands its ties to the civil rights movement and explains why this community is an environmental justice Community. To answer this question, I compare this community's environmental harms to other communities in Houston, where the population is less diverse and more affluent. The data used in the paper comes from the EPA, TCEQ, and other local groups operating in the Houston area. After examining the data, I concluded that Harrisburg/Manchester is an environmental justice community. After determining that the community is indeed an environmental justice community, I propose possible solutions that the community can take to help alleviate the environmental risks the community faces. I look at ways the community can get involved, including participation in permitting hearings and connecting with their representatives. I look at ways the community can get involved in the enforcement of air pollution regulations that the facilities must abide by. Finally, I analyzed the possible state, local, and federal legal remedies. From an Environmental justice perspective, this paper emphasizes the need for both state and federal environmental bodies to consider the cumulative impacts of exposure to various environmental harms that have direct and indirect effects on the environment that affect health and well-being.

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Building Social Capital: An Effective Method for Combatting Discriminatory Zoning and Environmental Degradation in Urban Minority Communities

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AUTUMN HOOKER

Abstract

The United Nations Sustainable Development Goals provide a helpful framework for achieving healthy, sustainable communities globally, with specific applicability to the United States urban, low-income, and minority communities. Urban communities experience disproportionate levels of environmental degradation as a result of discriminatory zoning practices. These communities often shoulder vast amounts of toxic waste pollution which is detrimental to both the environment and the health of the community. These communities must garner social capital to reverse decades of environmental degradation that has resulted in severe poor community health. There is no one size fits all way to build social capital, it will depend on the unique needs of each community.

Social capital refers to the relationships among community members that confers benefits to the community, usually in the form of a public good. These social connections are garnered through civic engagement, trust, and shared social norms. The development of social capital will likely facilitate other forms of community development, such as, economic, human, and political capital. Social capital often connects people and resources resulting in community problem-solving. In fact, communities with high degrees of social capital are able to overcome barriers of social injustice, like racism, poverty, and environmental injustices, which enhance productive community development

Using Washington, D.C. as a case study, this paper will analyze Community Benefit Agreements and Land Trusts as two of the many ways to create social, political, and economic capital. The Southwest region of D.C. has experienced two major renovation projects. The first, "Urban Renewal," spanned from the 1950s-1970s. It initially brought economic success. The second "Revitalization" project, now known as "The Wharf," holds a similar nostalgia. Although the project was successful in creating new, luxury apartment buildings, townhomes, and condominiums, it [HAE1] drove low-income and minority residents out of their long-standing, established communities. The Renewal project was unsuccessful at creating and establishing a lasting community, resulting in another costly round of revitalization. Without building social capital through these mechanisms, society will continue to build unsustainable communities that threaten the health of future generations.

TRACK 7

Social-economic aspects of sustainability

*7b. The future of employment and good
work*

Emerging indications of employment in the circular economy: a synthesis of European case studies

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Abstract

The potential to create new types of jobs is widely assumed to follow from the greening of the economy by means such as the circular economy (CE). Indeed, a green economy was heralded by the UN Rio+20 Summit as the means to achieve sustainable development through the provision of environmentally and socially sustainable economic growth. Although there have been efforts to quantify the number of jobs potentially arising specifically from a CE, the nature, distribution and specific skills required for these jobs remains under explored; how organisations are approaching issues relating to CE-employment in practice is also a largely unexplored area. This paper is drawing on several studies which were part of the H2020 MSCA ITN 'Cresting' (Circular Economy: Sustainability Implications Guiding Progress) project, which either directly address the experience of CE employment or have raised issues relating to employment and skills in the context of organisations' approaches to the CE. Thus, we here address the questions: how CE-ready are European organisations, what type of changes to employment are underway and/or expected. Methods used included semi-structured interviews of representatives of companies and public sector bodies who are directly involved in roles with CE-relevance (product design), or management roles (with oversight of CE-activity implementation) or directly undertaking CE activity (repair sector). In addition, an online survey with follow-up interviews was undertaken of companies and a document analysis of international sustainability and CE reporting. Findings suggest that the sense that a CE is associated with employment opportunities is shared by organisations, whilst noting staffing constraints. There are critical skills shortages e.g., designers needing additional training. Higher level management skills, e.g., for co-ordination across departments, are also needed. There is an interdependent situation of job roles, responsibilities and qualifications needing to change in order to bring about the necessary transitions towards a sustainable green economy.

This paper relates to the intersection of SDGs 8 (Decent Work and Economic Growth) and 12 (Responsible Production and Consumption). It examines the relationship between a system (circular economy) primarily targeted at reducing the environmental impacts of consumption, but the consequences of which are still uncertain. The contribution to the theme of the conference is similarly investigating the potential trade offs emerging between the 5Ps (particularly people, planet, prosperity), as we progress towards the target date for the SDGs.

Quality of working life in the Circular Economy: the case of self-employment in the repair sector

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Abstract

Establishing a circular economy (maximising value from resources, recirculating materials rather than disposing of waste) is assumed by some definitions to incorporate social benefits. These benefits are seldom explicitly analysed. For example, there is a widespread assumption of the generation of circular jobs – and indeed the activities of the circular economy are likely to require at least a rebalancing of different economic roles. One such role would be product repair, as a consequence of reduced consumption by extending product life with or without a chance of ownership. To date, however, scant attention has been paid to the experience of working within a circular economy. The implicit assumption is that having a job is sufficient in terms of social benefits. Furthermore, there is an assumption that work is in the form of employment, whereas emerging opportunities may be in self-employment. Although there is a field of research around the quality of working life, to date this has been predominantly quantitative and only recently starting to consider self-employment. This paper therefore addresses a major research gap by applying a qualitative approach to the experience of self-employment in the circular economy. We undertake a case study of the quality of working life in the self-employed repair sector in the City of Hull, NE England. This further allows us to consider the spatial context of employment in the circular economy. Five semi-structured interviews were undertaken in 2020/21 exploring multiple dimensions of quality of working life. Findings indicate that stresses of work in the circular economy are similar to those of other fields, with self-employment offering opportunities both for job satisfaction and additional stresses. Some interviewees were reluctant to undertake the responsibilities of becoming employers. This suggests that research needs to give more consideration to the social implications of a circular transition – work may be a necessity for a satisfactory life experience (for most people), but it is under-ambitious to assume that having working is sufficient to achieve that and all that we should be looking for in a sustainability transition.

This paper relates to SDG 8 on decent work and economic growth, especially the target 8.5 on full and productive employment. However, with respect to the conference's agenda of the 5Ps, we suggest that perhaps the targets are too conservative - being overly focused on growth rather than experience of work.

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Wellbeing of Small and Medium Enterprise Migrant Workers: Analyzing Post Pandemic experience in India

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MR. INDRAJIT KHANDAI



DR. SANJAY KUMAR SINGAVARAPU

Abstract

Covid-19 has had significant impact on global economy and different economies are still grappling with the disruptions caused due to it. Small and Medium Enterprises (SMEs) were worst hit due to the inherent vulnerabilities of the sector. In developing countries like India where SMEs provide employment opportunities, both formal and informal, to vast majority of working population, the impact of Covid-19 on SME workers is more precarious. It is well known that majority of SME workforce comprises of migrant labors from rural India and have migrated to urban areas in search of better livelihood opportunities. The disruptions caused due to the pandemic further exacerbated the plight of migrant workers. In order to cope with the challenges posed due to pandemic many organizations in SME sector have introduced changes in their work practices by adopting new technologies and digitalization. It is obvious that the pandemic induced changes in the work organization has rendered the jobs performed by migrant workers redundant leading to heavy job losses. The reasons for loss of jobs particularly in SME sector are varied and important among them is the skill gaps among the migrant workers. The management of SMEs often do not perceive the benefits associated with re-skilling and training their workers due to highly informal nature of employment. Even those SMEs that recognize the long term beneficial effects find it difficult or unviable to invest in imparting new or upgrading skills of migrant labors due to various constraints. Such a scenario has wide ranging implications not only in terms of job security of migrant workers but also adversely affects their wellbeing. In the light of the resultant economic consequences impinging on the sustainable development goals(SDGs), the present study aims at: (1) understanding the impact of pandemic induced changes in work practices on wellbeing of migrant workers (2) the extent to which policies and programs initiated by the government , employers & other non-government actors consistent with SDGs contributed to their wellbeing (3) the challenges being faced by migrant workers during Post Pandemic period and (4) further measures that are likely to improve migrant workers' wellbeing. Research study employs both quantitative and qualitative data collected through survey and interview methods to arrive at the findings.

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Sustainable Entrepreneurship Practices among Emerging Agro-Based Entrepreneurs and Security Implications in Ibadan Metropolis, South-West, Nigeria

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DR. OLANREWAJU ABDULWASII OLADEJO

Abstract

ABSTRACT

As a populous country of over 200 million people, Nigeria earnestly requires steady and sustainable economic plans to ensure constant and continuous national development. Same applies to its constituent states and sub-units at the local government levels. Hence, as part of measures to achieve this feat, the intensification of economic diversification efforts by government at all levels to create jobs and encourage culture of entrepreneurship, particularly among youths, became a priority. In particular, owing to its potential to play significant roles in job creation drive and perhaps, implications on internal security, entrepreneurship in the agro-based sub-sector recently attracted attention which cannot be under-estimated in Ibadanland; a city in the heart of the fourth most populated states in Nigeria. Meanwhile, despite these attention, there are some apprehensive concerns over the sustainability of entrepreneurship practices among budding entrepreneurs in the sub-sector. Therefore, the study investigated the level of competence in sustainable entrepreneurship practice among emerging entrepreneurs, the gender influence as well as the nexus between the practice and internal security in the designated area.

The study adopted quantitative approach using structured instrument to elicit responses from the target sample made up of randomly selected agro-based emerging entrepreneurs in Ibadan metropolis; Ibadan North, North-East, North-West, Ibadan South-East, Ibadan North West Local Government areas. Human and Social Capital theories offered a framework for the study as both capture measurement of skills, education, support, capacity and attributes of labour which scholars admitted influence human productive engagements, capacity and earning potential.

As expressed in the analysed data, emerging agro-based entrepreneurs in the study area were noted to possess appreciable skills to manage people, enterprise environment (planet) and profit (prosperity) to an extent with acceptable mean scores of 1.75, 1.74 and 1.56 respectively. Gender was reported to have significant impact ($R^2 = .412$; $P > 0.05$) on sustainable entrepreneurial practices with male dominating as better profit and enterprise environment managers while female had a higher impact on people management. Equally, the result revealed a positive significant relationship between sustainable entrepreneurship and internal security.

Proffered recommendations suggest that the concept of sustainable entrepreneurship practice should be popularized with emphasis on integrated entrepreneurship development strategy beaming more searchlight on the practice sustainability and its essential elements; competences to manage profit, people and enterprise environment. This is in addition to specific capacity enhancement intervention to budding entrepreneurs in the agro-based sub-sector. In conclusion, having established the significant impact of sustainable entrepreneurship on internal security, it was therefore recommended that further efforts be made to encourage the youths involvement in agro-based ventures to attract their attention and discourage them from social vices. These recommendations resonate with sustainable development goals 1, 2 and 8 emphasizing need to overcome poverty and hunger, with the instrumentation of inclusive and sustainable economic growth (respectively) through viable entrepreneurship exploits.

Keywords: Sustainable entrepreneurship, Internal security, Emerging entrepreneurs

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ACTIVE AND INTEGRATIVE LABOR MARKET POLICIES TO ACCELERATE POST-PANDEMIC UNEMPLOYMENT MANAGEMENT

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Abstract

The Covid-19 pandemic, which began in Wuhan at the end of 2019, was finally declared a global pandemic in March 2020. The regional lockdown policy had an impact on people's social and economic activities, resulting in termination of employment and even closing of businesses. Therefore, based on these matters, current labor market policies need to be adjusted. The job market is not only structured in the old ways, the pandemic condition requires policy makers to accelerate labor market policies. Integrative and adaptive labor market policies need to be implemented as an accelerated step by policy makers to quickly recover from the pandemic, especially in the context of reducing unemployment. Active labor market policies, which include measures such as job search assistance, training programmes, wage subsidies or public employment schemes, are a key element in a portfolio of policy tools designed to bring unemployed workers back into work. In manpower planning, the supply of labor is a very important part because the supply of labor is a human resource that needs to be utilized optimally in achieving progress. This supply of labor is often referred to as the work rate. For this reason, it is necessary to estimate the number of workers, namely how much and how the quantity and quality will be in the future which is based on a planning period that has been determined nationally. In order to support manpower planning, it is also necessary to make policy adjustments and planning in other sectors besides employment, to accelerate the resolution of the post-pandemic unemployment problem. An active labor market policy is a labor market policy aimed at strengthening business resilience and preparing a quality workforce. An integrative labor market policy is a labor market policy that involves other sectors involved in creating an active and integrative labor market.

TRACK 7

Social-economic aspects of sustainability

*7c. Economic and financial innovations
for sustainability transitions*

From Malthusian Nightmare to the "Brave New World": the search for Sustainable Development

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Abstract

In his essay on *The Principle of Population* (1798) Thomas Malthus identified the ultimate demographic choice “starvation or restraint”, because unrestrained growth in population was always liable to exceed any increase in food supply. We could construe this as an early statement of threats to sustainability. Fortunately, technological development has thus far largely averted the spectre of famine. Agricultural productivity has massively increased, permitting population growth far beyond the level envisaged by Malthus. At a later date Aldous Huxley’s *Brave New World* (1932) depicted a dystopic future for the world. This world was based on boundless consumption underpinning production, and where technological progress including genetic engineering and the nature of the organizational basis of peoples’ lives removed restraints to “happiness.” *Brave New World* could be regarded as a warning about what type of future we can expect if injudicious resource use and uncontrolled technological developments go unchecked. This may be seen as sustainable development, but not as we would wish it. Technological developments, especially, latterly, where machine learning and programming culminating in the ever-growing use of Artificial Intelligence (AI) along with globalization have accelerated economic and social change in a way that is historically without precedent. The process of change that began with the industrial revolution has intensified with the onset of globalization driven by the development of information technology, sometimes characterized as the second industrial revolution. The concept of welfare as the objective of human activity has long been debated by philosophers, economists and others. Political debates tend to focus on economic variables notably GDP and consumption as measures of welfare with increases in their magnitudes as beneficial to individuals and society. The context is the market economy, predominantly focussing on the short term, without much regard for the inherent uncertainties of the long term. Half a century of economic growth, driven by economic liberalisation across the globe has highlighted the social limits to growth and the unsustainability of resource allocation in the market economy. Inequality has widened at many levels and poverty persists in many parts of the world. While technical innovations and economic and social policy measures have “prevented the Malthusian nightmare becoming a reality,” globalisation, and information technology, which helps to diffuse state of the art technology, will give a continuing impetus to economic growth and abundance in a market economy. The triumph of the market economy has been a phenomenon of modern history. What is needed is a strategy for sustainability, in a form that is generally beneficial. The Sustainable Development Goals set out a policy framework to counter unsustainability in resource allocation, imply changes in human behaviour, and manage processes for improving economic and social welfare. These reflect a conscious effort to balance human needs and resource use without the reliance on apocalyptic solutions like famine and war. Promotion of these goals would also avert the dystopic future of the *Brave New World*.

ESG investing: decomposing reporting standard

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Abstract

When the world has embraced green finance for materializing sustainable development, ESG reporting, which sets the precondition for green finance to work, has attracted unprecedented attention from regulators. In 2011, Hong Kong Exchanges and Clearing Limited (HKEX) published its first consultation paper on the ESG reporting guide, promoting voluntary based. In 2019, HKEX published its third consultation paper, imposing compulsory ESG reporting. Within eight years, like the annual report, all the listed companies and a company applying to list in Hong Kong must publish their ESG reports annually. To push companies to address climate risks, the HKEX requires companies to disclose climate-related issues, encouraging them to follow the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. However, there is no mandatory assurance on ESG reports. The lack of consistent reporting standards makes it hard for investors to compare the ESG performance of different companies or even the same company across different years. Given the information asymmetry, the regulatory agencies force publicly listed companies to inform the public and investors of their operations' environmental and social impacts and corporate governance. However, the format and content of published ESG reports vary significantly. Except for Appendix 27 Environmental, Social and Governance Reporting Guide, nine other reporting standards were found in the 2020 ESG reports from 268 sampled Hong Kong listed companies (PwC, 2021). If we look at the global level, we can see that the increasing investment flows into sustainable finance. Starting in 2016, USD 22.8 trillion went into the pool, While four years later, the investment amount has already increased by 50% to USD 35.3 trillion (Global Sustainable Investment Alliance, 2021). To make ESG information and related rating products useful, there are three challenges:

1. The format and/or language of the self-reported ESG data are not standardized.
2. There is a lack of assurance on the credibility of the self-reported ESG data. Although financial reports of listed companies must be audited, there is no mandatory assurance on ESG reports (Ngan & Kwong, 2021). The HKEX only does a random check on ESG reports, and until now, no enforcement action has been mentioned.
3. The metrics for evaluating ESG performance are not standardized.

This project tries to build a taxonomy of ESG factors by the decomposition of existing frameworks to develop a transparent methodology for decomposing and assessing ESG reports. Furthermore, the project also conducts network analysis for mapping the ESG eco-system for identifying influential individuals and organizations in the field, as well as the inter-connections between the organizations and their publications.

Interaction of emotional intelligence in investment decision making.

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Abstract

ABSTRACT

The main purpose of this research study is to measure the relationship between emotional intelligence influence investor decision making. The study found from the SPSS regression analysis of the five independent variables, three variables found a significant relationship towards investor decision-making, there is self-awareness (p-value 0.006), Self-empathy (p-value 0.000), and relationship management (p-value 0.016). Two variables found no significant relationship towards investment decision-making there is self-management (p-value 0.097), and self-motivation (p-value 0.729). The measurement analysis has brought the impactful policies recommendation to stakeholders to target a different group of investors by providing them the market information and building a strong relationship with the market analysis to build on the investor confidence level.

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Biodiversity and economic instruments: implications on biodiversity due to using harmful financial tools.

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MSC DIANA CAROLINA HUERTAS-BERNAL

Abstract

Biodiversity is so rich that many species are still to be discovered, and many others are in danger of extinction. The biodiversity that forests house differs from one place to another depending on the type of forest, management practices, and the availability or lack of economic instruments in the country or region where forests are located. For more than 30 years, it has been evidenced that many economic activities are not economically profitable unless they receive certain types of subsidies, such as transportation, agriculture, mining, and manufacturing. Said activities generate significant impacts on natural resources and biodiversity; however, as they are economic activities that increase the competitiveness of countries, they continue to be subsidized regardless of the environmental effects generated. Thus, this research aims to review the impact of subsidies on biodiversity through the systematic review of articles indexed between 1990 and 2021 and the content analysis of the implications and consequences of their use regarding biodiversity and other environmental effects as well as the perception of forest actors through in-depth interviews to learn from experience how they perceive the use of economic instruments in the management of their forests. Preliminary results indicate that environmental degradation continues to be evident despite the constant modifications to evaluate and improve subsidy schemes. Likewise, the perception of forest stakeholders means that private owners conserve their forests and take mitigation and adaptation measures due to their interest, not due to the subsidies provided, since the processes to access require too much time, lengthy bureaucratic procedures, and specific knowledge that does not compensate for the support received in exchange. Additionally, they prefer to invest their funds to benefit their forests if they have the means. Based on the results, it is intended to inform society and decision-makers so that they request the reduction of harmful environmental subsidies and improve the subsidized systems of initiatives of good management and conservation practices that improve environmental conditions in multiple small areas and local communities. The study is relevant for goals 10: Reduce Inequalities and 15: Life on Land, since it focuses on the biodiversity associated with forest ecosystems and proposes how, through small and medium-scale use, state subsidies can be used to improve the quality of natural resources and the quality of life of the communities where the projects are carried out. Likewise, the presentation is aligned with the evaluation of the 5Ps of the SDGs because it evaluates the environmental consequences of the use of subsidies for more than 30 years in traditional economic activities and exposes the need for the conservation of biodiversity and of the local communities that face the consequences of not having access to financing for the proper management of their resources and the preservation of their culture. The presentation focuses on the results and how to engage decision-makers and the community to demand changes in subsidy schemes to reduce environmental pressure.

The transformation of the global financial system to sustainability

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Abstract

Climate change presents material risks for the finance and investment sectors. While the costs of the physical impacts of extreme events are significant, the regulatory landscape is also rapidly changing. Emerging legal and fiduciary requirements present ‘transition risks’ that demand extensive work in identifying, assessing, and reporting asset exposures and climate-related impacts on business performance. Financial institutions seeking to ensure positive long-term investment performance, recognition as trusted partners, and alignment with clients’ increasingly ambitious sustainability goals must develop robust, science-based responses to climate change in the form of net zero targets, climate action plan, and comprehensive sustainability disclosures. Board directors increasingly understand the diversity and seriousness of the risks posed by global heating, and over the last decade have consistently rated climate change, extreme weather, and the failure to act on climate as the most severe global risks in the next 10 years. While governments work to establish appropriate and effective regulatory parameters and pathways, the private sector must proactively and ambitiously find ways to decarbonise investment portfolios and establish new metrics of value creation and financial performance. This is a necessary strategic response to growing regulatory and legislative requirements imposed by jurisdictions including Europe, Singapore, Australia, and the United States, where mandatory climate risk disclosure is already or will soon be mandatory. There are global movements to integrate climate and nature considerations into financial thinking, and these have implications for how organisations invest and do business. As new macroeconomic scenarios are integrated into corporate strategy, and regulators require increasing stringency around disclosure of risk, finance flows are changing with clear implications for sustainability outcomes. The net zero transition is also a multi-decade global investment opportunity of more than USD 4 trillion per year – up to \$200 trillion by 2050 – with robust corporate and consumer demand. There are substantial opportunities in key energy sectors including energy efficiency, renewable energy, electric vehicles and charging infrastructure, and transmission and distribution. This paper examines the ongoing transformation of the international financial system and the implications of this shift for the Sustainable Development Goals, in areas from climate change and renewable energy to modern slavery, Indigenous empowerment, and biodiversity on land and in the ocean. The paper provides a review of the ‘state-of-the-art’ in net zero transition. The study considers (1) the costs of climate change and the business case for decarbonisation and net zero; (2) the global regulatory and voluntary architectures of financial sector decarbonisation; (3) the challenges, barriers, pain points, and solutions that exist in finance sector transition; and (4) the key frameworks and tools that are in place and emerging to address the financial transition, and (5) the roadmap to 2030, 2040, 2050, and beyond. The study is relevant to all SDGs, but this paper examines in detail SDGs 7, 8, 9, and 11.

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Sustainable Digital Financial Inclusion - Leveraging Social Capital to Improve Adoption and Usage by Subsistence Retailers

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PROFESSOR SHAINESH G

Abstract

The poor in emerging countries have limited access to formal financial service institutions for savings, loans, investments & insurance. They depend on informal sources including family, friends and money lenders to borrow for their financial needs. Unfortunately, many of them end up in a debt trap, especially when borrowing from moneylenders who charge very high-interest rates. Recognizing this reality, governments and financial service providers have launched several digitally driven programs to improve financial inclusion. In India, some of the major programs include Jan Dhan, which provides a basic savings bank deposit account and Mudra, which provides loans among micro and small entrepreneurs. Programs for financial security through pension, life and accident insurance have also been launched. All these programs have been built on the foundation of digital access enabled by Aadhaar (identity) on mobile phones for financial transactions. The programs have been phenomenally successful in attracting millions of users. 475 million basic bank accounts, with a total deposit of ~US\$ 22bn, have been opened after the launch of Jan Dhan[i] in August 2014. However, analysis shows that approximately 18% of accounts have turned dormant with no transactions in the last two years. It indicates a very high initial adoption but low usage thus perpetuating the cycle of low financial inclusion and perpetuation of poverty. India's Financial Inclusion Index (FII) of 56.4 for 2022 highlights opportunities for improving financial inclusion. This research focuses on improving financial inclusion by increasing usage among subsistence retailers. Retailing in India accounts for over 10% of GDP and 8% of employment. The industry estimated at \$ 883 bn. in 2020 is dominated by small shops. Almost 96% of the over 19 million outlets are smaller than 500 square feet (46 m2) in size. We study two specific research questions:

- What is the impact of different forms of social capital on preference for digital financial services?
- Does the preference contribute to increased usage among subsistence retailers?

The multistage, multi-method study involves in-depth interviews with retailers, a survey questionnaire, survey-based conjoint analysis, field experiments and conditional logit analysis.

Our hypotheses include –

H1: Preference towards flexibility is moderated by the level of social capital.

H2: Sensitivity to barriers to service access is moderated by the level of social capital.

H3: The impact of product innovation on consumer preferences is moderated by the level of social capital.

We applied a conjoint-based choice modelling approach to test the hypotheses.

Results show that

- Subsistence retailers with higher levels of social capital prefer better and more flexible services.
- Social capital has a significant positive impact on preferences to the adoption of innovations such as mobile / app

Our research contributes to the literature on social capital, subsistence consumers and financial inclusion. We bridge the gap between consumer preferences and service design. Our research underscores the importance of social capital and innovation in improving access and affordability for subsistence consumers.

We believe that the financial service providers can improve financial inclusion through increased usage of financial services among subsistence consumers by leveraging social capital.

TRACK 8

Social foundations of sustainability

8a. Gender, inclusivity and human rights

Crisis of Climate Induced Internally Displaced Female: Challenges to Achieving Sustainable Development Goals for Bangladesh

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MS ZELINA SULTANA

Abstract

Bangladesh, a geographically vulnerable country to climate change, is facing problems for slow on-set climate change impacts and climate change extreme and frequent disasters. It results economic loss, loss of life, livelihoods and increases poverty, hunger, miseries of the affected particularly for the female who are internally displaced. Climate induced internally displaced persons' particularly female (hereinafter CIIDP) humanity crisis is concerning matter and it has been already estimated that 20 million people could be displaced over the next three decades in Bangladesh. The rehabilitation and livelihood settlement of this huge amount of CIIDP are pertaining to centered by integrating their issues in the forthcoming climate change policies and actions. Bangladesh has taken some adaptation strategies and action plans for climate change and disaster risk reductions including a strategy for CIIDP in 2022 which focus the norms of many international instruments related to the internally displaced but inadequately and insufficiently focus the female rehabilitation issues. However, the female need more concentration on adopting the strategies as they are the most affected section of society for climate change. Their housing, land and property rights should be protected in all phases of displacement and a durable solution should be formulated with the assistance of government, non government organizations, regional and international organizations synergistically to meet their resettlement crisis. It will increase their humanity crisis and ultimately halt the achievement of sustainable development goals (SDGs) within 2030 for Bangladesh. The aim of the paper is to examine the extant climate related policies and strategies, climate actions plan to evaluate the strategies of Bangladesh regarding reducing the crisis of female CIIDPs by adopting a policy analysis method. It also intends to focus on the female CIIDP's troubles which mutely looming the achievement of SDGs. The study finds that Bangladesh is failed to address female CIIDPs problems in its climate change legal policies and actions, development policies, plans and unable to implement the provision of protection of their rehabilitations and livelihoods. It also fails to understand and co-ordinate the developments that place human rights protection of CIIDPs is the best way to achieve the SDGs in future. So, the paper argues for female CIIDPs friendly climate actions and other development strategies, plans to ameliorate their human rights which surely stimulate to achieve the SDGs in due time.

Sustainable Development Goal 5: Exploring Gender Equality Practices of Social Enterprises

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DR. REETI KULSHRESTHA

Abstract

Introduction: Despite making up half of the world's population, women are underrepresented, overworked, and underpaid which is against the spirit of Sustainable Development Goal (SDG) 5 that addresses gender equality and women empowerment. Therefore, studies are required in various sectors of employment on gender equality. This study explored how social enterprises are mainstreaming gender, contributing to SDG5, and suggested measures for empowering women, thereby bringing gender equality.

Methodology: Using an identity lens in a longitudinal study with four social enterprises, we conducted multiple unstructured interviews of participants adopting a narrative approach. It allowed the authors to delve deeper into 'gender equality' issues and practices of women empowerment facilitating the collection of rich and thick data. The data so collected were analyzed using thematic analysis.

Findings: The study revealed how SDG 5 was an overarching goal set by all social enterprises. Findings revealed that the gender equality practices of '*identity work*', '*gendering*', '*performativity*', '*equal pay*', '*negotiating identities*', and '*denouncing othering*' empowered women and helped the sustenance of families and contributed to society.

Discussion: The study is expected to contribute to the achievement of SDG Goal-5 which has a positive spillover to most other SDG goals. "Assessing the 5Ps of SDGs (people, planet, prosperity, peace, and partnership)" with the perspective of gender equality helped us understand how practices that are oriented towards bringing gender parity are ultimately going to bring more prosperity to the planet and people in terms of strengthened workforce, economic upliftment, and equal participation.

Implications: The study contributes to the achievement of SDG goals by social enterprises and how it creates a more sustainable society that encourages and embraces diversity, inclusion, and equity. The study also highlighted the systemic changes required to tackle deeply rooted 'gender challenges' arising out of the societal structure and social vulnerabilities.

Scope for future work: Future work may include a more nuanced and inclusive "gender agenda" which can be studied in different contexts, geographies, and temporal setting

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Women's influence on sustainability performance in Higher Education Institutions: the case of Universidad Pontificia Bolivariana (Medellín, Colombia)

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Abstract

Higher education institutions have been undertaking considerable efforts to embed sustainability into their system, in a world in which education and social scenario are characterized by continuous and rapid changes, Higher Education Institutions are called to act rapidly and consciously. In Latina America, Higher Education Institutions, are therefore facing a significant change, which requires the definition of policies and strategies strongly oriented toward sustainable development, becoming fundamental for long-term success and competitiveness. In this perspective, female leadership plays a key role. Over time, women have demonstrated the ability to successfully manage the challenges imposed by social dynamics and environmental change (Showunmi, 2021, Pierli et al, 2022). Despite the growing number of studies on women as sustainable development leaders, there is still little empirical evidence on how women contribute to Higher Education Institutions' sustainable development performance. The paper aims to address this gap by developing a qualitative case study based on the administration of a questionnaire in one Colombian Higher Education Institution, Universidad Pontificia Bolivariana in Medellín, which is characterized by the presence of women in research groups, teaching staff, and leadership positions and the review of scientific papers written by women and research projects headed by women at UPB in the last five years. Therefore, the objective of the research work is to analyze how female leadership facilitates Higher Education Institutions' transition toward sustainability. Findings suggest that female leadership contributes to the promotion and implementation of environmental and social practices through several characteristics intrinsic to their nature, such as the ability to emphasize and comprehend and the

predisposition to sharing and collaboration. Additionally, women heading sustainability courses, research projects, and boards exhibit similar skills and traits, such as: thinking systematically, managing complexity, and inclusive approach to leadership in Higher Education Institutions. This study shows that women's representation in research projects, teaching staff, and management sustainability boards has a positive impact on the university's sustainability performance.

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Protecting The Well-being of The Disabled in Achieving The Nation's Sustainable Development Goals

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Abstract

As the nation is leaning towards achieving the Sustainable Development Goals (SDG), it is pertinent and crucial to look into the plights faced by people with disabilities in this country. This study delves straight into the current socio-legal climate surrounding them. It adopts methods of content and critical analysis when analysing the data qualitatively. The findings show that even though the overall social acceptance and reception have improved over the years, some members of the disabled community have faced unfair treatment during job scouting, job interview or while at work. From legal point of view, an ambiguity in a provision under the Persons with Disabilities Act 2008 has resulted in inaccuracy and false interpretation by the local authorities, leading to poor and shoddy construction of public amenities for the disabled. Furthermore, effectiveness of the Street, Drainage and Building Act 1974 in ensuring accessibility of public facilities for the disabled remains questionable. In the concerted effort of achieving Goal No 9 of developing quality, reliable, sustainable and resilient infrastructure in support of economic development and human well-being, and Goal No 10 of reducing income inequality under the nation's SDG, the above-mentioned socio-legal problems must be urgently addressed.

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AN EVALUATION OF GENDER AT THE INTERSECTION OF RECENT DISASTERS IN TURKEY, SDGs, AND SENDAI FRAMEWORKS

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Abstract

This study focuses on gender issues at the intersection of disasters, SDG, and Sendai Frameworks. Specific attention will be given to recent disasters in Turkey. Gender issues and their connection to disasters are rarely evaluated. These evaluations are usually connected to vulnerability, resiliency, and human rights. These appearances in the literature usually came forward in time. There is a strongly accumulated knowledge on both sides the SDG's side and Sendai Frameworks (related to disasters) side. However, the connection between SDG and Sendai Framework is a rare study. Gender issues gradually came forward in the frameworks. Yokohama, Hyogo, and Sendai are different in their inclusion of gender issues. This study evolves on the recent disaster experiences of Turkey. These are 2020 and onward occurrences such as COVID-19 pandemics, floods, and earthquakes (2020 earthquakes and 2023 Kahraman Maraş earthquakes and following floods). Disaster processes are difficult times and force the achievement of SDGs and Sendai Frameworks. It is necessary to find out possible reflections of gender issues, bring out equalities and inequalities, inclusion, and needs, and reveal possible solutions during experienced disaster processes.

The findings are derived from Firat University students' COVID-19 experiences and thoughts on occupational choices and disasters. These are derived from questionnaires and focus groups. Then 11 mostly affected cities and their earthquake and flood experiences were focused on through written materials and visually recorded materials related to them and focus group interviews and field observations. They scrutinized on the base of gender issues. This analysis deepened the intersection of the Sustainable Development Goals and Sendai Frameworks. This study will be bringing forward preliminary findings. Findings revealed that the fragility and resiliency of gender groups under different disaster issues sometimes are similar and sometimes differ. However, differences in the occurrence and essence of disasters come out with multiple appearances of gender issues related to SDGs and Sendai Framework articles. These will be a preliminary evaluation of the present situation of gender groups related to recent disaster issues in Turkey.

KEYWORDS: Gender, SDGs, Sendai Frameworks, Turkey, Disasters

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Comparative Analysis of Health and Education Expenditures for Disabilities and Non-Disabilities in Indonesia Using the NTA Calculation Method

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NI PUTU MIA TARANI

Abstract

Demographic Dividend is a potential as well as a challenge for Indonesia in increasing economic growth where some residents who have physical limitations or people with disabilities have difficulty getting adequate facilities and jobs compared to non-disabled because they are constrained by the burden of expenses. This study aims to analyze the estimated costs of expenditure on health, education, and other consumption for individuals with disabilities and non-disabilities. Indonesia's national socio-economic survey or commonly abbreviated SUSENAS in the core section and the consumption or expenditure section in March 2021 are the data sources used in this study. The method used to estimate in this study is the National Transfer Account (NTA) calculation method. This method is used to analyze changes in the pattern of private consumption expenditures by individuals based on the age profile of the individual with the main variable used in this study is people with disabilities. The estimation results show that people with disabilities have lower private expenditure on education than non-disabled people when they enter their productive age. Meanwhile, private expenditure on health for persons with disabilities is higher than non-disabled in every age.

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THE PROBABILITY OF BEING NOT POOR BASED ON SOCIOECONOMIC STATUS, PERSONS WITH DISABILITIES, AND DEMOGRAPHY IN INDONESIA

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Abstract

Inequality is a major problem in developing countries. Inequality can be caused by several factors such as disability, socioeconomic status like poor or not poor, education and work, the other variables like demographic conditions like gender, marital status, and area of residence. This study aims to analyze the factors that can influence individuals in poverty in Indonesia. The data used National Socio-Economic Survey. The method uses logit regression with the poverty line as the dependent variable. In addition, disability, socioeconomic status, and demographic conditions are independent variables that can influence individuals. The results of this study the probability individuals with disabilities have a higher 1.8% being poor than non-disable. Individuals with a disability have some limitations in accessing such job opportunities, health, and education. In the gender category, the probability of males will get an income higher than females is around 0.2% and the result is significant. The gap in income between males and females is still happening. Inclusivity is particularly important, especially for people with disabilities, and the gender gap in income must be reduced.

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Individual Probability of Being Poor Based on Person with Disabilities and Socio-Economic Status: Using Indonesia Cases

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Abstract

Poverty is a major problem in developing countries. Several factors individual become poor are disability, socioeconomic status, education and work, the other variables like demographic conditions like gender, marital status, and area of residence. In Indonesia, the poverty rate has experienced a decline until 2019, however, it still remains relatively high compared to other developing countries. Another issue is with over than 24 million people living below the poverty line and an estimated 15% of the population living with disability. The study aims to analyze the factors can influence poverty in Indonesia, with the focus on the relationship between PWD and poverty. The study used National Socio-Economic Survey with logit regression method. Poverty line is dependent variable and disability, socioeconomic status, and demographic conditions are independent variables. The results show that PWD have probability 2.6% higher than non-disable for being poor. PWD have some limitations in accessing such job opportunities, health, and education. On the other hand, PWD with higher education has the probability of being poor lower 1.9% compare with non-disability. In the gender category, the probability of males will get an income higher than females is around 0.2% and the result is significant. The gap in income between males and females is still happening. Inclusivity is particularly important, especially for PWD, and the gender gap in income must be reduced.

Ageing Population and the Perception of Sustainable Development: A case study in rural areas, Beira Baixa, Portugal

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Abstract

Over the next few decades, the ageing population is expected to increase significantly, especially in rural areas. Generally, poverty is more frequent in the elderly, being even more pronounced in women. In 2015, the adoption of the Sustainable Development Goals (SDG) defined a new agenda, which will have an impact on the elderly, for example, the goals associated with poverty reduction, improved health and gender equality. The United Nations Decade of Healthy Ageing (2021–2030) has recognised the essential contribution of older population to the implementation of the 2030 Agenda for Sustainable Development (SD). The case study presented is about a region in the interior of Portugal, Beira Baixa. The region's population represents less than 1% of the resident population of Portugal. This region holds the country's 3rd and 4th largest municipalities in terms of area. That translates as one of the lowest populational densities (almost 18 inhabitant/km²). Out of the six municipalities, five have a rural profile and have strong structural weaknesses, that are reflected in the demographic and socioeconomical indicators (eg. namely in Oleiros there are about 780 elders per 100 youth, which is the highest index in the country). The main objective of this study is to reflect on the perception the elderly have about SD, based on the results from a questionnaire applied to a representative sample of the population of Beira Baixa, Portugal. This questionnaire had as its goal to know the perceptions, the knowledge and attitudes of this population about SD and in what areas there is a need to act for its implementation in the scope of the region where they reside. The results allowed to verify that almost 3/4 of the ageing respondents have already heard of the term SD, the media being the largest contributor to this. When asked about the evaluation of SD in the region, referring to the four dimensions, and according to a traffic light, the majority considered the environmental dimension "green", and the economic, social and governance dimensions "yellow". About 70% of the elderly consider that their quality of life "is the same" or "worse" as in previous years. Regarding public policy, the respondents highlight the social area. When asked about what is important to evaluate in their region's SD and, specifically which of the SDGs are more important to their region, the main ones are Quality Education (SDG 4) and No Poverty (SDG 1). In the results analysis, statistical tests were carried out that allowed the detection of statistically significant differences for gender. A wide spread of SD among the elderly is important because they are also essential for achieving the SDGs. That is, creating the same opportunities to ensure that ageing population fully develop their human potential, but also fully and effectively enjoy their human rights.

This abstract is especially related to SDG10 Target: 10.2. The pace of population ageing is much faster than in the past. In the Decade of Healthy Ageing, the elderly are fundamental "pieces" of the SDGs.

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THE REALITY OF SEXUAL VIOLENCE AGAINST CHILDREN IN INDONESIA FROM THE PERSPECTIVE OF LAW AND HUMAN RIGHTS

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Abstract

The reality of sexual violence against children in Indonesia is increasingly concerning. The Ministry of Women's Empowerment and Child Protection (KemenPPPA) even stated that currently, Indonesia is in an emergency for sexual violence against children. According to KemenPPPA records, cases of sexual violence against children reached 9,588 cases in 2022. This number has increased from the previous year, namely 4,162 cases. The weak and helpless position of children is the main cause of sexual violence against children in Indonesia. Therefore, children must receive legal protection for their human rights, such as children's rights.

In this discussion, the approach method used is a doctrinal approach with secondary data collection methods through library research. This paper will raise the discussion of: how is the reality of sexual violence against children in Indonesia today? And how about sexual violence against children from the perspective of law and human rights?

Legal protection for children from sexual violence has been regulated in: Law Number 23 of 2002 concerning Child Protection, Law Number 35 of 2014 concerning Amendments to Law Number 23 of 2002 concerning Child Protection, and Law Number 1 of 2014 2016 concerning the Second Amendment to Law Number 23 of 2002 concerning Child Protection. Meanwhile, from a human rights perspective, Article 28B paragraph (2) of the 1945 Constitution of the Republic of Indonesia states that every child has the right to survival, growth, and development as well as protection from violence and discrimination. Child protection is all activities to guarantee and protect children and their rights so that they can live, grow, develop, and participate optimally in accordance with human dignity and values, and receive protection from violence and discrimination.

The author concludes that all acts of violence against children are acts that violate human rights, namely children's rights as specified in the law. The government and all elements of society must commit together to combat sexual violence against children by increasing awareness of the

importance of upholding human rights for children. This article relates to the goals and targets of the Sustainable Development Goals (SDGs) at point 16.2, which is to stop cruel treatment, exploitation, trafficking, and all forms of violence and torture against children. This paper makes a scientific contribution according to the conference's theme, namely "social foundations of sustainability: gender, inclusivity, and human rights" and thus relates to the 5Ps specifically to people, prosperity, and peace.

Keywords: sexual violence; children; human rights.

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UNDERSTANDING ONE HEALTH APPROACH FROM LEGAL FEMINISM PERSPECTIVE (is it relevant???)

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MS AISYAH WARDATUL JANNAH



MS RIZKA NURLIYANTIKA

Abstract

Legal feminism attends through a dialogue rather than just a method to be involved in the decision making, not far as the One Health approach it is also has the outstanding in gaining the best approaches to form the provision of global health in every aspect. Lessons from Covid-19 and other zoonotic disease, One Health then presence through the collaboration of OHHLEP by several meeting one of which by implementing new hard law in the international Health instrument. Therefore, feminism concept also argues that they should be included in considering many aspects of the gender perspectives should be taken into account in the regulatory system. the aims of this study to understanding the impact of Covid-19 with concern to the women's health issues and collecting the list of failure under International Health Regulations regime enforcement during the Covid-19 situations, therefore it will set an examples of China case that provide the late announcement to the WHO, therefore this delay have causing the violation of international law and human rights law, the study will also examine the different treatment that countries in the world to faces the situation. The method of this research using normative juridical legal research by conducting library data and by examining existing regulation concerning gender bias and the rights of women from the international convention. The result set an example from covid-19 impact to women disproportionately, mostly faces the gender inequities through unpaid care work, losses of jobs, lose a chance in getting health care access particularly for those who are pregnant and likely two times in high risk of the disease, and mostly while the restriction established women tend to receive gender-based violence and increasing number of child marriage. Therefore, the only response that can consider are through the feminism approach in recognizing the matters together with the solution by involved in the policy making with the stand to the rights based on one health approach.

TRACK 8

Social foundations of sustainability

8b. Communication for sustainability

Communication of sustainability and the Impact on the Consumer Behavior: Study Case ISTO. Brand

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Abstract

Sustainable communication is increasingly utilized as a strategy by brands to draw attention to sustainability, as well as to increase proximity to their consumers. This communication lead by sustainable portuguese fashion brands can be perceived as a useful tool in changing the paradigm of consumer behavior, since it alerts for the problems of the fashion industry, demonstrating the importance of sustainability in this sector. Individuals exposed to this communication may adopt a more conscious and responsible behavior.

The present study is focused on a portuguese brand – ISTO. – and its impact in the behavior of consumers and potential consumers, understanding whether or not they change their behavior due to this communication. It was intended to understand if ISTO. has an impact on the fashion industry, presenting innovation and demonstrating the importance and possibility of sustainability in this sector, as well as understanding the value that consumers and potential consumers attribute to the brand's sustainability. Another focus of this study was to conclude if consumers and potential consumers of ISTO. perceived it as a reference brand in the set of sustainable portuguese fashion brands.

Regarding data collection, it was carried out an exploratory analysis of the brand, especially of its communication, complementing it with an exploratory interview to the Marketing Experience Manager of ISTO., in order to get an internal perspective of the brand. An online questionnaire was implemented to consumers and potential consumers of ISTO., collecting and analysing the external perspective. The research question that conducted the present study was: "What is the impact that the sustainable communication of ISTO. has in the behavior of its consumers and potential consumers?", where the main results revealed that the sustainable communication of this brand has a positive impact on the behavior of its consumers and potential consumers, leading them to change their daily behavior, acting more consciously and responsibly towards sustainability, not only in moments of purchase but also in other daily activities.

This study and our results also help us to better understand two of the big Ps of SDGs, people and planet, specially regarding the consumption of sustainable brands. The focus is mainly on Goal 12 (Ensure sustainable consumption and production patterns) and specially the Target 12.8 (By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature).

Keywords: Sustainability, Communication, Fashion Industry, Sustainable Portuguese Brands, Consumer Behavior

Content analysis for the promotion of geotourism in the UGGp Network websites in Latin America

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Abstract

Geoparks are areas defined by singular geological diversity (geoheritage) elements that integrate added value to local communities, including geotourism (geological tourism). For these territories to gain visibility, websites are valuable resources for enhancing geoheritage and promoting geotourism services to users. However, conducting a transversal evaluation of the geotourism elements present is necessary for effective dissemination to the public. This work aims to evaluate the presence of geotourism information using evaluation criteria based on UNESCO technical specifications through a rubric in the UNESCO Global Geoparks (UGGp) Network in Latin America (LATAM) for the development of communication strategies. The workflow consisted of three stages: (i) criteria selection, (ii) LACGN website assessment, and (iii) analysis and development of strategies. Overall, the study assesses 11 websites of the UGGp Network in Latin America. The average results of the evaluation criteria showed a measure of the diversity of the content present in the three geotourist profiles: i) geospecialist (57.09 %), ii) interested visitor (59.68%), and iii) general visitor (59.59%). It is verified that the UGGp websites reflect an interaction and development work aligned to Sustainable Development Goals (SDG) 8, 10, 11, 15 and 17, highlighting the link with strategic targets and the reality of the geopark and its surroundings.

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Information Value Chain Management: A Critical Element in Disaster Risk Reduction

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Abstract

It is a well-known fact that information and knowledge play a critical role in society's and the individual's progress. There is enough evidence that timely availability and accessibility to information and knowledge can help reduce the loss of life and property due to disasters as it facilitates informed decision-making and coordinated action by all the stakeholders. Information is critical in policy-making to implementation and ultimately benefit the people.

The idea of value chain further emphasizes the customer viewpoint in terms of identifying the right information required and providing the same in a desired way which in turn has the potential to trigger the desired response and repeating it may lead to lasting impacts and changes. The Sendai Framework on Disaster Risk Reduction 2015-2030 further emphasized on the need to accentuate the network and systems for better outreach of disaster related information to people.

This paper attempts the potential conceptualization of the idea of information as value for the disaster affected people and how emphasizing and developing on the idea of information value chain shall help minimize the risk of disasters. It is based on experiences and instances of disaster risk reduction initiatives and activities in the state of Bihar, highlighting the importance of the information value chain in disaster risk reduction. A better conceptualized and integrated information network can facilitate better policy making and implementation of schemes on the ground and equip the people to develop disaster resilience in a sustainable way.

Key words: Information Value Chain, Value Chain Management, Disaster Risk Reduction, Information Network, Resilience

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ARE WE NASTY? THE IMPACT OF DIGITAL HATE SPEECH TOWARDS CYBERSPACE SUSTAINABILITY IN MALAYSIA

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Abstract

The widespread expansion of social media outlets has enabled the spread of disinformation, hate speech and extremist narratives online. Moving beyond the Euro-America hate speech phenomenon, cross cultural nuanced by ethnography has evolved in Malaysia. As a result, it appears that preventing discrimination, dehumanization, and incitement to violence while maintaining individual freedom of expression is a challenge, particularly in the pursuit of democracy and the development of a sustainable cyberspace environment. Hence, there is a significant knowledge gap regarding the impact of hate speech towards cyberspace sustainability, with few studies that look at their impact and effectiveness. The study interrogates the nexus between hate speech and extremism and its implications for sustainable development and democracy in Malaysia. Focus group discussions (FGD) among experts and academics were held to gather their perspectives on this phenomenon, and the data was analyzed thematically. A cursory examination reveals a long-standing concern about the dangers of free speech in situations where it can spark ethnic and religious conflict, mass violence, and social unrest. This study demonstrates that understanding user cultures, technology, and specific political contexts will enable moral change in situations where the pressures of incivility and subjugated knowledge have emerged and erupted into the mainstream. This research contributes to Agenda 2030, which is embedded in the United Nations Sustainable Development Goals (SDG) 16 and is critical in promoting inclusive societies with integrity at multiple scales especially in maintaining sustainability in Malaysia cyberspace.

TRACK 8

Social foundations of sustainability

8c. Just transition

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Reconceptualizing sustainability transitions in the context of capitalism

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DR. BOSCO BWAMBALE

Abstract

By portraying the dominant capitalist mode of (re)production as unsustainable or destructive and proposing a transition from it to sustainable ways, sustainability transition mirrors Marxism. Marx(ism), though with occasional success, questioned capitalism and proposed a transition via scientific socialism upon which the proletarian consciousness facilitate the overthrow of the bourgeoisie to centralize means of production to society. It, thus, provides a suitable framework against which to gauge the success of sustainable transition as an anthesis to destructive capitalism. Here, one would expect a synthesis between capitalism and sustainability to hybrid, socio-ecologically sensitive, modes of production. From a triparted comparative analysis of sustainability, capitalism, and Marxism, sustainability discourse is noted to elaborate and justify content-wise that the political economy is necessarily socioecological and so modes of production should counteract destructive capitalism. Yet, there is hardly a clear theorized process to drive the pathway to that effect; moreover, sustainability transition debates barely elaborate on the epistemic foundation(s) required to counteract capitalism. Sustainability transition discourses are thus neither comparable to Marxism nor committed to alternatively engaging capitalism to systematically evolve hybrid modes of production; rather, they present a step, awaiting an epistemic methodology required to theorize strategies to counteract socio-ecologically destructive modes of production.

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Greenwashing in financing just transition: Potential solutions from an Islamic law perspective in Malaysia

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Abstract

One of the most important strategies to fight climate change on a global scale is to finance 'just transition'. Insufficient holistic legislation framework and reckless green market participant conduct had rendered the plan problematic in light of the escalating greenwashing phenomenon. Since the Muslim world also plays a crucial role in this transition, this paper seeks to explore potential solutions through a critical legal analysis based on Islamic jurisprudence within the Malaysian federalism framework to combat greenwashing. All three levels of legal sources, which had arguably been successfully integrated with Islamic jurisprudence despite the need for further refinement, will be critically examined. Islamic jurisprudence refers to the theologico-ethico-legal (kalam-tasawuf-fiqh) tradition as interpreted within the Shafiite-Ghazalian school of jurisprudence (usul fiqh). This jurisprudential framework provides not only potential solutions for greenwashing through top-down 'hard law' instruments but also bottom-up 'soft law' instruments that provide profound theological and ethical principles that serve as a stable foundation for both Islamic environmental and financial law. Specifically, its broad legal structure in regard to the relationship of federal and state power includes feasible potential solutions. At the federal level, Islamic jurisprudence had already been integrated into civil court decisions in cases involving Islamic banking and financial markets via Syariah Advisory Council resolutions. At the state level, the same jurisprudence through gazetted fatwas in each state could empower the Syariah Court to liberalize its jurisdiction to include public matters pertaining to environmental issues and related financial or non-financial assets under state administration. In light of this, it is evident that the existing Islamic legal system has the potential to serve as one of several viable strategies to combat greenwashing phenomena that may undermine a just transition. Even though none of the SDG goals or indicators are directly related to the topic of this study, there are a few that are relevant, such as SDG+targets: 11.3, 11.a., 12.8., and 13.2. This article suggests potential solutions to the challenges that are hampering efforts to achieve the SDGs in the 5P context by examining alternative legal means for combating greenwashing.

A critical discourse analysis of the just transition in South Africa

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Abstract

Recent studies have analysed the scope for a just transition toward a low carbon and climate resilient future in the context of the Global South. The idea of a 'just' transition is becoming more prevalent in policy text and political discourse; it calls for the distribution of societal risks in a way that is thought to be fair. This approach is particularly complicated and multifaceted for a nation like South Africa that is hugely dependant on a fossil fuel economy while most of the population live in energy poverty resulting from inequalities under apartheid. Therefore, pursuing a just transition in South Africa, means ensuring that those most affected by apartheid policies particularly women, children and poor are not disproportionality burdened by the negative impact of the shift towards a low carbon economy. The paper aims to deepen understanding of problems relating to the just transition, focusing on competing priorities that tend to marginalise non dominant groups. It uses critical discourse analysis to examine how government policy addresses the questions about historical responsibility and social justice. Neoliberal discourses linked to the political economy, nature, and top-down planning objectives as barriers to public participation and unequal power distributions emerged. This analysis demonstrates that despite drawing upon a transformative discourse to justify its vision, government policy serves to camouflage local development disparities, further exacerbating exiting forms of inequalities and injustices. Hence, the just transition policy needs to incorporate these critical perspectives in order to management potential social ill emanating from the envisioned transition. We recommend social protection policies as means of enhancing the shift while also helping to mitigate negative impacts such as high poverty levels and inequalities. In conclusion, intentional strategies that engage with inclusion, especially in relation to marginalised experiences of women's must be enacted for a just transition to be achieved.

Keywords: just transition, social justice, public participation

Let Communities Lead: Stories and lessons on grassroots energy initiatives for sustainable futures

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Abstract

A sustainable planet will not be a reality unless millions of poor and vulnerable people in marginalized communities around the world are capable of pursuing sustainable development goals locally. Such a pursuit is possible by leveraging shared knowledge, infrastructure, and resources, including energy systems, in environmentally benign ways. The sustenance of high quality and productive energy systems, on the other hand, is conditional to the communities deriving a high degree of social and economic value from energy services, making them invested in the system's success. Ignoring and sidestepping this critical complementarity prevents thousands of vulnerable and poor communities from adopting clean energy systems and successfully pursuing sustainable development. Drawing from narratives from sixteen community energy systems from around the globe, the Let Communities Lead¹ initiative showcases how locally planned, clean energy investments in communities can be long-term investments in food security, socioeconomic opportunities, health and shelter, climate adaptation, community resilience, security, human rights, and democracy. Realizing such co-benefits of clean energy system are outcomes of a localized and bottom-up design which: (a) create new financial models that attribute significant value to community co-benefits, (b) build situated knowledge and coordination capacities within and around vulnerable communities, and (c) unleash the creativity and innovation of communities to lead the fight against climate change and the transition to a sustainable energy futures. Lessons from the Let Communities Lead case studies offer ways of knowing to transcend the poor understanding of local sustainability aspirations by top-down approaches to projects and policy. They draw attention to the importance of nuanced and explicit approaches to address the social, economic, cultural, infrastructural and governance attributes of resilient and sustainable futures in vulnerable places. The cases contrast how most institutional clean energy transition strategies are geared towards mitigation goals at the global scale but ill equipped to address urgent adaptations to climate vulnerabilities and enduring poverty at local levels. This report argues for filling this key gap in pursuing local clean energy transitions and sustainable development by putting communities at the center of the solutions to intersecting challenges (SDG) and enabling them to creatively imagine and build participatory and inclusive energy systems for resilient futures.

The paper highlights examples of intentional design of community energy systems linking SDG 7 with SDG 1 (targets 1.1, 1.4, 1.5), SDG 2 (targets 2.1, 2.3, 2.4), SDG 3 (target 3.7), SDG 13 (targets 13.1, 13.3), SDG 11 (target 11.1), SDG 16 (target 16.7). It illustrates the options for filling the key gap in achieving universal SDG 7 by 2030, through programmatic approaches leveraging the 5P's of SDG.

¹Biswas S., François D.E., Miller C.A., Parmentier M.J., Chettri N., and Poganietz W.R., (Eds.) (2021). Let Communities Lead: Stories and lessons on grassroots energy initiatives for sustainable futures. Center for Energy and Society, Arizona State University. <https://letcommunitieslead.wordpress.com/>

TRACK 9

Governance. Power and institutions

9a. Peace and sustainable development

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Lending Your Ears to Parties in Community Mediation: Active vs. Passive Listening

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Abstract

Community mediation is a dispute resolution method that is increasingly being used in many countries, especially in Asia. It is a process where the parties involved in the dispute come together and work out an agreement with the help of a mediator. This mediator facilitates communication, encourages understanding between the parties, and helps them reach an agreement that everyone can live with. Community mediation has been found to be effective in resolving disputes quickly, efficiently and cost-effectively, while also preserving relationships between the parties involved. When a conflict arises, it is important to have a middle person who can be trusted to assist the parties in managing and settling the dispute. Such a person should be able to provide impartial advice and help in finding solutions that are beneficial for all involved. This requires a great deal of skill and experience, which is why it is often wise to resort to an experienced third-party mediator when conflicts arise within a community. More often, such a person will play the role of a mediator, be it formally or informally. One of the key skills that a mediator must possess is listening. While it is something that can be commonly applied in numerous conditions, the use of such a skill in a mediation process requires more engagement from the mediator. This article seeks to establish the need for a mediator in every single community mediation process to impart in active listening rather than passive in order to achieve positive results in mediation.

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“Closing the Gap: The Need for Military Prosecution Appeal Right to Ensure Exclusive Accessibility to Justice”

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Abstract

The military justice system in Malaysia differs from the ordinary criminal justice system in several aspects, including the availability of appeals. While the Public Prosecutor has the right to appeal against a court's decision, the right to appeal for the prosecution in a court-martial is absent. This paper aims to examine the absence of the military prosecution appeal right in Malaysia. This paper uses a doctrinal research methodology to explore and highlight the gaps in the current legal framework and compares it with the right of appeal available to the prosecution in the civil court system. The study found that the Malaysian military justice system does not provide the prosecution with the right to appeal against a court-martial decision. This absence of the prosecution's right to appeal hinders their ability to seek justice in the military justice system and goes against SDG Goal 16, which promotes peaceful and inclusive societies for sustainable development, provides access to justice for all, and builds effective, accountable, and inclusive institutions at all levels. This paper argues for the need to introduce a robust prosecution appeal right in Malaysia's military justice system that would help promote peace, justice, and strong institution.

Securitization of the Blue Economy

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Abstract

The relationship between climate change and security has been identified as an important aspect of sustainability and sustainable development. Previous research highlights the close relationship between climate-related natural disasters and outbreaks of armed conflict and the fact that competing claims for natural resources can catalyze new clashes and deepen existing conflicts. The environment can be understood as a policy arena with compounding stressors – climate change, for example, has been described as a ‘threat multiplier’. The ocean is arguably the most significant yet under-represented environmental domain in mainstream discussions of geopolitical security issues. The ocean contains 80% of all life on Earth and produces more than half of the oxygen we breathe. The ocean is also the dominant factor in the climate system, absorbing 90% of excess heat in the atmosphere. The global ocean economy is valued at more than USD 1.5 trillion per year. 90% of global trade by volume is carried by sea and 350 million jobs world-wide are linked to fisheries. Aquaculture is the fastest growing food sector and provides about 50% of fish for human consumption. The ocean is the primary source of protein for 3.5 billion people. ‘Securitization’ refers to the reformulation of societal issues as security concerns. This can legitimize undemocratic actions as responses to exceptional political circumstance. In this paper, we examine the securitization of the ocean realm, where impacts of climate change including sea level rise, acidification, deoxygenation, and pollution are interacting with economic, cultural, strategic, and political priorities. Economic activities and interests in economic development in the ocean have accelerated in the last decade, referred to as the blue acceleration or the blue economy. Subsequent initiatives, such as the UN Ocean Decade, have brought the ocean and its open nature to the forefront. Related to understanding international conflicts, the blue economy has also been moving from state-centric conceptions to a global understanding, further epitomized by the Ocean Treaty ratified on 4 March 2023. This treaty demonstrates an international recognition to take action on the existential risk presented by and protect the ocean and coastal ecosystems. The connection between security issues in the context of the blue economy has not been sufficiently covered in an academic context. Accordingly, this study explores security issues and sustainability in the emerging blue economy. The planetary and human risks that result from blue economy security dynamics, specifically conflicts between state and non-state actors, need to be better understood and discussed in international arenas. Considering security issues in an ocean context - described as securitization of the blue economy - includes critical questions about the relations between ocean industries, political boundaries, and jurisdictions while highlighting resource accessibility and governance that epitomizes questions of accountability and social equity. This study has direct and particular relevance to SDGs 7, 8, 9, 13, 14, and 16. We develop and present a conceptual framework with which to assess and understand securitization of the blue economy, consider existing threats and potential future crisis points, and identify a research agenda for future work.

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The Application of Futures Methodology in Understanding International Law and Emerging Issues in Peace and Conflict Resolution in the Muslim World

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Abstract

The Muslim world faces various conflicts that often impede its growth and prosperity. These conflicts have been resolved through the use of international law and peace conflict resolution, but it is frequently difficult to find long-term solutions due to the complexity of the problems. The article explores the application of futures methodology as a tool for understanding issues in international law and peace conflict resolution in the Muslim world. It examines the state of international law and peaceful conflict resolution in the Muslim world today and emphasises the difficulties encountered in resolving intricate conflicts. The methodology applied is based on futures methodology developed by renowned UNESCO futurist Professor Sohail Inayatullah. It includes the six foundational concepts (the used future, the disowned future, alternative futures, alignment, models of social change, and uses of the future) and six pillars (mapping, anticipating, timing, deepening, creating alternatives, and transforming) of futures studies. It also applies the futures wheel methodology to explore the impacts of emerging issues. The article presents case studies that illustrate the application of futures methodology in understanding conflicts in the Muslim world and marking its different futures scenario. It draws attention to the fundamental problems that underlie conflicts and the potentials for creating long-term solutions and the inter-connectedness with the dynamic development of international law. The article concludes that futures literacy offers a valuable approach for the Muslim world for anticipating future outcomes and developing innovative and sustainable solutions to complex conflicts. The case studies presented in the article demonstrate the possible contribution of this approach for the community and international peace.

Keywords: Futures methodology, International law, Peace conflict resolution, Muslim world.



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Futures Methodology for Mediators in Sulh and Mediation Conflict Resolution Practice

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DR ADZIDAH YAAKOB

Abstract

Mediation and Sulh are increasingly being used in conflict resolution practises, and mediators play an important role in assisting the parties involved in reaching mutually acceptable solutions. In order to help the parties come up with their own solutions during mediation, the mediator must act quickly, thoroughly comprehend the circumstances, and develop relevant questions. The article explores the use of futures methodology in mediation and Sulh in this context to assist mediators in foreseeing potential outcomes and preparing for possible obstacles to conflict resolution. The article illustrates samples of the application in Sulh-Mediation certification trainings conducted in Malaysia in different case studies. The methodology includes the use of various futures tools, including scenario building and futures wheel analysis to encourage parties' innovative solutions to resolve conflicts. These case studies demonstrate the effectiveness of futures methodology in understanding the underlying issues that cause conflicts and highlight its potential for creating long-term solutions that address these issues. The use of futures methodology in peace and conflict studies can help mediators navigate the complex landscape of conflict resolution and contribute to the creation of long-term sustainable peaceful resolution.

Keywords: Futures methodology, Mediation, Sulh, Conflict resolution, Peace studies.

TRACK 9

Governance. Power and institutions

*9b. Collaboration and co-creation for
sustainability, SDGs initiatives and scale
of governance*

Gaps in Multi-level Governance toward Sustainability in the EU

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ANIL POYRAZ

Abstract

Sustainability concerns different levels of government due to the nature of environmental, social and economic issues. Multi-level governance (MLG) features a research context to scrutinise the interplay between government tiers as well as an approach to governing itself. While some recent works focus on guiding MLG in sustainability-related issues, others point out the connections between MLG and Sustainable Development Goals (SDGs). For example, an OECD report (OECD, 2019) defines seven gaps regarding MLG: policy, administrative, funding, capacity, accountability, objective and information gaps. This work endeavours to disclose the sustainability-related interplays between the European Commission (EC) and national and subnational governmental bodies in the European Union. In the discussion of the interplays, we look at five aspects and explore the MLG-related gaps and evolving mechanisms in the Union concerning SDGs (Poyraz&Csete, 2022). The analysis reveals that as the Commission mainstreams SDGs by incorporating them into economic and social policies, the interplay between the EC and the Member States mainly occurs in the platforms in which these policies are shaped. Objective and accountability gaps persist in this aspect due to the differences between the Member States, non-binding policies and lack of policy coherence to some extent. Administrative and information gaps are noticeable regarding coordination and cooperation. These gaps can emerge because of a high number of stakeholders. Besides, the form of the coordination mechanism and the position of subnational governmental actors in the boards consisting of diverse stakeholder's matter. The responsibility and competence delegation aspect is where capacity, accountability and administrative gaps are experienced. Unclear and isolative role delegation can trigger these gaps along with the political-administrative structure of the countries. Funding and administrative gaps are prevalent in funding allocation for sustainability transitions. Political-administrative structure and level of political commitment have an impact on these gaps. Access to direct funding by subnational governmental bodies occupies a crucial place in the discussion. The assessment standardization aspect accommodates objective and information gaps. The lack of quantifiable and measurable objectives is a driver for lagging. There have been a set of actions to overcome the gaps that impede further mainstreaming SDGs via policy, regulation and research such as incorporating the SDGs into the European Semester, establishing the Committee of the Regions and Covenant of Mayors, joint and holistic planning, EU Green Deal Investment Plan, and supporting research projects on sustainability assessment. While this work concerns all of the SDGs, SDGs 11 and 17 are particularly relevant to the MLG approach and examined topics. Besides, the work highlights the gaps in MLG as a tool for fostering the 5Ps of SDGs with a focus on people and partnership.

UniSus: The role of universities in sustainable development. Collaboration, academic freedom and cross-sectoral contributions

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PROFESSOR PETER DOBERS

Abstract

Sustainable development is widely accepted to be an all-embracing policy frame by United Nations (UN) for a social, economic, environmental and cultural frame for grand societal challenges. Next to organisations of the private and the not-for profit sector, universities, too, are increasingly asked to think about ways to directly address and contribute to the necessary sustainability leadership (Dobers, Linderström and Mobjörk, 2008) and sustainability transformation (Schneidewind 2016). The ability to foster transformative change, and the ability to directly challenge imbalances in power and empowering marginalised voices in civil society, culture, public sector and in business, is what universities do best when their research, education and collaboration is left untouched (Leitheiser, Vezzoni and Hakkarainen, 2022). While in many European countries university staff supported by public funding increasingly decides to make sustainable development a guiding principle for developing education (Kostera and Strauß 2022; Strauß, forthcoming), research, cross-sector collaboration and academic freedom increasingly come under attack in others. However, cross-sectoral collaboration with institutions and individuals in relational, transdisciplinary and collaborative practices is paramount to addressing grand challenges in ethical ways (Gawell, 2021; Keitsch 2021; Franklin, 2022).

The policy frame of the SDGs has in recent years been complemented by the action frame with many skills of the Inner Development Goals, IDGs (Jordan, 2021). In establishing such collaborative practices and skill sets, universities can take a leading role in facilitating collaborative network activities and supporting society with relevant education and research alike (Izak, Kostera and Zawadzki, 2017; Dobers and Stier, 2019; Strauß and Albrecht, forthcoming). Analysing regional sustainability initiatives, Zilahy and Huisingh et al. (2009) also come to the conclusion that both universities and other stakeholders may benefit from partnerships at the regional level, however, such potentials are currently underutilised.

In order to promote the leadership and entrepreneurship of universities in sustainability issues (Dobers, Linderström and Mobjörk, 2008), and to overcome barriers, the expanded and highly popular Triple Helix Model (Etzkowitz and Leydesdorff, 2000, Etzkowitz and Zhou, 2017) can serve as a suitable approach: the Quadruple Helix Model of innovation recognizes four major actors in the innovation system: academia, public sector, industry, and civil society. In keeping with this model, more and more governments are prioritizing greater public involvement in innovation processes, also because

collaboration “allows multiple actors to share, scrutinize, and build on each other’s ideas and work across established organizational and sectorial boundaries that tend to prevent both public hierarchies and private firms from tapping into the ideas and competences of external actors” (Torfing, 2016 p. 293, see also Torfing, 2019).

The project aims at a better understanding of barriers to collaboration for sustainable development in countries of Central and Eastern Europe with a special focus on universities. Expected conceptual outcomes include (i) a set of identified barriers and potential activities to overcome these barriers; (ii) a general literature study of the emerging research and project outcome; including (iii) identified research questions.

Governance of Pentahelix Collaborations as a Shared-Value Creation for Sustainability in the Waste Management and Processing as Circular Economy Project

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DR. RATNA JANUARITA

Abstract

Waste management and processing programs (WMP programs) are one way to reduce the adverse environmental impact of using materials that are difficult to recycle and move towards zero waste. To effectively contribute the earth and its environment preservation, the circular economy concept can create benefits and values for many parties. This is related to several Sustainable Development Goals (SDGs), including Affordable and Clean Energy (7); Decent Work and Economic Growth (8); Sustainable Cities and Communities (11); Responsible Consumption and Production (12); and Climate Action (13). These ideals, however, will be difficult to realize unless other potential parties contribute. The pentahelix model of a collaboration consisting of the government, community, business institutions, academics, and media is in line with the mutual cooperation values that have existed in Indonesia since ancient times.

The main objectives of this research are, first, within the scope of the parties at the project site, to formulate proportional order and justice in the WMP in the neighborhood. Second, within the scope of pentahelix collaboration, examine the supply chain values of each helix as a shared value created in the WMP activities to support the circular economy project.

This research employs a combined normative-empirical juridical method, meaning that to provide legal, policy, and governance aspects, it also flexibly considers other social variables that serve as influencing determinant factors and have been reflected in previously conducted research. By using this method, this study designed legal, policy and governance systems for the WMP programs as a circular economy model created in previous research. First, create a governance system that includes regulations and procedures. Second, map and place the governance structure as needed, and third, develop the governance process of WMP.

The pentahelix elements can play their roles and functions. However, it has not been supported by the community awareness and readiness. According to the 5Ps of SDGs (people, planet, prosperity, peace and partnership) this study views problems in urban and rural areas related to waste issues. Lack of understanding on the positive correlation between WMP with the potential benefit of a circular economy for them. Difficulties are still existed in conducting waste management which has the potential to damage the environment and disrupt economic growth. Meanwhile, the zero-waste

program provides a circular economy which has a multiplier effect to potentially benefit the community. There is no meaningful economic growth without environmental improvement. Therefore, strengthening programs are needed through activities related to governance systems, structures, and processes, especially in the aspect of community culture, which is the most important aspect of pentahelix in the WMP program in the community.

The study concludes that the formulation of proportional order and justice in this WMP program can be useful for building community awareness and readiness. This formulation is outlined in the governance system, governance structure, and governance process in a series of WMP. The frameworks are expected to create value from each supply chain in the community, and all elements of the pentahelix can create their own shared value in the WMP program.

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Partnership for Sustainability - Ukraine case in the context of global security and sustainable development

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DR KATARZYNA CICHOS

Abstract

Russia's aggression against Ukraine and the inability to take effective action by the United Nations have shown that the concept of maintaining global peace, developed in 1945, may be at danger. With the development and empowerment of states, the role of the so-called great powers is decreasing, which jeopardizes the possibility of using the security guarantees provided by the UN Charter and makes more difficult to maintain the development and prosperity of societies. The development of technology and access to resources cause that today, perhaps for the first time in the history of mankind, it is possible to ensure a dignified life and development for all people of our planet without the need to conduct wars for these resources.

The main purpose of the presentation is to present the concept of the new Partnership for Sustainability (P4S). It is an answer for the call for the Partnership expressed in the 2030 Agenda. But it is also an answer for the call of a new threat for UN collective security system, which is actually the fear of development. Development that can contribute to peace and prosperity is increasingly becoming a cause of fear and anxiety, which, as in the case of Russia and Ukraine, can turn into conflict. Partnership for Sustainability, has its roots in the UN Charter and human right.

The the main assumptions of the presentation will be the concept of building a global partnership for sustainable development. It will be presented based on a Ukraine war case and the lack of effective UN action in the situation of aggression on Ukraine of one the Security Council permanent member, Russia. It include such issues as the origin of state concept, the meaning of sustainability, the relation between the threat of the peace and sustainability, the UN Charter and legal base of potential P4S based on UN regulation regarding membership, and institutional structure, the right to collective self-defence and UN collective security, regulation regarding the prohibition of nuclear weapons.

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CO₂Uptake - A Taiwan Hackathon Project Devise the Collaboration and Co-Creation Model for a Net-Zero Future

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Abstract

Climate change is an urgent challenge that significantly threatens the modern world. According to the Intergovernmental Panel on Climate Change (IPCC), a net-zero carbon target must be achieved by 2050 to limit global warming to 1.5°C by the end of the 21st century. As a result, various countries have developed net-zero roadmaps to achieve this goal, including Taiwan's government. However, there is little discussion and exploration on how the public and private sectors can collaborate for a just and equitable transition to a low-carbon society, as many measures are still top-down approaches. Meanwhile, since 2018, Taiwan's government has held an annual Presidential Hackathon to promote innovation, citizen participation, and transparency in government. Participants, including software developers, data scientists, designers, and other experts, are invited to collaborate with government agencies to solve issues using open data and modern technologies.

CO₂Uptake is one of the winning teams for the Presidential Hackathon 2021. It aims to provide decarbonized solutions for public assets through “national assets inventory” and “matching carbon reduction measures” by engaging industry, government, and academic stakeholders. The project team has established a “dashboard of public assets query system” and a “decarbonize practice knowledge database” for reviewing relevant references and cases. The team also takes Da-an District (Taipei), Ji-an Township (Hualian), Shou-Feng Township (Hualian), Taoyuan and Tainan City as examples to showcase the synergy across “urban and rural regeneration and development” and “net-zero transition policies.” Through in-depth interviews with the project teams and stakeholders, this paper aims to evaluate the outcomes and analyze the collaboration mechanisms between private and public sectors on different sites, along with their challenges, barriers, solutions, and potentials.

This paper is related to “SDG11-Make cities and human settlements inclusive, safe, resilient and sustainable (11.3, 11.4, 11.7 & 11.a)”, “SDG13-Take urgent action to combat climate change and its impacts (13.2)”, “SDG15-Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt

biodiversity loss (15.2, 15.a & 15.b)”, “SDG16-Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels (16.6 & 16.7)”, and “SDG17-Strengthen the means of implementation and revitalize the global partnership for sustainable development (17.14 &17.18)”. Moreover, this paper will contribute ISDRS 2023 through its novel Public-Private Partnership mechanism and local practice experience.

Keywords: Net-zero transition policies, Collaboration mechanisms, Decarbonized solutions, Climate governance, Public-private partnership, Urban and rural regeneration

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Photovoice, open data and Artificial Intelligence: implementation of a “participatory action research” methodology for social innovation and sustainable co-design processes

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PHD CANDIDATE PIETRO BOVA

Abstract

This contribution presents a visual methodology of Participatory Action Research (PAR) called "Photovoice" (Wang & Burris, 1997; Wang, 2006) – the use of this methodology is reported in literature for community engagement and social innovation, especially in developing or left-behind regions (Adams et al., 2017; Bova, 2022; Derr & Simons, 2020; Fantini, 2017; Trout et al., 2019) – discussing about two case studies in which the methodology has been implemented: 1) in the first case using two artificial intelligence-based tools for co-visioning actions in participatory processes, "Midjourney" and "Chat GPT"; 2) in the second case, where the open platform “monithon” was used for civic monitoring of European funds spending, adding a phase in which Midjourney translates the proposals into visions.

The results of these two application of Photovoice will be presented and compared. Both applications of Photovoice are integrated into educational pathways for schools that have facilitated the engagement of young students residing in the areas (of the case studies themselves). The first application of the method involved 21 students from the Metropolitan City of Reggio Calabria using the method to describe the urban heritage and landscape. In this case study, focus groups produced textual "prompts" to contribute in a co-visioning process using AI tools like Midjourney: a chatbot based on artificial intelligence whose task is to produce images that are as faithful as possible to the textual description provided. The second application took place in the Grecanica area of Reggio Calabria – a left behind and low-density area – where the use of the method allowed the students to produce a civic monitoring report on the spending of European funds, using the open-web-platform "Monithon" (Monithon - Civic monitoring marathon of public policies, 2021).

The multidisciplinary approach allowed by PAR methodologies theoretically improves community engagement, facilitates bottom-up governance and decision-making processes. Lastly, the use of PAR methodologies as Photovoice proves to be useful (in particular, but not only) for the achievement of target 10.2 of the 2030 Agenda by involving citizens into participatory processes concerning: 1) policies and social innovation; co-design of urban spaces from a sustainable perspective in line with the third P of sustainability (Prosperity).

Connecting people and strengthening inter-institutional cooperation: The case of the Portuguese Sustainable Campus Network (RCS)

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DR. ANTJE DISTERHEFT

Abstract

Networks are an important mechanism for systemic change towards sustainability in higher education institutions (HEIs). In Portugal, there is no formal law or regulation at the governmental level pressuring for this change. Also, due to the lack of collaboration among the Portuguese higher education community, there was a need for action that would allow and strengthen an advanced sustainability implementation in higher education institutions. This work presents the activities that the Portuguese Network Sustainable Campus - Rede Campus Sustentável (RCS) has been undertaking, following a descriptive-reflective approach over the past 4 years of the network's existence. The history and organisation of the network are presented as well as a summary of its main initiatives, namely the results of the first national-wide survey report on the Implementation of Sustainability in Higher Education in Portugal, which was initiated and carried out by RCS and where the current practices in the main sustainability-related fields of actions are listed. This work aims to contribute to the studies about sustainability-oriented networks in higher education, addressing its current and future challenges.

By sharing the experience of the Portuguese Sustainable Campus Network (RCS), this contribution aims to inspire and be useful for possible replications in other regions and contexts. RCS has started to fill in the gap for the lack of a platform that connects Portuguese HEIs in pursuit of advancing sustainability. Started as a network of people and currently with over 280 members, RCS is preparing its future lines of action by fostering and enhancing institutional cooperation. At the same time, the network continues to share and create knowledge in the ten working groups and annual conferences, with increasing visibility and impact. Having carried out manyfold initiatives, being the survey report

on the implementation of sustainability in Portuguese HEIs one of the most significant joint efforts of the network so far, RCS is committed to continuing to strengthen HEI's role in sustainability transformation and striving for a liveable future for all.

While RCS addresses all SDGs in its diverse activities, this work relates in particular to SDG 4 - Target 4.7, SDG 13 - Target 13.3, and SDG 16 - Target 16.6, and highlights the importance of the 5P's (People, Planet, Prosperity, Peace and Partnership) for strong inter-institutional collaboration and cooperation in the higher education sector. By fostering the 5P's through the network, they are becoming inherent to the different levels of actions, from teaching to operations and policy-making.

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A Journey of a University's Research Institute towards SDGs: Initiatives, Progress and Challenges

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Abstract

Two years after the Rio Conference that was held in 1992, the Universiti Kebangsaan Malaysia (UKM) took the initiatives to establish the Institute for Environment and Development (LESTARI). LESTARI is one of the earliest academia research institutes in Malaysia that place emphasis on research related to sustainable development and sustainability. After 29 years of the establishment of LESTARI, it is timely to analyse progress of LESTARI in promoting sustainable development, especially to address the calls from various international initiatives, such as World Summit on Sustainable Development (WSSD), Johannesburg Plan of Implementation (JPOI), Millennium Development Goals (MDGs); Rio+20 and Sustainable Development Goals (SDGs). This paper discusses the initiatives and progress of LESTARI in the context of research strengths, which include research projects; journal publication, graduated students and activities, that support the SDGs. Also, this paper also discuss the challenges facing by LESTARI in promoting multi-, inter- and trans- disciplines research that are relevant to the SDGs.

Leveraging South-South Cooperation and Triangulation to Enhance Growth and Resilience in Africa

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Abstract

Continuous sustainable growth and development is key for countries to ensure citizens are well taken care of and living standards are improving. Resilience is also increasingly important in the face of internal and external stresses and shocks that countries encounter. Ensuring growth and resilience has been difficult to guarantee and attain in the past few years in the face of the Covid-19 pandemic, the conflict between Russia and Ukraine and climate change (3Cs). Countries utilize various internal and external means, policies, frameworks, resources, instruments, and partnerships to attain growth and ensure resilience. South-South and Triangulation Co-operation (SSTC) has been noted in the past few years as a route for enabling low- and middle-income countries (LMICs) to attain their socio-economic goals. South-South cooperation is a form of solidarity among peoples and countries in the South that contributes to their national well-being, national and collective self-sufficiency, and achievement of internationally agreed development goals, such as the 2030 Agenda for Sustainable Development. The international community has lauded the need for partnerships and cooperation to achieve sustainable development, incorporating Goal 17, which emphasizes revitalizing global partnerships for the attainment of the Sustainable Development Goals (SDGs). Partnerships and cooperations have become even more pertinent considering the 3Cs which have exposed vulnerabilities in the health, industrial and agricultural sectors of many African countries, while testing their resilience. It has led to a call for the strengthening of food, health and industrial security for these countries and the need to do this through increased cooperation. The combined impacts of the 3Cs have seen negative impacts on various socio-economic indicators across Africa. This paper considers the role of SSTC in ameliorating living standards and promoting growth and resilience among LMICs in Africa, considering the impact of the 3Cs. It reviews in what areas SSTC has been successful in promoting certain kinds of growth and resilience, what challenges has been faced and draws recommendations for how SSTC can be more impactful given the current realities of the 3Cs.

TRACK 9

Governance. Power and institutions

*9c. Public participation and the role of
stakeholders*

What constitutes and drives socio-technological and institutional innovations in water governance?

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Abstract

Hong Kong's water resources are under increasing stress from supply and demand challenges. Over 70% of drinking water in Hong Kong is imported from Guangdong province, cross the border. Cities relying on the same water source, the Dong river are important economic powerhouses in the Pearl River Delta. Meanwhile, the flow of the Dong river has been reduced by 30%, and the current level of water withdrawals has already exceeded its ecologically safe level (Yang, Chan, and Scheffran 2018). Increases in demand related to economic and population growth and supply decreases due to climate change would increase drought risk and threaten Hong Kong's sustainability. To address these challenges, since 2008, the Water Supplies Department (WSD) has deployed a mix of technological (e.g., smart metering) and non-technical (e.g., water efficiency labeling) measures, and expansion of public education. They have had limited success in reducing water demand (Li, von Eiff, and An 2020).

This article will survey socio-technological and institutional innovations in water governance in cities with water shortages to facilitate international policy learning and develop a holistic approach towards sustainability transitions. We want to understand the drivers, enabling and impeding conditions, working mechanisms, and impacts of those innovations. More specifically, we aim to address the following research questions.

- What socio-technological and institutional innovations have occurred and been documented?
- How much attention have the academics, policymakers, and the public paid to the above-documented socio-technological and institutional innovations, and changes over time?
- Who are the agents of change, and how have they worked with significant water incidents, breakthroughs in science/technology, changes in political leadership, changes in government policies, and/or non-state actors?

Using Melbourne, Singapore, and Israel as case studies, we uncover the system of innovation by systematically analysing the existing documents related to water governance, including academic literature, government regulations and regulations, and reports by civil society groups (NGOs). A combination of bibliometric and textual analysis will enable us to

- substantiate the specifics of documented socio-technological and institutional innovations,
- explicate the narratives on the emergence, adoption, and scaling up of those innovations, and
- constructing the functions played by the major actors in the innovation system, e.g. social guidance, market creation, entrepreneurial activity, knowledge development, resource mobilization, legitimization, and/or positive feedback.

Compared with the existing literature, the contributions of our study are threefold. First, we utilize computational social science methods to develop sustainable water governance theoretical constructs, following a grounded theory approach. Second, we bridge environmental governance and innovation system framework to substantiate the processes of transitions towards improved water sustainability. Lastly, we offer new case studies on environmental policy and governance, particularly on the extremely scarce but life-sustaining resource, water. Practically, our study will inform the Hong Kong SAR Government and other states of innovative measures to improve water sustainability and facilitate knowledge sharing and international lesson learning.

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THE BOTTOM-UP APPROACH TO SUSTAINABLE BUILDING CONSTRUCTION AND THE EMPLOYER'S OBLIGATIONS: A PROPOSED CONTRACTUAL FRAMEWORK

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DR KHARIYAH MAT YAMAN



PROFESSOR ZUHAIKRAH ARIFF ABD GHADAS

Abstract

Sustainability in construction involves living in harmony with nature. The quest for a secure and healthy society is typically interwoven with economic and environmental endeavours. The construction industry continues to face the challenge of promoting sustainability, both in terms of resource consumption and carbon emissions. If economic and social development is to continue without damaging the environment that sustains us, each member of the building industry must contribute to the identification of new sustainable future pathways. In the construction supply chain, the employer is the main stakeholder that dictates the direction of a project. The employer is the principal contracting party for whom the work is undertaken and usually owns the land where the work is performed. The bottom-up approach to sustainable building construction would necessitate a paradigm change in the employer's requirements. This approach can be mandated through contractual obligations that bind the rest of the supply chain that catalyst the coordination, collaboration, and partnership needed to meet Goal 17 - Partnerships for the Goals (SDG 17). This paper highlights the legal obligations that may affect the employer if sustainability is pursued in a building project. The obligations were derived from analysing the relevant rating tools introduced into the Malaysian construction industry market to assess building sustainability. The requirements were then compared and analysed within the current structure of the building standard forms in Malaysia under the traditional general contracting method. The analysis revealed that whilst the current structure of the standard forms affecting the employer's obligations is to be maintained, there are augmented obligations on the employer's part that must be addressed to successfully embed sustainability requirements in buildings. These augmented obligations are classified into a framework or parameter of employer obligations that can be introduced into the current structure of the building standard forms in Malaysia. The findings form part of the overall strategy to have a standard form catering for sustainable building projects in Malaysia. The findings are significant in providing a platform for understanding the sustainability requirements in so far as the employer's obligations are concerned.

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Envisioning a smart energy transition in Hong Kong: A transdisciplinary community engagement model

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MS WING KEI CHEUNG

Abstract

Public engagement is crucial for a holistic energy transition. However, conventional community engagement approaches tend to be peripheral to the transitions research agenda, and overly focused on particular groups in the society. This tends to result in dis-empowerment of the remaining community. This research studies the effect of envisioning as a community engagement process to fostering an inclusive smart energy transition. Envisioning is a non-conventional community engagement approach that encourages creative inputs and participation of everyone. The process hopes to cater people of different different ages, interests, cultures. Unlike most generally one-off community engagement approaches, envisioning is a long-term process that builds capacity of local households in order to empower residents to co-learn knowledge on sustainable energy, co-develop visions and co-create energy transition action plans that are tailored to their needs. Four forms of envisioning were designed and applied in the Fairview Park community in Hong Kong. Target groups include general households, children, elderly, intellectually disabled children, as well as university students from Hong Kong, Guangzhou, Seoul and Tokyo. Firstly, to equip households with the abilities to design visions for energy transitions, we invited 24 Fairview Park households to a solar exchange workshop to share about the opportunities and barriers on developing residential and community solar, as well as the possibilities of community solar development. Secondly, to enhance creativity in the envisioning process, three children science workshops were conducted in Fairview Park, with one particularly designed for intellectual disabled children. Thirdly, to visualise the change, a mobile game is designed to allow households to envision and build their energy community. Fourthly, a cross-cultural deliberate workshop for 40 university undergraduates on the Stanford Online Deliberative Platform was conducted, and the method could be applied towards cross-community envisioning workshops. Based on the above trials, I highlight three key preliminary observations. First, it is observed that envisioning is not an inborn skill, instead it could be acquired through knowledge-sharing and trainings. It is challenging to push households to envision their community's future without background knowledge. Second, cross-sectoral collaboration could be an effective method to promote envisioning in the local community, as internal and external organisations bring in and connect various groups of residents in the community. Third, envisioning could be a way to rebuild dialogue across generations. Intergenerational-learning between young children and parents builds up a stronger bond within the community, fostering a more effective communications throughout the envisioning workshop. Envisioning plays an effective role in empowering community members to pave their way towards a more sustainable future. This research project act as a preliminary case, as it will be applied to three other energy communities in Seoul, Sydney and Bristol.

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People's place in state-run forest management: A history of limited capability, its effects and possible avenues for improvements, studied in Himachal Pradesh, India

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MR. KRITISHNU SANYAL

Abstract

Forest ecosystem services are important for almost all species. Also, many services are commercially valuable. The role of the local communities who often depend on forest for livelihood especially in the developing countries, is crucial for the sustainability of the forests. However, in South-East Asia they are mostly ignored by the policy makers. In India, the roads for community participation in forest management has always been narrowed and curbed by the policy makers. Though without any hierarchically superior outside authority the forest dependent communities can well develop an institution to sustainably manage the local forests, other than some legal user-rights, their perspectives, perceptions, and feelings often remained unaddressed.

We examined how limited capability to the community was always a theme of the state-run forest management regime in India and how it is barred the system from achieving more. We also tried to understand how increased partnership can be achieved through increased capability promoted by the state.

While explored the evolution of modern Indian forest management in the literature we examined the ground reality in Chamba district of Himachal Pradesh in India. Respondents from 600 households selected by random sampling interviewed with a semi-structured questionnaire provided both quantitative and qualitative data required for the same.

We understood that there was a strong sense of alienation from the existing system. Generously recognizing the positive sides of the state-run forest management system, the respondents deeply desired for a change in the existing practice. Though the present options were limited, there was an urge for increased community participation. Changed policies with a larger set of functionings seemed likely to bring the change.

Inclusive institutions create level playing fields and economic opportunities for the people and increase their capabilities. Our study showed that expanding the set of functionings for the community through changed policies was needed. To do that, the present conditions (conversion factors) needed to be changed. Along with the option of trading forest products opening dialogues between the community and the state, involving the community in decision making process at local level, using useful traditional knowledges etc. can act as starting blocks.

Understanding the policies' weaknesses are crucial to find the ways for betterment. A smooth and wider participation of the ground level stakeholders is important for sustainable forest management which helps in achieving SDG 15. Considering its societal impact, the study helps us to understand some of the possible ways in achieving SDG 16. Also, ways advised here are indirectly vital for SDG 1; 2 and 13 as well. This study helps in "...ASSESSING THE 5Ps OF SDGs ..." with a greater focus on people and partnership while addressing the issue of prosperity and peace as well. Finally, by offering an understanding of the lacunae of the existing forest management and proposing ways for improvement this study helps in making the planet more sustainable.

Understanding actor perspectives through narratives regarding challenges for integrated lake basin management

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Abstract

Today many lakes suffer from the impact of several pressures, which act simultaneously and interact in a complex manner influencing all levels of the ecosystem. In such cases, the ecological status is varying according to the sensitivity of lake ecosystems and the combination of pressures. With increasing development activities, the threat to water resources is also increasing, thus there is a need to save traditional and historic water resources from being depleted completely. Similarly, for Tasik Chini Basin, while development is inevitable, the impact of over the years unsustainable activities had seriously affected Tasik Chini ecosystem. The dire situation of Tasik Chini Basin (TCB) calls for immediate attention to be addressed particularly in understanding actor perspectives to risks associated with environmental change. Over the last 30 years, Tasik Chini has been experiencing continuing development, including logging and agricultural development that started in the 1970s. Many studies have shown that encroachment on forest reserves and wetlands, and major changes inland cover and use in the TCB have serious concerns on the sustainability of these changes and their effect on the livelihoods of the local communities and the environmental health of TCB is raising concerns. In addition, land use changes in the TCB region have been associated with land degradation, especially soil erosion and depletion of nutrients. Previously, the basin is endowed with rich natural resources of the lake and its environment, now most of these resources are threatened with environmental challenge. Thus, a basin perspective helps in the analysis of the interactions among various types of land uses and other uses, and in the process, it enhances the understanding of the physical, environmental, social and economic influences that impinge on the productivity of land use systems. The objective of this study is two-fold namely, to examine vulnerability to risks associated with environmental change through narratives among local community and stakeholders and to assess adaptation measures and adaptive capacity of local community and stakeholders. It is hoped that participation of a larger number of stakeholders can be sought, and land use planning can be more effectively carried out. The broader view through a river basin is able to capture dimensions that are not normally included in a land use management approach, such as the causes (and not only the effects) of natural resource degradation, related disputes and livelihood options.

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Empowering Migrant Workers: Enhancing Their Inclusion in Public Information Access for Comprehensive Indonesian Human Development

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MR KADEK WIBAWA



MR MUH. AFIF MAHFUD



MRS RETNO SARASWATI



MR BUDI ISPRIYARSO

Abstract

Migrant workers must have access to core human rights, such as the right to information, in order for them to be able to fully engage in society and make decisions that are based on accurate information. It is necessary to provide migrant workers with access to information to protect their rights and guarantee their general well-being and safety.

This study explores migrant worker involvement in public information access for Indonesian human development. The paper focuses on Indonesia's population growth and migrant workers' village development. Migrant employees lack labor skills and data access. The information helps migrant workers participate and make decisions. The information enhances rights and well-being.

This study uses a normative juridical method to determine migrant workers' right to information. It will involve a complete examination and analysis of international human rights agreements, such as the International Covenant on Civil and Political Rights and the International Convention for the Protection of the Rights of All Migrant Workers and Members of Their Families. This approach will make it possible to identify gaps, inconsistencies.

It finds legal flaws and proposes changes to protect migrant workers' information. Indonesian migrant laborers must participate in public knowledge access for total human development. The Indonesian Constitution and transparency law protect public information. Migrant workers need fair enforcement and public knowledge. Solutions are offered. First, education and awareness efforts should teach migrant workers their rights and how to access public information. IT training boosts digital literacy.

Second, migrant workers require public information quickly. The government, relevant institutions, and international organizations can gather and exchange labor rights, working conditions, migration rules, and support networks. Migrant worker-specific online portals boost information availability. Third, migrant workers need decision-making opportunities. Committees, policy forums, conferences, and meetings are examples. Media educates migrant workers. These steps empower and preserve migrant workers' public information access. This promotes Indonesian human growth and inclusiveness.

TRACK 9

Governance. Power and institutions

*9d. Legal aspects of sustainable
development*

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From the 1st to the 4th Generation of Human Rights: Where is Malaysia in Fulfilling the Right to live in a Healthy Environment?

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Abstract

The right to live in a healthy environment has been promoted in the late 20th century when the international community commits themselves to sustainable development. However, many countries including Malaysia have not incorporated this rights in their constitutions. As a result, there have been difficulties in upholding this right due to the requirement of locus standi. This paper evaluates on the development of rights to live in a clean and healthy environment as part of a human rights, from the first to the present generation of human rights. The paper employs the doctrinal analyses of relevant laws, treaties and cases. The paper concludes that attempts towards achieving the right to live in a clean and healthy environment in Malaysia remain unclear under the first generations of human rights. It is thus submitted that the rights to be incorporated into the Federal Constitution to ensure that Malaysia is not left too far behind from other countries in upholding this fundamental right as a human. Fulfilment of this rights will fulfilment of sustainable development goals 16 on justice.

China Environmental Resources Contract: Analysis of the determination of validity rules

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Abstract

In recent years, China has been paying more attention to environmental protection and proposes to build a resource-saving and environment-friendly society. Environmental resource contracts are an essential part of Chinese civil law in protecting the environment. However, in disputes over environmental resource contracts, there are difficulties in determining the contract's validity. Most contracts were determined to be invalid. In this paper: (1)Reviews violate the mandatory provisions literature and discuss two types of validity determination criteria, (2)Empirically the current status of determining the validity of environmental resources contracts and their extensions, (3)Formulate a unified framework that integrates elements of benefit measurement and proportionality principles, and (4)Theoretically validate the unified framework. Using data from China judgments online over ten years with the supreme people's court and Local courts in 27 provinces, a total of 80 decisions. Next, a unified framework, Using the legislative intent of environmental resource protection law as a starting point, the weighing of interests as a method, and the principle of proportionality as a guide to making value judgments on individual cases. The new framework thus provides a new adjudication idea for the status quo of different judgments in the same case. Breaking down the existing dilemma of determining the validity of contracts in environmental resource contracts, abandoning the current single-determination method, and balancing the preservation of environmental law's social and public interest with the equal preservation of the interest of freedom of contract. The paper also makes several recommendations for future research, including the accumulation of cases in judicial practice for a typological summary and a more refined rule for determining the validity of environmental resource contracts.

Revisiting the Legal and Institutional Framework towards Water Sustainability: A Critical Analysis on Malaysian Water Sector.

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Abstract

Revisiting the Legal and Institutional Framework towards Water Sustainability: A Critical Analysis on Malaysian Water Sector.

The government of Malaysia amended the Federal Constitution in 2005 to regulate the water supply and services sector. As a result, the National Water Services Commission was established as the economic regulator for the water services sector. This will solve the state's financial inability to provide better water supply services and ensure water operators achieve full cost recovery. However, water supply disruptions continue after nearly two decades, especially in industrialized states like Selangor, Johore and Penang. The study finds that the current legal frameworks empower several authorities in the water supply sector. to carry out their responsibilities. The Ministry of Natural Resources, Environment and Climate Change (NRECC) offers policy directives for water services, while SPAN is responsible for the economic regulation of the water operators. Meanwhile, the Ministry of Health oversees the quality of drinking water, while the Ministry of Rural Affairs is in charge of water supply in rural areas. As the owner of watercourses, the state government is responsible for safeguarding the water catchment areas, including rivers. The rivers, if badly polluted, will cause water operator to stop work and causes water supply disruption. This study suggests a new legal and institutional framework for water services law in Malaysia, particularly emphasizing economic, health, and environmental regulation. This will ensure the government to achieve SDG No. 6 on clean water, which is pertinent in ensuring other goals towards sustainable development in the country.

Research on Environmental Information Disclosure Rules of Listed Companies——From the Perspective of the Legalization of Chinese Corporate Social Responsibility

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Abstract

Abstract : With the increasing public attention to environmental issues, the legal system of environmental information disclosure of listed companies has also become an emerging development field in China's environmental legal system and financial legal system in recent years. The academic and practical circles have begun to call for the adoption of existing securities and corporate legal systems to promote the disclosure of environmental information of listed companies and strengthen the legal basis for listed companies to undertake social responsibilities. Therefore, in recent years, environmental information disclosure has gradually become a key area for Chinese listed companies to undertake corporate social responsibility. However, the construction basis of the legal system for environmental information disclosure of listed companies is essentially incompatible with the legislative goal of investor protection in the Securities Law, which has led to the incompatibility between the Securities Law and the Environmental Law in the process of supervising the environmental information disclosure of listed companies. It is not a small difficulty to coordinate and apply the two systems; at the same time, under the existing system of company law on fiduciary duties of directors, the rules for the disclosure of environmental information of listed companies will lead to institutional goals between shareholder protection and stakeholder protection conflict. After analysis and demonstration, this paper finds that there is still a considerable institutional bottleneck in the introduction of a mandatory environmental information disclosure mechanism for listed companies within the existing securities law and company law mechanisms. It is impossible to coordinate the application of securities law and environmental law. There is also no way to well resolve the conflicts and contradictions between the company's shareholder protection and stakeholder protection. Finally, a suggestion is put forward to explore the possibility that listed companies disclose environmental information on a voluntary basis, which may be relatively low in cost and relatively strong in feasibility. Effective voluntary disclosure of environmental information can promote the establishment of corporate reputation.

Keywords: Environmental information disclosure; Supervision of listed corporations; Corporate social responsibility; Stakeholder; Securities law

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Regional energy integration in the SADC region

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Abstract

The Southern African Development Community, or SADC, is an inter-governmental organization of 16 Southern African states with its goal being regional socio-economic integration as well as political and security cooperation among member states. SADC has twenty-seven protocols legally binding on member states dealing with issues such as defense, development, the illicit drug trade, free trade, and the movement of people. SADC Member states experience water and electricity pressure due to population growth and agricultural and industrial development. Most of SADC's population lives in poverty and energy generation and supply remains a problem for most of the member countries. The Protocol for Energy was signed by SADC member states in 1996 and have at its core, the purpose of promoting harmonious energy development for the region. Unfortunately, the Protocol in its current form does not make provision for the effects of climate change and the effect of power generation thereon. Currently the power utilities of mainland SADC members, apart from Malawi, Angola and Tanzania are interconnected allowing countries to supply electricity to one another through a competitive market. However, only about 50% of the region's residents have access to electricity with an energy shortfall being experienced by most countries in the region. The challenges faced by SADC members to generate electricity has affected socio-economic growth, sustainable development, and industrialization throughout the region. Currently the region places a heavily reliance on coal for most of its energy generation, which runs contrary to global efforts to curb greenhouse gas emissions, and on hydropower, which is highly susceptible to climate change, as demonstrated by the current drought. This paper looks at the design and implementation of an appropriate institutional framework for the regional production and distribution of energy. The study reviews SADC's energy resources and recommends policies based on an integrated, reliable, and sustainable system. A coordinated approach stimulates economic growth and can make energy generation and supply sustainable while fighting the effects of climate change. The study comprises a critical review of relevant legislation, both local and regional, on energy generation and supply. The study uses electronic sources, textbooks, and academic articles. It is critical for SADC countries to do some introspection. The drive towards energy sufficiency and efficiency should strive to utilize the vast array of renewable energy resources available that includes solar, hydro and wind energy generation. It is critical to review regional and national energy frameworks to align them with energy realities in the regional and global community. The study makes recommendations regarding "hard" infrastructure, in the form of development and exploitation of renewable energy sources and "soft" infrastructure, harmonized policies and cooperation in electricity planning and energy development.

Deforestation in the eyes of Earth Jurisprudence

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Abstract

The forest in Malaysia and even around the world faces the problem of deforestation. The causes of deforestation are from humans and the implication also affected the people around the world. In order to prevent future harms to nature, Earth Jurisprudence theory has been put out. The theory recognizes the rights of nature and adopts that nature has the rights in law which is that they should have their own legal entity to protect themselves. Earth Jurisprudence also believes the laws must have connection between human and nature as human and nature must co-exist together in this humanity. This article aims to explain and analyse how Earth Jurisprudence helps to prevent deforestation and how far the law around the world has applied Earth Jurisprudence in their law of nature. Earth Jurisprudence is reflected in the Wild Law with the concept that nature has the right to be protected and humans need to protect as we depend on nature to stay alive just like indigenous people. The example will be taken from India, Malaysia and also Ecuador which is the first country to adopt the rights of nature in their constitution. Wild Law is important as the laws adopted the theory of Earth Jurisprudence and shows how humans need nature and how nature can cause the suffering of humans around the world if it is not protected. This article shows that Wild Law seeks to make laws that give a positive connection between people and nature. Wild Law has the potential to become a powerful force in defending the rights of nature against the erasure of today's society

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Understanding Advance Medical Directive and Death Wishes to Treatment

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Abstract

If someone becomes terminally ill and unconscious, an Advance Medical Directive (AMD) can be used to communicate that they do not wish to undergo extraordinary life-sustaining treatment. Meanwhile, death wishes are the conscious or unconscious desire for the death of another or of oneself. Here, the problem is whether there is a law governing the individual's rights relating to AMD and/or death wishes. Ultimately, everyone cares about doing what is best for the patient. Who, then, makes the ultimate decision? Is an advance medical directive (AMD), created before the patient lost the ability to express his or her preferences, the best option? The first goal of this paper is to analyse the legal perspective of protecting someone when communicating his or her wishes before dying. Secondly, to recommend improvements relating to AMD and death wishes for treatment in Malaysia. This paper employs a qualitative method. It has been found that there are dilemmas faced by doctors, patients and family members to determine the patient's wishes before he or she dies. Therefore, the recommendation ought to have elements that can save lives while still respecting the patient's autonomy over that life's course and his or her desires.

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FROM COPYRIGHT PROTECTION TO SUSTAINABLE DEVELOPMENT: HOW THE COPYRIGHT ACT (AMENDMENT) 2022 ADDRESSES DIGITAL PIRACY AND SUPPORTS THE SUSTAINABLE DEVELOPMENT GOALS

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Abstract

The introduction of the new Copyright (Amendment) Act 2022 in Malaysia aims to combat digital piracy and strengthen copyright law in the digital sphere. This aligns with Sustainable Development Goal (SDG) 16 which promotes peaceful and inclusive societies for sustainable development and calls for effective, accountable, and inclusive institutions at all levels. By improving copyright law, Malaysia is taking steps to build effective institutions that can protect the intellectual property rights of individuals and businesses. The new Copyright Act (Amendment) 2022 introduced in Malaysia Act aims to provide access to justice for all and promote accountability in the enforcement of copyright law. The result indicated that while copyright law in Malaysia plays its role in combating digital piracy, improvements of the provisions through the Copyright (Amendment) Act 2022 such as the introduction of current new offences aimed at tackling the latest trends of digital piracy on the internet and conferment new investigative powers to assistant copyright controllers are needed to review in order to further support copyright enforcement mechanism in Malaysia. These improvements to the law are needed in order further support copyright enforcement mechanisms in Malaysia and promote legal sustainability, which is a key aspect of SDG Goal 16. Hence, it is the aim of this article to explore how the Copyright Act (Amendment) Act 2022 Malaysia can be used to fight digital piracy and provide access to justice for right holders at all levels through a new copyright enforcement measure introduced in the Act. This article employs library-based research which collects data from statutes, journals, books and case law.

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Towards A Healthy Generation: ‘Modifying’ or ‘Selecting’ Embryos Using Gene Therapy or Preimplantation Genetic Diagnosis

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Abstract

Having children who are free from genetic diseases is a dream for most parents. Thanks to the advancement in medical technologies, this dream can now be a reality. Healthy children will not only be a benefit to their parents, but is also an asset to the society and nation. Healthy citizens may contribute towards the development of a nation in many ways. This is in line with Sustainable Development Goals (SDGs), particularly SDG3 that aims to promote the well-being and health of citizens of all ages. The advancement in medicine and technology is, arguably, a useful tool that can be utilised in the pursuit of creating a healthy society. This can be achieved by avoiding the birth of children with genetic diseases by using technologies such as gene therapy and preimplantation genetic diagnosis. Although the ways in which both technologies work differs, the end result remains the same, that is, to ensure the birth of children who are free from genetic diseases. In a nutshell, gene therapy ‘modifies’ embryos while preimplantation genetic diagnosis ‘selects’ the desired embryos. Both techniques, however, involve numerous legal and ethical concerns that should be scrutinised before they can be legally permitted in Malaysia. This is the main crux of this paper where the issues surrounding both technologies are carefully analysed. The aim of this analysis is to determine the appropriate legal framework that can be adopted in Malaysia on the use of these innovations as part of the effort to fulfil SDG3.

Keywords: Law; Bioethics; Gene Therapy; Preimplantation Genetic Diagnosis; Sustainable Development Goals; SDG3.

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IMPROVEMENT OF INVESTMENT LAW DEVELOPMENT IN INDONESIA BASED ON ARTICLE 22 LAW NUMBER 25 OF 2007 CONCERNING CAPITAL INVESTMENT AND OMNIBUS LAW

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MARLINA WIDIYANTI

Abstract

Legal development in capital investment is a national legal program to create a good legal culture and economic ensure profits for business owners as well as continuity of state development with an impact on society. Article 22 of Law Number 25 of 2007 on Investment stipulates investors are given right to use land rights in territory of Indonesia. Normative legal this research is conducted to identify legal concepts and principles used to regulate economy, especially those used as basic framework investment regulation and research is used to build a legal construction in terms of refinement of investment law development in increasing investment in Indonesia, accordance with global order is guided Presidential Decree Number 29 of 2004 concerning Implementation of Investment in Framework of Foreign Investment (PMA) and Domestic Investment (PMDN) through the One-Stop Service System and Law Number 25 of 2007 concerning Investment, and the agency authorized to coordinate the implementation of investment in Indonesia is the Investment Coordinating Board (BKPM). Approval, licensing and investment facility services in the context of PMA and PMDN are carried out by BKPM, based on the delegation of authority from the Minister that fosters the relevant investment business fields through a one-stop service system.

Towards A Net-Zero Society -What Taiwan can Lean from the Laws and Policies to Develop Hydrogen Energy in Leading Countries

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Abstract

Hydrogen energy, with its zero carbon emissions, low pollution, and high electrical energy conversion efficiency, has become a focus of green energy in leading global technology countries in recent years. For example, in 2020, the European Commission established the European Clean Hydrogen Alliance, planning to create hydrogen production sites across Europe by 2030 to form a European hydrogen energy infrastructure. In 2021, the Biden administration in the United States proposed the "Energy Earth shots Initiative" and further announced in 2022 an investment of over 9 billion dollars in the "Green Hydrogen Energy Plan" to establish regional hydrogen energy centers and supply chains. In 2017, Japan revealed its "Japan Hydrogen Basic Strategy," aiming to construct a commercial-scale hydrogen supply chain by 2030, leading the world in achieving the goal of a "hydrogen energy society." In 2021, New South Wales, Australia, declared its support for Australia to become a "global hydrogen superpower" and allocated over 3 billion Australian dollars in subsidies to the Australian hydrogen industry.

In response to the global trend of pursuing net-zero emissions, supply chain decarbonization pressure, and the negative impacts of extreme weather, Taiwan's cross-ministerial agencies, including the National Development Council, Environmental Protection Administration, Ministry of Economic Affairs, Ministry of Science and Technology, Ministry of Transportation, Ministry of the Interior, Council of Agriculture, and the Financial Supervisory Commission, officially announced the country's "2050 Net-Zero Emission Pathway" on March 30, 2022, serving as a cross-generational, cross-disciplinary, and international energy and industrial transformation project and key strategy.

According to Taiwan's "2050 Net-Zero Emission Pathway," the country will strengthen hydrogen energy technology development and application, enabling hydrogen to become the primary source of innovative clean energy by 2050 and gradually replace traditional fossil fuels. In addition, Taiwan will construct a "hydrogen supply and demand system," including researching short, medium, and long-term hydrogen supply promotion strategies, planning hydrogen sources and infrastructure, and collaborating with countries like Australia, Japan, and Germany in hydrogen energy. By 2050, hydrogen energy is expected to account for 9% to 12% of Taiwan's total power sources.

As leading global technology countries consider hydrogen energy as an essential green energy source for the future, hydrogen has become a crucial alternative for the transformation of traditional high-pollution industries. Taiwan, surrounded by the sea, has great potential for hydrogen energy. However, the country's hydrogen industry is still in its infancy, and the issues may not necessarily lie in technology but rather in the policies and legal aspects required for hydrogen development. It remains uncertain whether Taiwan is adequately prepared. Based on this background, this article attempts to organize hydrogen energy development policies and legislations in the European Union and the United States, exploring policies or legislations that leading countries in hydrogen energy have already implemented or planned, and examining what Taiwan can learn from them.

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Climate change, water management, and urban planning governance: a case study on extreme events of droughts and floods in Águia Branca, ES, Brazil

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MARCOS DE JESUS OLIVERIA FILHO



GABRIEL MILLER

Abstract

This study analyzes extreme events, such as droughts and floods, as climate change indicators and how they influence how a local government regulates urban planning and a local government is bound by water management regulation. The paper analyzes the international, Brazil's, and Espírito Santo's state regulations on climate change, water management, and urban planning national and local legislation.

The connection of these extreme events as climate change indicators are also demonstrated. Through a systematic legal interpretation, this paper combines all the legal instruments that a local government in Brazil would have to be a bind for climate change, water management, and urban planning. In this context, it's explained how governance plays a significant role.

As Brazil occupies the 53rd position in the Sustainable Development Goals (SDG) among 163 countries measuring the indicators, SDGs 6, 11, and 13 will be investigated and narrowed by the topics discussed in this paper, i.e., extreme events of droughts and floods, water management and urban planning. The goal of this part of the analysis is to verify if the measures in place in the city of Águia Branca in the countryside of Brazil are connected to achieving the SDGs.

Águia Branca is a municipality with around 10.000 people, and its territory is 454,448 Km². Most of the area is in a rural zone, representing most of its economic activity. This is a region where everyone knows everyone, and the separation between technical knowledge and decisions made by government officials is not always as technical as we would like to see. This happens because people are acquaintances or family members, and making technical decisions becomes difficult due to their common bonds. Brazil's old-style politics in small cities play a huge role in decision-making. And in this case, we will analyze how the regulations described previously will be applied in the municipality of Águia Branca, as well as how the cited SDGs are shaping or not the picture.

Microplastic Pollution in Marine Ecosystem and Plastic Recycling Strategies in Malaysia and Indonesia: A Legal Approach

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Abstract

The presence of microplastics in the marine ecology is worrying. According to the United Nations, the ocean contains approximately 51 trillion microplastic particles, which is 500 times more than the stars in our galaxy. Indonesia and Malaysia, in particular, struggle to handle and tackle the problem of microplastics, as it has been discovered that uncontrolled plastic waste from these countries ends up in the oceans. According to the Indonesian Institute of Sciences (LIPI), between 0.27 and 0.60 million tonnes of plastic waste enter Indonesia's waterways each year. According to a 2015 analysis by Jambeck, Malaysia generated 0.94 million tonnes of unmanaged plastic waste, of which between 0.14 and 0.37 million tonnes may have been washed into the ocean. Furthermore, Indonesia is identified as the biggest contributor of plastic trash to the ocean, with an annual production of about 9 million tonnes, while Malaysia is ranked ninth in the world due to poor waste management implementation. As a result, marine ecosystems in both nations are continually threatened by the accumulation of microplastics, leading to a rise in marine mammal extinctions. Indonesia and Malaysia face additional challenges in managing their local plastic litter due to unregulated stranded material from other locations, such as plastic imports exacerbated by the absence of proper legal and policy mechanisms. This study explores the legal governance of microplastic waste management and recycling programs in Malaysia and Indonesia using a doctrinal qualitative approach in which various legal instruments and other secondary legal documents are descriptively evaluated to reveal the legal concerns. This article explores and analyses existing legislative governance on plastic waste management and sustainable approaches, such as robust recycling plans in different nations. The article indicates that in Malaysia and Indonesia, regulatory processes on plastic waste management are in place, however, they are not effectively applied and enforced to prevent the degradation of marine habitats caused by microplastics. In addition, plastic recycling initiatives are not regularly presented as an activity that promotes economic benefits through trash segregation and recycling practices in communities. In order to safeguard marine ecology from microplastic contamination, proper waste management through segregation and the installation of waste treatment facilities are required.

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The Role Of Cooperative Federalism between Federal and State Government Towards Sustainable Housing Development

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Abstract

The concept of sustainable development is the effort to maintain the well-being of the physical environment inhabited by a group of people who will strive to ensure that the physical environment is in good condition and able to meet the needs of life. Sustainable housing development should combine environmental protection, reasonable use of natural resources, protection of economic growth, and social progress. In Malaysia, the government has implemented the concept of sustainable housing development, but it is insufficient and poorly implemented. With the rising levels of urbanization, governments implemented numerous housing programs, laws, and policies. However, attaining sustainable housing development and closing the housing demand-supply gap appears to be increasingly difficult. For example, 183 of 450 certified green buildings are residential (GBI, 2018). Nevertheless, the country has a housing stock of 5.2 million, and 100,000 housing units are added every year to this figure. The problem is that the implementation of sustainable housing development in Malaysia is very low and requires attention and action to address this issue. This article will look into the concept of cooperative federalism to achieve sustainable housing development. This study aims to use and evaluate qualitative legal research methods. An in-depth interview method based on established guidelines will be implemented. Analyze the role and cooperation played by Federal and State Government Departments and make references and comparisons of laws and practices in selected countries such as the United Kingdom, Australia, and Canada regarding the concept of sustainable housing development. The focus of linking this study with the SDG is Sustainable Development Goal 11 which is Sustainable Cities and Communities. The target is to make housing safe and affordable by 2030. This study will meet development needs along with the concept of sustainable development based on more universal aspects such as social, economic, technological, and Sustainable Development Goals (SDGs) to support development in Malaysia. This study will propose a harmonious cooperative federalism mechanism to ensure sustainable housing development can be achieved in Malaysia. Reviewing laws and policies regarding sustainable housing development that is being implemented and then suggesting improvements

Keywords: Sustainable Housing Development, Cooperative Federalism, Sustainable Development Goals (SDG's)

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Sports industry and sports scandals challenge: Sustainably under threat?

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Abstract

The National Sports Vision (VSN 2030) has outlined a new direction for national sports development. VSN 2030 is a complementary to the National Sports Policy 2009 which aims to instil a sports culture among Malaysia which divided into two folds namely sports for all and high performance sports. This vision is a catalyst in driving the Malaysian sports industry to remain sustainable by six strategic cores, among others to develop efficient sports organisation, safe, integrity and justice. Through this concept, VSN is developed to strengthen sports industry by reinforcing sports organisation with good governance and professionalism. On the other hand, SDGs particularly SDG 16 on peace, justice and strong institution which clearly reflects this with its emphasis on governance and integrity as a key enabler of prosperity and sustainable growth. However, the government effort is hampered by the sports scandals. News like doping, match-fixing and corruption are challenges to the integrity of sport. According to the media reports, sports scandals such corruption still becoming cancer to the developments in this country. As such, these papers aim to discuss the issues and challenges that are facing in Malaysian sports industry. The analysis is sosio-legal research by evaluating applicable laws and regulations and also data from the interview.

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Local Administration and Its Power to Manage the Natural Resources

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DR. NUTHAMON KONGCHAROEN

Abstract

People and community are the key persons to successful natural resources management. However, Thailand legal implementation is undermined people's participation when it is incompatible with the national legislature with the unity of law principle. Hence, the local administrations have struggled to trajectory legal pluralism especially in the people's participation in natural resources management. For SDG goal 15, national and local planning that requires the integration process of development and poverty reduction strategies. One major tool would be decentralization. Local administrations can enact by-law or municipal allow people's participation for their natural resources, but the situation in Thailand seems frozen the decentralized power to the local. Examples from the observation in Chiang Mai Province where the communities demanded their rights to participate in community forest management show that the national plan does not provide the real practical decentralization. To comprise the national plan and the local capacities local regulation would be the potential resolution to sustainable development for environmental justice which ecosystem and biodiversity can survive while people can live healthy. People can be forest stewardships. This scenario starts with local regulation with people true participation. From the national part, the strategic plan of decentralization is long delay and still no light at the end of the turner. Lack of political will and skeptical to the local administration are the main factors. The legislation to grant local authority still find the ignited almost three decades since the Constitution of 1997. There are, at least, three types of communities. First, the beginner cannot find the way to start and remain un-regulate; un-participate. Second, the middle model enacted the local regulation already, but there is no enforcement. The veteran communities with long experiences and now, plan to revise and move forward. These case studies would compare with the strategic plan of target 15.9 in which sheds some lights from the international environmental agreements to domestic law.

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Towards achieving sustainable development goals for abandoned children in Malaysia through foster care

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Abstract

In many parts of the world, children without families including those who have been abandoned, abused, and neglected are the most vulnerable children. These children need the best care and protection possible because they have been deprived of a family environment. A newborn infant may be abandoned anywhere, such as in a public restroom, in front of houses, or even in a dumpster. Some of these abandoned infants are also discovered dead. Those that survive are sent to welfare institutions. Notwithstanding the Child Act (Amendment) 2016's acknowledgement of family-based care, many children without families in Malaysia including abandoned children continue to languish in institutions. Research have demonstrated that institutional care has a detrimental effect on a child's physical, intellectual, or mental development. Hence, family-based care should be chosen over institutional care in order to protect a child's wellbeing and right to a family. One of the best alternatives to traditional family care is foster care. However, except from a few provisions in the Child Act of 2001, there is currently no specific statute governing foster care in Malaysia. There are also no formal foster care agencies that evaluate a foster parent's eligibility. Thus, this paper will examine foster care as a preferable alternative care option for abandoned children in order to better understand it from legal perspective. This study uses a qualitative approach that is based on library research. The discussion is related to Goal 3 of the United Nations Sustainable Development Goals (SDGs) regarding health and wellbeing under target 3.2, to end all preventable deaths under 5 years of age since abandoned children cases in Malaysia contribute to death of new-borns. In this regard, foster care is perceived as a legal protection measure for abandoned children. This paper will also contribute to the advancement of children's welfare and strengthen the child protection system by building inclusive society including children in accordance with the 5P of SDGs: people, planet, prosperity, peace and partnership.

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The Urgency of Climate Justice on Legal Reasoning To Enhance Climate Policies Enforcement

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Abstract

The enforcement of environmental law in Indonesia, specifically environmental criminal law, has been deemed feeble and ineffective. Numerous instances of environmental destruction have resulted in mild sentences or even acquittals, diminishing the deterrent effect. This results from the inadequacies in the justices' arguments and their limited comprehension of the fundamental principles of climate justice. This study seeks to investigate the pressing need for incorporating climate justice into the legal reasoning of judicial decisions to enhance the efficacy of climate policy enforcement. This research sheds light on the challenges encountered by Indonesian judges by employing qualitative methods and relying on literature studies within the field of law. The findings demonstrate that Indonesian judges frequently adhere to the prevalent civil law system tradition, which results in rigorous decision-making processes and oversimplification of complex cases. In the context of climate justice, judges must comprehend the interconnectedness of the climate policy system beyond statutory regulations. Therefore, legal reasoning emerges as an indispensable mechanism for incorporating climate justice into judicial decisions. By employing sound legal reasoning, judges can integrate climate justice principles into their arguments, thereby ensuring that their decisions contribute to environmental protection, climate change's effects, and the promotion of social and intergenerational equity.

Keywords: Climate Justice; Climate Policy; Legal Reasoning; Indonesian Judges.

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The Legal Aspects of Thrifting Business and its Impact on MSME Enterprises and the Environment Sustainable

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Abstract

The thrifting business trend in Indonesia currently has many enthusiasts. Since the profits from this business reach more than ten million dollars. The concept of obtaining branded products at reasonable prices is very appealing to a variety of groups. In addition, certain people consider thrifting as an effort to preserve the environment and prolong the useful life of an item.

From another perspective, using second-hand goods have the risk of transmitting disease. Evidently, this can exacerbate the post-pandemic situation, which has not fully recovered.

Some second-hand items have been prohibited for decades. The government has issued Regulation of the Minister of Trade (Permendag) Number 40 of 2022, Concerning Amendments to Regulation of the Minister of Trade Number 18 of 2021, Concerning Export Prohibited Goods and Import Prohibited Goods. However, the rampant smuggling of used products, which causes losses to the Indonesian government and violates applicable laws and regulations, has become a major concern. Furthermore, this thrifting business has reduced the demand for domestically produced items, among other negative effects.

As a result, the authors are interested in researching the influence of thrifting regulations on sustainable business and the environment. This research was undertaken using a normative juridical approach.

The research shows that the laws and regulations relating to the thrifting industry need to be managed to ensure the effectiveness of implementing these regulations and foster a healthy and sustainable economic climate for MSMEs and the environment.

This research concludes that the thrifting business, which is currently snowballing, has been regulated by the Minister of Trade Regulation (Permendag) Number 40 of 2022 concerning Amendments to the Minister of Trade Regulation Number 18 of 2021 concerning Export Prohibited Goods and Import

Prohibited Goods. Nonetheless, second-hand goods, mainly clothing and footwear, are imported in rat routes and small ports. These actions are unquestionably unlawful yet challenging to halt. Therefore, it is necessary to adhere to stringent rules and conduct in this thrift store.

The selection of the theme Legal Aspect of Sustainable Development, which in the end, the authors present this research, The Legal Aspects of Thrifting Business and its Impact on MSME Enterprises and the Environment research, is expected to contribute on implementing the Sustainable Development Goals or SDGs, especially goal number 12, which encompasses educating the public about responsible consumption and production, that ensuring consumption and production patterns are managed using sustainable methods. Furthermore, this complies with two of the five principles of the 5Ps, which are the global agenda of the SDGs; Planet and Prosperity, which pertain to protecting the earth from damage and attained by economic development that upholds justice for everyone can sustain themselves in prosperity, physically and economically, socially, and technologically, which are also in unity with nature.

Keywords: Thrifting Business, Legal Aspects, MSME Enterprises, Environment Sustainable

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Recent Reform of Corporate Environmental Information Reporting Regulation in China – A Preliminary Assessment

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Abstract

Environmental law and corporate social responsibility ('CSR') have been becoming increasingly intertwined attributable to the long-lasting issue of corporate pollution. Nowadays, the regulation of environmental information disclosure plays a vital role in fostering CSR as well as constituting the foundation for effective environmental risk management. To strengthen its environmental governance regime, China aims to form a mechanism for mandatory corporate environmental information disclosure by 2025. In order to achieve this goal, the Ministry of Ecology and Environment ('MEE') has put forth two sets of rules (collectively '2022 MEE Regulations') with effect from 8 February 2022. The implementation of the 2022 MEE Regulations represents an overhaul of the pre-existing corporate environmental information reporting system. Because this reform is in its nascent stage, the significance of the 2022 MEE Regulations remains under-researched. The current research takes an initiative to perform a preliminary examination of the 2022 MEE Regulations, inspecting in what ways China's environmental information reporting structure has been improved. This paper conducts a doctrinal study of the doctrines and rules concerning the 2022 MEE Regulations and a comparative analysis of the environmental information disclosure requirements under the 2022 MEE Regulations and pre-existing rules. In particular, this study looks into the 2022 MEE Regulations in nine main aspects, including: (i) types of companies required to disclose environmental information; (ii) determination and announcement of the covered companies; (iii) timeliness of disclosure; (iv) way of disclosure; (v) information required to be disclosed; (vi) disclosure exemptions; (vii) disclosure format; (viii) penalties imposed on violators; and (ix) information transparency. The analysis finds that the 2022 MEE Regulations cover a larger scope of companies and involve a higher level of public engagement. Remarkably, the 2022 MEE Regulations adopt a centralized approach to standardize the way of disclosure submitted by all covered companies. The covered companies are required to upload their corporate reports to a national mandatory environmental information disclosure system established by the MEE. Annual disclosure employs a differentiated disclosure approach under which the extent of information disclosed is linked to the nature of the covered companies. A nation-wide environmental governance mechanism is scheduled to be fully implemented by 2025, providing the general public with free access to the corporate environmental information disclosures uploaded to the centralized disclosure system. These reforms are expected to upgrade the quality of corporate environmental information disclosure substantially, alleviating the greenwashing problem.

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Rethinking Pesticides Management Law and Policy in the Face of Climate Change Risks

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PROFESSOR HSING HAO WU

Abstract

In response to climate change and increasing food supply demands due to the growing global population, the increasing consumption of pesticides globally imposes great health and environmental concerns. International and national legal regimes on pesticide management both require appropriate legal and policy approaches to protect food consumers' and farmers' health from increasing consumption of pesticides. This article first explores the international governance of pesticide usage and then discusses the limits of existing international legal regimes tackling environmental and health concerns of pesticides in use. The international governance on agrochemicals mainly focuses on ensuring the trade of pesticides and other agrochemicals does not present significant health risks to farmers and food customers of importing states. The treaties and international institutions have difficulties in testing and listing hazardous pesticide products in a timely manner.

This article then analyzes the recent Roundup litigation that incurs panic for farmers to use pesticide products. Roundup is a widely used herbicide to eliminate weeds produced by Monsanto and has been legally challenged in the U.S. on the grounds of severe human health concerns since 2016. The claims of thousands of product liability and tort lawsuits are based on a 2015 report released by the World Health Organization (WHO) that animal tests found glyphosate as "probably carcinogenic" and potentially harmful to DNA in human cells. Finally, this article provides policy suggestions that tackle the health concerns of increasing pesticide usage and ensuring sustainable food security at both the international and national government levels. There is an urgent need for global leaders to explore sensible and sustainable approaches to tackle global food security issues without compromising environmental and health protection. The deregulation of GM crops technology and promotion of sustainable agriculture may serve as sensible and in-time solutions to reduce pesticide consumption and water usage.

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How to regulate and design new software technology, including AI, so that human rights violations can be avoided and adverse environmental can be minimised?.

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PROFESSOR TINEKE LAMBOOY

Abstract

The development of technology moves forward every day. This paper's topic dives into the question of how to regulate and set up a governance structure concerning the development of new software technology, including AI. Currently, in many jurisdictions, the design and governance of new software technology is not regulated. Often, unwanted and unforeseen problems occur with new software: the design is not inclusive and discriminates when put into practice. Or, the software technology causes a tunnel vision for the receivers of information and hence contributes to polarization in society. Software technology is also employed in warfare, even when not designed for that purpose. Moreover, the use of software technology and the storage of data requires enormous quantities of energy and raw materials from mines for the production of the hardware on which the software runs. Studies reveal that both resources negatively affect the environment and, often, human rights. The European Commission and also some national governments are in the process of developing strategies and policies to influence software developers and software users to ensure inclusiveness. In April 2023, US president Biden called for regulation concerning and proposed to establish an 'AI Authority' tasked with regulating and overseeing this sector.

In this paper, first an analysis is presented of the legislative and policy developments in this field in the European Union and the United States and of the academic literature on this subject. Next, a model is presented to address the issues raised above. The model can be used by private sector parties that decide to produce and govern their software in a responsible way and the model can inspire governments that consider regulating the sector. The model is a roadmap that shows how ethics and inclusivity can become part of the software technology design and governance and how the environmental adverse impact can be made transparent. The involvement of stakeholders at an early stage is key as is the formulation of the goals. The model is the result of qualitative and theoretical studies conducted by the Dutch NGO Lab for Future Generations and elaborated by the authors.

The paper contributes to creating more insights concerning fulfilling the SDGs 12 (responsible consumption and production), 13 (climate action) and 16 (peace, justice and strong institutions).

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Can the granting of Rights of Nature to natural entities such as a mountain, river or an animal species, contribute to a better protection of nature, considering the existing nature protection laws?

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PROFESSOR TINEKE LAMBOOY

Abstract

Worldwide, in more than 40 jurisdictions, over 400 initiatives have been launched to grant or acknowledge legal rights and/or legal personality to elements of nature such as rivers, mountains, forests, types of animals and individual animals. Approximately two-thirds thereof were established Rights of Nature have been granted or acknowledged in the Americas, South-East Asia, New Zealand and Australia, Africa and Europe. In many of those countries, nature protection laws have been in place for a long time. For example, in the European Union, the Bird Directive and Habitat Directive were adopted in the 70s and 80s of the last Century. Nonetheless, many reports reveal an enormous reduction of species and deterioration of ecosystems everywhere in the world due to the impact of human activity. Apparently, even though nature protection legislation is in place, this does not stop or diminish the ongoing destruction of nature. As humans are just one species of the community of life, humans decide over the fate of all other species. The concept of Rights of Nature embraces a more holistic perspective of nature and the relationship of people with the rest of the community of life. It values the intrinsic value of elements of nature and promotes that those elements also gain a legal position and voice in the legal systems which we have constructed. Examining the open access data base linked to the above referenced Journal of Maps study, shows that Rights of Nature have been established in various ways, regards a variety of natural entities and have developed various models of representation and governance regarding the natural entity that holds rights. In this study three Rights of Nature representation and governance models are compared: the Yarra River in Australia, the Mar Menor in Spain and the legislative proposal for the Dutch part of the Wadden Sea. Additionally, the experiences in Colombia with the legal personality of the Colombian Amazone forest and the Atrato River, in Bangladesh with the legal personality of the Turag River, in New Zealand with the legal personality of the Whanganui River, in Ecuador with the Constitutional Rights of Nature in Ecuador, and in the United States with the rights granted to Mountain Lake Park will also be considered. The method is doctrinal and comparative case studies. The analysis of the case studies will lead to a discussion on the ways in which the granting or acknowledging of Rights of Nature can add/adds to existing environmental legislation. The paper contributes to creating more insights concerning fulfilling the SDGs 14 (Life below water) and 15 (Life on land). In addition, granting Rights of Nature also contributes to SDG 16 (peace, justice and strong institutions).

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Research on Environmental Information Disclosure Rules of Listed Companies in China——From the Perspective of the Legalization of Corporate Social Responsibility

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Abstract

Abstract : In recent years, with the surge of enhancing disclosure of environmental information, there has been an increasing call for companies to improve the transparency of corporate reporting around the world. Companies are seen as agents contributing to a better future and thus can help achieve the 2030 Sustainable Development Goals (SDGs) through transparent environmental disclosure. Environmental information disclosure has gradually become an emerging key area for Chinese listed companies to undertake corporate social responsibility, and some views advocate relying on existing securities law and company law rules to realize the legalization of corporate social responsibility in this area. However, the construction foundation of the legal system for environmental information disclosure of listed companies is essentially incompatible with the legislative goal of investor protection in the securities law, which has led to the incompatibility between the securities law and the environmental law in the process of supervising the environmental information disclosure of listed companies. It is not a small difficulty to coordinate and apply the two systems; at the same time, under the existing system of company law on fiduciary duties of directors, the rules for the disclosure of environmental information of listed companies will lead to institutional goals conflict between shareholder protection and stakeholder protection. Therefore, there are still many institutional obstacles to introducing a mandatory environmental information disclosure mechanism for listed companies within the existing securities law and company law mechanisms, and the realization of the goal of legalizing corporate social responsibility is not a easy task.

Keywords: Sustainable Development Goals; Environmental Information Disclosure; Listed Company Supervision; Corporate Social Responsibility; Securities Law

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CULTURAL RIGHTS OF ORANG ASLI FROM LEGAL PERSPECTIVES

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Abstract

The Aboriginal Peoples Act of 1954, which protects the rights of the Orang Asli, is inadequate and out of date. In spite of the fact that the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) provides worldwide recognition of the rights of indigenous peoples, Malaysia does not currently have a comprehensive legal framework that recognises the Orang Asli's right to culture. These legal constraints need a holistic approach to the Orang Asli's right to culture, which incorporates concerns of language, education, identity, customary practice, traditional knowledge, and customary land. As a result, the primary purpose of this study is to analyse the existing legal framework of the cultural right of the Orang Asli people. In addition to that, the current study elaborates the on the rights to the culture of indigenous peoples in accordance with international legal standards. This study employs doctrinal legal research to accomplish the said objectives. This study revealed that the existing legal framework on the cultural rights of Orang Asli is not compatible with international law standards. In conclusion, this paper can substantially contribute to the attainment of sustainable development by advocating for Orang Asli's right to culture, in particular, goal 10 of the Sustainable Development Goals, which aims to reduce inequality, especially target 10.2 to empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status by 2030.

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Towards Achieving Sustainable Development Goals for Abandoned Children through Foster Care in Malaysia

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Abstract

Abandoned children in Malaysia face significant challenges, often found in distressing situations and sometimes even discovered deceased. Institutional care has been shown to have detrimental effects on their development, making family-based care like foster care as preferable option. Despite the recognition of family-based care in the Child Act (Amendment) 2016, the absence of specific legislation and the limited provisions on foster care in the Child Act pose challenges to its effective implementation. This paper examines foster care as a preferable alternative care option for abandoned children from a legal perspective. Using a qualitative approach based on library research, it explores the importance of foster care in promoting the health and wellbeing of abandoned children. The study aligns with Goal 3 of the Sustainable Development Goals (SDGs), addressing the mortality of newborns and children under the age of five. The findings of this research contribute to advancing children's welfare and strengthening the child protection system in Malaysia. By addressing the challenges and gaps in the foster care system, it aims to build an inclusive society that prioritizes the wellbeing of children in line with the 5P framework of the SDGs: people, planet, prosperity, peace, and partnership.

TRACK 10

Special themes

10a. Sustainability and Africa

EFFECT OF WOMEN EMPOWERMENT IN AGRICULTURE ON HOUSEHOLD FOOD SECURITY IN KENYA

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MR. PETER KIPKORIR



DR. PAUL DONTSOP

Abstract

Agricultural production in Kenya has remained low with relative food insecurity affecting many citizens in most parts of the country because of the increase in population growth in Kenya over the past two decades. Women labour contribute a higher percentage in agriculture labour supply. They are the main players in household food security. Yet, in Kenya, women lack financial support, access to productive resources despite the documented role women play in achieving household food security. The involvement of women in agriculture is indispensable yet their contributions is still low. Therefore, this study aims to analyze the effect of women empowerment on household food insecurity in Kenya. The objective of the study is to establish the determinants of women empowerment in agriculture in Kenya and to analyze the impact of women empowerment in agriculture on food insecurity in Kenya. The study will heavily rely on Panel data using the household and individual questionnaires from the Kenya 2020 Covid-19 Rapid Response Phone Survey to achieve the stated objectives. The random utility theory and the farm household theory will be employed. The probit endogenous switching regression model will be utilized to control for endogeneity using the Instrumental variables approach for panel data. These preferred techniques will also account for heterogeneity and unobserved effects. Women in most of African countries are the main players in ensuring food security for the family yet their contributions are often undermined by male dominance in the agriculture sector whose main agenda is commercial gains rather than the food security of the household. Thus, the need to treat this current study with urgency. The study findings are expected to inform policy on how women empowerment in agriculture can be re-engineered towards enhanced household food security in the country. This study contributes to SDG 2 and goal target 3 and SDG and goal target 7 and 8. The study also contributes towards the conference especially and improving on the prosperity and people welfare of the 5Ps of SDGs

Entrenching Climate Mitigation Standards in Extractive industries' contracts for Sustainable Trade and Development in Africa

Mr Ifesinachi Okonji

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MR IFESINACHI OKONJI

Abstract

Africa is blessed with abundant natural resources which constitute significant parts of their economies and remain keys to their economic growth. These natural resources include metals such as lithium, bauxite, cobalt, aluminium, tantalum, gold, iron, steel, zinc, titanium, and copper; minerals such as diamonds, gypsum, salt, graphite, coal, uranium, platinum, chromium, phosphate rock; petroleum oil and gas. Trade and development for many African countries depend heavily on the mining, exploration, exploitation, and processing of their natural resources carried out by extractive industries usually consisting of multi-national and international companies from developed countries under contracts. Unfortunately, activities of these extractive industries have caused environmental problems including pollution (air, water and soil), global warming, emission of CO₂ and greenhouse gases, loss of biodiversity, damage to ecosystem, improper waste disposal, deforestation, depletion of the ozone layer, acid rain and public health issues which violate right to a healthy environment.

The above phenomenon lay credence to the myth of resource curse in Africa which needs to be demystified by examining what better ways to deal with natural resources, adopting climate change adaptation, resilience and governance for economic prosperity and well-being of the African nation. By way of doctrinal research method, the study seeks to explore provisions of the African Continental Free Trade Area (AfCFTA) and examine Climate Mitigation strategies as Standards for entrenchment in Extractive industries' contracts to ensure adoption of safer and better ways of mining, exploitation, exploration and processing of natural resources sine qua non for a regulated environmental impact and social stewardship that guarantee protection of right to healthy environment, secures sustainable trade and development in Africa. The outcome of this study will facilitate the establishment of a uniform standard of mining, exploration, exploitation and processing of natural resources by extractive industries that guarantee protection and preservation of climate, alleviation of poverty and sustainable development in Africa

The study relates to Sustainable Development Goals 13 (Climate action), and 1 (No poverty). It targets at implementation of social protection systems; and the building of resilience to environmental, economic and social disasters ("SDG + Target: 1.3.5") especially, integrating climate change measures into policies and planning ("SDG + Target: 13.2"). It is worthy of note that the outcome of this study will be of immense and valuable contribution to the topic of the conference, "Half-way through Agenda 2030: Assessing the 5Ps of SDGs (people, planet, prosperity, peace and partnership)", because the proposed contributions addresses the myth of resource curse in Africa, provides a pathway for protection and preservation of the planet while advancing the prosperity of the African continent.

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THE ECONOMICS OF NEGLECTED AND UNDERUTILIZED SPECIES IN UGANDA

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MR DOUGLAS OTOO

Abstract

Abstract

Neglected and underutilized Species (NUS) or forgotten crops are believed to directly and indirectly benefit agricultural diversification, broadening and diversification in agroecology, reduction of imports, and self-reliance on African food systems. Uganda is one of the many African countries with a number of indigenous neglected and underutilized crops spread across its 9 agroecological zones. The NUS is embedded with vast nutritional, medicinal, and economic potential to transform the African food systems. In spite of the great potential of NUS and matched with two rainy seasons (March-June and August-November) in Uganda, NUS production, utilization, and consumption have remained low. Critically, there is limited information on the potential of such crops. Therefore, the study aims to explore the potential of NUS in Uganda. The objectives of the study are to profile neglected and underutilized crops in Uganda; examine their economic benefits; and assess the market potential of NUS. The results from the study would be used to publish different NUS crops according to their agroecology importance. Additionally, policymakers would pick interest in the promotion of these crops. Lastly, market development both within and regionally would be established. The study deploys a systematic literature review as the research design to retrieve the required information. Web searches on websites like the African Orphan Crops Consortium (AOCC), Forum of Agricultural Research in Africa (FARA), Google Scholar, and web of science. Keywords, abstracts, and lists of publications will then be explored using words such as orphan/neglected/traditional/indigenous crops, production, nutrition, consumption, and market. Only those articles fit for the study purpose will be considered for review and analysis. Preliminary findings reveal the agroecological distribution of NUS by crop type and market potential of neglected and underutilized species in Uganda.

Keywords: Neglected and Underutilized Species, sustainability, Markets, Uganda

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Digitizing National Planning Frameworks for the Coherent Implementation of Global and Continental Commitments

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Abstract

National governments find it imperative to carry out development planning to conceptualize, streamline and ensure the implementation of economic, environmental, social, and spatial growth and development. While countries maintain their independence in planning for what occurs within their borders, many also commit to global and regional goals and frameworks, which if implemented, will also boost economic, environmental, and social development. Some of these include the Sustainable Development Goals (SDGs), Agenda 2063: The Africa We Want, and the Doha Programme of Action for the Least Developed Countries for the Decade 2022 – 2031 (DPoA). The United Nations Economic Commission for Africa (UNECA) works with member states to review and report on SDGs and Agenda 2063 goals' implementation at national and regional levels through its Development Planning Section (DPS). DPS has evolved a toolkit called the Integrated Planning, Financing and Reporting Toolkit (IPRT) that assists African countries to integrate the SDGs and Agenda 2063 in their national development plans and to track and report on the progress on both initiatives. This paper is written in recognition of the imperativeness and challenges of development planning in African Countries. It seeks to understand the development challenges of ECA's member states and the solutions they are using to address it. The paper utilizes surveys to take stock of the utility and efficacy of the IPRT, with a view to increasing its effectiveness in supporting the needs of member states. It commences by providing a background on the IPRT, its key features, evolution, and roll out. The paper features the alignment of the National Development Plans of nine (9) African countries and the Southern African Development Community (SADC) with the SDGs and Agenda 2063. The paper concludes by considering challenges and opportunities in implementing the IPRT, and proposes a way forward in strengthening the support provided to member states.

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Entrenching Climate Mitigation Standards In Extractive Industries' Contracts For Environmental Protection And Development In Africa

Mr Ifesinachi Okonji

University of Ibadan, Ibadan, Nigeria



MR IFESINACHI OKONJI

Abstract

Africa is blessed with abundant natural resources which constitute significant parts of their economies and remain keys to their economic growth. These natural resources include metals such as lithium, bauxite, cobalt, aluminium, tantalum, gold, iron, steel, zinc, titanium, and copper; minerals such as diamonds, gypsum, salt, graphite, coal, uranium, platinum, chromium, phosphate rock; petroleum oil and gas. Trade and development for many African countries depend heavily on the mining, exploration, exploitation, and processing of their natural resources carried out by extractive industries usually consisting of multi-national and international companies from developed countries under contracts. Unfortunately, activities of these extractive industries have caused environmental problems including pollution (air, water and soil), global warming, emission of CO₂ and greenhouse gases, loss of biodiversity, damage to ecosystem, improper waste disposal, deforestation, depletion of the ozone layer, acid rain and public health issues which violate right to a healthy environment.

The above phenomenon lay credence to the myth of resource curse in Africa which needs to be demystified by examining what better ways to deal with natural resources, adopting climate change adaptation, resilience and governance for economic prosperity and well-being of the African nation. By way of doctrinal research method, the study seeks to explore provisions of the African Continental Free Trade Area (AfCFTA) and examine Climate Mitigation strategies as Standards for entrenchment in Extractive industries' contracts to ensure adoption of safer and better ways of mining, exploitation, exploration and processing of natural resources sine qua non for a regulated environmental impact and social stewardship that guarantee protection of right to healthy environment, secures sustainable trade and development in Africa. The outcome of this study will facilitate the establishment of a uniform standard of mining, exploration, exploitation and processing of natural resources by extractive industries that guarantee protection and preservation of climate, alleviation of poverty and sustainable development in Africa

The study relates to Sustainable Development Goals 13 (Climate action), and 1 (No poverty). It targets at implementation of social protection systems; and the building of resilience to environmental, economic and social disasters ("SDG + Target: 1.3.5") especially, integrating climate change measures into policies and planning ("SDG + Target: 13.2"). It is worthy of note that the outcome of this study will be of immense and valuable contribution to the topic of the conference, "Half-way through Agenda 2030: Assessing the 5Ps of SDGs (people, planet, prosperity, peace and partnership)", because the proposed contributions address the myth of resource curse in Africa, providing a pathway for protection and preservation of the planet while advancing the prosperity of the African continent.

TRACK 10

Special themes

10b. Sustainability and ASEAN

Integrated River Basin Management Approach towards Effective Climate Change Mitigation and Adaptation in Malaysia

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Abstract

Climate related impact, including sea level rise, severe floods and water shortages has posed challenges to all Malaysians. The increasing temperature trends of 0.130C to 0.24oC per decade have been observed and reported in the Malaysia's 2020 Third Biennial Update Report. Greater rainfall intensity is projected until 2050 that would result in an increase of sea water level and severe flooding. The number of affected persons attributed to disasters, mainly floods and seasonal monsoon, increased from 57,946 victims in 2015 to 86,406 in 2019. Terrestrial biodiversity in Malaysian forests remains vulnerable to climate change impacts with 55% of the land remained forested. The greenhouse gas (GHG) inventory described in Malaysia's BUR3 detailed the anthropogenic emissions and removals for the year 2016 in four major sectors: energy (79.4%); industrial processes and product use (IPPU) (8.6%); waste (8.6%) and agriculture, forestry, and other land use (AFOLU) (3.4%). The Ministry of Natural Resources, Environment and Climate Change (NRECC) has been the focal point on climate change mitigation and adaptation. However, as Malaysia is a federation there are matters relevant to climate change which falls under the exclusive jurisdiction of the state government. The study found that two of the major sectors in the GHG inventory, agriculture, and forestry, as well as land use, are within the exclusive jurisdiction of the state and local government. Thus, there are constraints, gaps and needs for fulfilling NRECC's reporting obligation and implementation of climate change strategies. It is proposed that integrated river basin management (IRBM) to be the suitable approach to mitigate and adapt climate change in Malaysia. It requires a close coordination between land use and water resources management so as to ensure sustainable water management that meets the need of the present and future generation. This requires close cooperation between levels of government is pertinent in ensuring effective climate change mitigation and adaptation. This will help NRECC to meet the goals of SDG 6 on clean water, SDG 13 on climate action, SDG 15 on life on land, and SDG 7 on partnership.

ASEAN Declaration on Heritage Parks and Cultural Heritage: Assessing the Progress Made in Malaysia

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Abstract

ASEAN member states have committed to protecting their cultural and natural heritage through two important declarations. Under the ASEAN Declaration of Cultural Heritage, each ASEAN Member Country must identify, delineate, protect, conserve, promote, develop and transmit to future generations the significant cultural heritage within its territory and to avail of regional and international assistance and cooperation, wherever necessary and appropriate. They must also recognize that the national cultural heritage of Member Countries constitutes the heritage of Southeast Asia, for whose protection it is the duty of ASEAN as a whole to cooperate. On the other hand, the ASEAN Declaration on Heritage Parks calls for cooperation to conserve and manage ASEAN Heritage Parks to develop and implement regional conservation and management action plans. This paper will evaluate Malaysia's initiatives and impediments to protecting her cultural and natural heritage in line with the commitments given under the two declarations. The researchers found that the similarity of Malay cultures among ASEAN countries has caused conflict regarding UNESCO listing. At the same time, the jurisdictional divide between federal-state and state-state in Malaysia has impeded several nominations of natural heritage in the country. Better protection of cultural and natural heritage will elevate the protection of life on land under SDG 15 and promotes better partnership among ASEAN countries toward sustainable development under SDG 17.

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Family Development Sessions (FDS) as a Pandemic Response: The Conditional Cash Transfer of the Philippines

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DR. ANA LEAH CUIZON

Abstract

This study seeks to account the impact of the Family Development Sessions (FDS), as a conditionality in the conduct of the Pantawid Pamilyang Pilipino Program (4Ps). 4Ps, a conditional cash transfer program, the Philippines' banner program in its goal for poverty alleviation. It has been institutionalized in 2019 through Republic Act 11310, An Act Institutionalizing the Pantawid Pamilyang Pilipino Program. During the pandemic, all sectors of the economy were adversely affected. Filipino families were at the core of this economic struggle, more so, are the families in the margins – the Pantawid households. FDS is the monthly meeting of Pantawid households organized by the municipal links (ML) of the Department of Social Welfare and Development-Field Offices in partnership with the LGU representatives. There are identified modules to be delivered per FDS session, nonetheless the advent of the pandemic allowed these sessions to transition and to innovate. FDS has become an avenue for community initiatives and collaborations as Pantawid households learn to struggle and to survive together. Later, these community initiatives translate to success stories that reflect the significance of FDS beyond being a conditionality towards the availment of the cash grants corollary to being identified as beneficiaries of 4Ps. Thus, FDS became a mechanism of empowerment for the Pantawid households. This study utilizes a qualitative method in exploring the narratives of the Pantawid households during the pandemic (FY 2019-2022) vis-a-vis community initiatives organized through the FDS. On the aspect of empowerment, the analysis will use the framework of Elizabeth Rocha's Ladders of Empowerment. It is revealed that FDS created positive impact on the Pantawid households especially during the economic pandemic struggle. The sessions have given opportunities for convergence of the households in sharing their struggles, exchanging ideas on alternative means of addressing their challenges, tapping different government agencies in the provision for services, and creating new paradigms and decision-making at the grassroots level. In gist, the FDS is effective in engaging the beneficiaries, providing them a sense of personal empowerment as they partake in the community initiatives during the pandemic. This proposal resonates SDG 11 – Make cities and human settlements inclusive, safe, resilient and sustainable; 11.3 by 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries. FDS takes the form of a participatory planning program that prioritizes the integration of technical expertise with the preferences and knowledge of community members in the planning process. It forges consensus building and collective community decision making while encouraging active participation of traditionally marginalized groups in the planning process. It relates to the conference theme as it probes the victories of 4Ps through its FDS. In empowering the community, the final rung of the ladder still remains elusive. Empowerment is still deemed to be personal rather than communal. For genuinely inclusive, safe, resilient and sustainable communities, much still has to be done. But we are moving forward, nevertheless.

Cross-border grid digitalisation in ASEAN Power Grid: Institutional imperatives for scaling up renewable energy integration

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Abstract

The world's most critical climate imperative today is to accelerate clean energy transition -- the most consequential of which, is to thoroughly decarbonise the electricity sector by mid-century. This means fossil fuel assets, particularly coal power would have to be decisively phased out, with renewables massively scaled-up, integrated in electricity generation systems, inclusively shared, and efficiently utilised. The premise of this paper is that cross-border grid digitalisation is a necessary complement to interconnections, which can facilitate a renewable-driven regional energy trade, and should be a priority if power system integration is to be aligned with decarbonisation agenda. In Southeast Asia, interconnecting and smartening power grids are identified as key strategies to transitioning to renewables, creating efficiency, and strengthening the region's energy security. The call for digitalisation of the energy system is reiterated in the 7th ASEAN Energy Outlook 2022 stating that, "Energy supply trails behind installed capacity by almost half of its value, indicating the efficient utilisation of renewables is a priority... smarter and more flexible grid infrastructures, are required to address higher penetration of RE in the future." Notably however, smart grid development in the region remains to be individual country endeavours. Amid a growing focus on 'low-carbon power integration', 'regionally interconnected green grids' and 'green power corridors' in recent discourses on the APG, there is limited reference on initiating cross-border smart grids in the region. The investment trajectory within the APG also remains focused on electricity interconnections absent a clear institutional framework for integration of distributed generation and emerging technologies into shared power systems. Drawing from policy discourses, technical and news reports, and academic analyses, this paper examines the case of Lao PDR-Thailand-Malaysia-Singapore Power Integration Project (LTMS-PIP). It identifies country policy motivations, incentives and emerging opportunity-paths for cooperation in cross-border grid digitalisation (i.e. cross-border smart grids) between partner countries towards scaling up renewable energy integration into shared power system, and the key institutional constraints that can be negotiated foremost. It then outlines priority regulatory policies and strategies that may lend reference for ASEAN to designing a regional governance framework for cross-border digitalisation towards a low-carbon APG.

1. While the thrust for clean energy transition is all encompassing, the paper responds directly to SDG 7 and all its five targets; SDG 9.1, 9.4, 9.c; SDG 13.2, and 17.3, 17.6, 17.7, 17.14.
2. The paper also responds directly to the theme of the conference. Promoting clean energy transition through decarbonisation and integration of renewable energy resources in electricity systems in the context of regional integration/cross-border cooperation, cuts across the 5Ps of the SDGs. Especially amid the prevailing shallow integration in ASEAN, cross-border requirements compel for parity and coherence in institutional, regulatory and market arrangements to facilitate equity and effective inclusion. How these are reconciled and negotiated pose consequences on people's welfare, protection of planetary resources, promotion of economic prosperity, of peace, and of sustained partnerships and cooperation.

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An empirical study on the impact of perceiving work as a calling and worship of God on perceived work stress of BPO employees in Cebu City, Philippines.

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PROF. TIFFANY ADELAINA TAN

Abstract

This study explores the relationship between the employees' outlook on work and their perceived work stress. One popular coping strategy is Freud's defense mechanism conception where people tend to avoid or reinterpret negative thoughts. An example of this repressive coping style is to use religion or spirituality to help individuals maintain a positive view of stressful situations. Thus, this current study explores the impact of one's spirituality on perceived work stress. One's view on work measures spirituality in terms of being planned by a higher being, namely God. It focuses explicitly on perceiving work as a calling of God and worship of God. Thus, the hypotheses are (1) Perceiving work as a calling of God impacts one's perceived work stress and (2) perceiving work as worship of God impacts one's perceived work stress. The business process outsourcing (BPO) industry was chosen for this study because of its importance to the Cebu economy. Two BPO companies based in Cebu City, with a combined workforce of 1,250, were invited to participate. Out of the 1,250, 451 employees (36%) agreed to join the study and completed the online survey. In addition to the structured survey, the human resource directors of the BPO companies were interviewed. To test the hypotheses, structural equation modeling was used on the proposed constructs. The results show that only perceiving work as a worship of God impacts the perceived work stress of the respondents while viewing work as a calling of God did not. The mixed results could be explained by the confusion about what 'work as a calling of God' meant for the respondents. Upon examining the demographics statistics, it appears that most of them lack interest in pursuing to know God. For instance, although 92% of the respondents claim to belong to a denomination that believes in God, only 13% attend church every Sunday, 20% attend only once a month, and 35% do not attend at all. When asked about their attendance of church activities outside the Sunday services, 47% said zero, and 64% claim not to attend gatherings that delve deeper into the teachings of God. Thus, if one does not purposively attend activities that teach about God, then how could one know God, let alone God's calling in one's life? A second possible explanation is that the respondents confused work as a calling of God (God-centric) with their need to work for money (need-centric). As the HR directors claimed, the top reason their employees join the BPO industry is the higher salary and benefits. Thus, it's possible they view work as more of a call to fulfill financial needs. Regardless of the mixed results, we know that what we think affects how we feel and how we behave. Thus, working on our perception of work helps lower stress and burnout. This study contributes to SDG 8, Target 5. It is common knowledge that stress is counterproductive. Thus, anything that could lower perceived work stress could contribute to productive employment.

Open search strategies and innovation performance of young firms: Evidence from Thai manufacturing industries

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Abstract

Open search strategies – search breadth and search depth – have been widely studied in the open innovation literature. However, little efforts have been made to analyze the effects of open search strategies on the innovation performance of young firms. Young firms are important economic actors with their significant contribution to economic growth, employment, and innovation. They need source external knowledge to overcome their resource limitation to generate knowledge in-house. The question is which external knowledge sourcing strategy – search breadth or search depth – is more appropriate for them. This study employs the survey data of 423 manufacturing firms in Thailand and uses the Negative Binomial Regression for the analysis of firms' product innovation. The results show that search breadth is more significant than search depth on young firms' product innovation performance (i.e., number of new products introduced into the markets). It is also found that the effects of search breadth on product innovation tend to be curvilinear taking U-shaped relationship, while the effects of search depth tends to be monotonically negative on product innovation. These results suggest that young firms should adopt the breadth strategy for enhancing their innovative performance, but should be selective in their search for external knowledge in order to avoid the over-search effects.

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CASCADING DEVELOPMENT TO THE MARGINALIZED: THE CASE OF THE BADJAO COMMUNITY IN BRGY. TOTOLAN, DAUIS, BOHOL

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ATTY. CYRIL BRYAN CUIZON

Abstract

This study sought to account the impact of the Kapit Bisig Laban sa Kahirapan - Comprehensive Integrated Delivery of Social Services -National Community Driven Development Program (Kalahi CIDSS-NCDDP) to the improvement of the day to day living of the Badjao community. Further, it traced their history, ethnicity and institutional arrangements as a group of people. This is a purely qualitative study utilizing an ethnographic method of data gathering and analysis. The data gathered was based on actual immersion and observation in the participant's real-life environment. Narrative account of actual observation is a major source of information. Key informants who have had direct access to the Badjao community for over a year and have personal knowledge of the KC-NCDD projects were identified and selected to participate and for the purpose of validation. Personal interview was conducted to the Badjao community leader and/or elders, Municipal Local Government Unit (MLGU) representatives, Municipal Inter-Agency Committee (MIAC) and Civil Society Organization (CSO) representatives. An understanding of the Badjao community's dynamics is a realization that at the core of empowerment lies the needs of the economically and socially marginalized groups. In this light, the Ladder of Empowerment proposed by Elizabeth Rocha in the Journal of Planning Education and Research (1997) is utilized in order to describe the characteristics of the Badjao Community in terms of democratic decision-making vis-à-vis individual and collective forms of community empowerment through the KALAH-CIDSS NCDD projects. Brgy. Totolan, Dauis, Bohol is among the targeted areas of the program since 2015. The locality hosts diverse people with the presence of the Badjao community (an indigenous group of Austronesian ethnic origin). It has been noted that the participation and involvement of the Badjaos to the program had made positive impact to their daily lives. However, the degree and extent of empowerment may vary across the lens of the different stakeholders. What is positive to note is the personal recognition of the Badjao that they are Filipinos, born in the Philippines, with lives that changed through their participation and involvement to the program.

Keywords - Community Driven Development (CDD), Badjao (indigenous group), community empowerment

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FOOD SOVEREIGNTY AND TRADE LIBERALIZATION TOWARDS RICE SUSTAINABILITY

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Abstract

As a member of WTO, Malaysia needs to hold the WTO policy in trade liberalization of the agrifood sector. However, food sovereignty achievement and the protection of farmers are two main focuses for the development of agri-food regulations. A good agri-food sector for long-term development focuses not only on economic contribution and social well-being but also on the environmental aspects. It is very important to regulate agricultural operations in a way that will minimize the negative impact on the environmental environment, at a level that is considered sustainable. This study analyses and maps the development of agri-food regulations from the current National Agrofood Policy 2.0 where food sovereignty and trade liberalization for rice sustainability. This is a qualitative study using secondary data and social jurisprudence theory. The results show that Malaysia's agri-food regulations support the WTO policy in the liberalization of trade for agriculture which give a negative impact on achieving food sovereignty and a lack of protection for farmers. Since SDG2 is focused to end hunger, achieving food security and improved nutrition, and promoting sustainable agriculture, it recognizes the interlinkages between supporting sustainable agriculture and empowering small farmers, it is recommended that the government to provides policies to strengthen the management of the food system in achieving food sovereignty. The Control of Padi and Rice Act 1994 needs to review in the development of a new Section, including the food sovereignty for people involves in the rice sectors. It can be in a separate chapter explaining the development of people in agri-food from the liberalization of agricultural trade so that they can sustain a global market to achieve sustainable development goals, in this case, competitive rice trade. The government needs to provide policies that strengthen the agrifood management system to support the achievement of food sovereignty. The law should be used as an instrument to support the achievement of this goal.

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The concept of land bank in supporting the protection of sustainable food agriculture land in Indonesia

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DR. SRI SUSYANTI NUR



DR KAHAR LAHAE

Abstract

A land bank is an agency that manages land supply and land use in accordance with the physical condition of the land as a supporting natural resource. Agricultural activity is a form of land use, which is very important to maintain in supporting sustainable development, especially food availability. Indonesia as an agricultural country has in several decades maintained a food surplus, by establishing several regulations, including regulations regarding the Protection of Sustainable Food Agricultural Land, and regulations concerning Food Security. Sustainable development in the context of maintaining food availability, one of which is by presenting a Land Bank which guarantees the availability of fertile land/agricultural land, prevents soil damage, increases soil fertility, prevents conversion of functions, and in its management can promote the welfare of farmers in the form of land ownership as a assets (Agrarian Reform). This sustainable development is carried out to ensure the fulfillment of the SGDs which are a series of economic, social and ecological developments. So that with this sustainable development, the goals of the state will be achieved to improve the standard of living and welfare of the people in Indonesia. The purpose of this writing is to find out; 1) what is the concept of sustainable land/agricultural management by the land bank; 2) how to legally maintain sustainable agricultural land/land in preventing the conversion of agricultural land; 3) how to realize the welfare of farmers in the ownership of assets in the form of land/agricultural land in achieving sustainable development. The research method used is Normative legal research method by collecting legal materials in the form of primary, secondary and tertiary legal materials. To then be analyzed qualitatively and presented in a descriptive form. The results are in the form of conclusions, namely; 1) The application of the land bank concept for land/agricultural land cannot be implemented due to constraints on land data and land management; 2) Law enforcement and supervision of the conversion of agricultural land is still weak; and 3) Forms of community participation in registering their land as assets and access to improving their welfare in the context of realizing sustainable development is still low.

Keywords: Land Bank, Agricultural Land, Sustainable Development

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FOOD SECURITY OF ABORIGINAL PEOPLES (ORANG ASLI) OF PENINSULAR MALAYSIA: LEGAL CHALLENGES IN ACHIEVING SUSTAINABLE DEVELOPMENT GOALS

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Abstract

The Orang Asli are indigenous peoples in Peninsular Malaysia who are not classified as homogeneous but rather heterogeneous due to their uniqueness and distinctiveness in perspective, socio-cultural, and psychosocial-cognitive features. However, they are one of the most vulnerable groups in society and remain marginalised due to the control of the majority. From a legal standpoint, laws in Malaysia, including the Orang Asli Act 1954 (Act 134), do not expressly provide food security for Orang Asli. In fact, the National Agrofood Policy 2021-2030 (NAP 2.0) was found to be insufficient because it did not address the issue of Orang Asli's food security comprehensively compared to international legal standards. Thus, the main objective of this article is to analyse issues and laws related to food security for Orang Asli based on human rights principles and international law standards. This study uses doctrinal methods. This study found that the government should have a comprehensive legal framework for food security for the aboriginal peoples in Peninsular Malaysia because it needs to integrate the uniqueness of the customs and aspirations of Orang Asli, human rights principles and international legal standards in one policy document. This effort will offer a complete and practical model to guarantee food security to all Orang Asli. It fulfills the Malaysian obligation related to food security and further helps Malaysia fulfill the second Sustainable Development Goal (SDG) agenda, which is to end hunger, achieve food security, and improve nutrition in particular, the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round by the year 2030.

CULTURAL RIGHTS OF ORANG ASLI FROM LEGAL PERSPECTIVES

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Abstract

The Orang Asli Act of 1954, which protects the rights of the Orang Asli, is inadequate and out of date. In spite of the fact that the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) provides worldwide recognition of the rights of indigenous peoples, Malaysia does not currently have a comprehensive legal framework that recognises the Orang Asli people's right to culture. These legal constraints require a holistic approach to the Orang Asli's right to culture, which incorporates concerns of language, education, identity, customary practice, traditional knowledge, and customary land. As a result, the primary purpose of this study is to analyse the existing legal framework for the cultural rights of the Orang Asli. In addition to that, the current study elaborates on the rights to the culture of indigenous peoples in accordance with international legal standards. This study employs doctrinal legal research to accomplish the stated objectives. This study revealed that the existing legal framework for the cultural rights of Orang Asli is not compatible with international law standards. In conclusion, this paper can substantially contribute to the attainment of sustainable development by advocating for Orang Asli's right to culture, in particular, goal 10 of the Sustainable Development Goals, which aims to reduce inequality, mainly target 10.2 to empower and promote the social, economic, and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status by 2030.

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Sustainable Community Development in Malaysia's Palm Oil Industry: A Case Study

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Abstract

The rapid growth of palm oil production in Southeast Asia could be seen in Indonesia and Malaysia. These two countries are among the largest producers of palm oil. Palm oil production is an important sector that contributes to the economic development of the country. In ensuring the palm oil industry in Malaysia moves forward according to the SDGs agenda, there is a need to ensure the sustainability of the community that works in the palm oil industry. Sustainable community development is an area that is lacking in this industry. Usually, standards or guidelines emphasize business sustainability. As the corporate social responsibility concept addresses the important responsibility - economic, social and environment, thus community development is also pertinent to achieve sustainability. The palm oil sector faces many challenges from time to time in ensuring a harmonious community to continue its legacy. In Malaysia, job security in this sector would be a major concern as younger generations lost interest to continue the legacy of working in palm oil industries for a more stable work pay. The labour shortage has cost the palm oil industry a huge sum. Hence, the government's initiative is to bring in migrant workers to cover the shortage. There is an intention from several industry players to have 100 per cent local workers in the year 2027. Apart from this, there are also issues on land conflicts, lack of education and experts in particular fields to bring the palm oil industry forward. Therefore, this qualitative study intends to understand the landscape of sustainable community development in the palm oil industry in Malaysia. A semi-structured interview was conducted with several palm oil agencies in Malaysia. The results of the study provide heads-up on several aspects such as collaborative initiatives with the government, corporate sector and community, providing education and training and others. The study also discussed implications to the communities to provide better social control so that companies can implement sustainability strategies in their business processes. The challenges faced may become an opportunity for better community development in future.

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THE ENACTMENT OF BLUE ECONOMY DEVELOPMENT INTO ASEAN: LEGAL PERSPECTIVE

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Abstract

ASEAN and blue economy are the new bound topic as a response to the migration of the green economy movement instead as well as the new way of alternative concept to optimize the growth of the economy based on the ocean and coastal development. On another side, the implication of climate change on the ocean would be against as the imminent threat to the development of the blue economy, especially in the areas or regions where a lot of states rely on its sea such as ASEAN. These circumstances would be great challenges for the readiness of their member states to adopt the blue economy in terms of a multiverse of legal frameworks and the consensus of its members. As maritime geography plays a significant role in the economy of the region, the enactment instead of the application of blue economy policy has a vital strategy to drive in their region.

This paper applies normative legal research methods and library research. In regard the result, this paper expected to answer the issue of the readiness of the member states to implement the blue economy toward the legal instrument and the norm setting-process at their national level. In addition, the paper also criticizes the framework of the blue economy since not all member states have an area of the sea instead of international waters.

This research aims to test the inconsistency of norm-setting could be identified as the heavily obstacle factor to realise the effective implementation of the blue economy such as IUU fishing, marine pollution, haphazard tourism, and unplanned coastal development. The roadmap of the blue economy should provide a comprehensive strategy that can synchronize social economic and environmental aspects. To meet consensus and integrated Blue economic policy in ASEAN, the member state must pay attention to The Principal of International Law while formulating the national policy. In addition,

the execution of the blue economy requires a strong commitment between state members to find a unification perception. As the conclusion, this paper suggest solution that ASEAN as a regional organization must evaluate each the member states readiness to face the blue economy. In addition, ASEAN can make an integrated legal basis for each the member states.

Keyword : Blue Economy, ASEAN, Enactment

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Developing Public Utilisation Fund Mechanism as New Social Protection System in Malaysia

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Abstract

Since the 1970s, Malaysia's socioeconomic development is imbalanced. This process creates multi-layered poverty in household heads through distribution policies. It influences by the consistency of good governance practices, a code of conduct in people saving ethics, the direction of responsible expenditure of households and the reaction of locals to a drastic change in the global megatrend. Therefore, this article proposes an innovative mechanism through a certain percentage of employee and employer contribution to the Employees Provident Fund (EPF) with a government subsidy to reduce the cost-of-living issue. The role of the state and ethical theory is used to form an exploratory framework in this article to situate the problem of inequality under the Malaysian development model. A combination of in-depth interviews, engagement in High-Level Meetings and a rapid poll conducted with 340 respondents through online survey determined that this innovative mechanism is the most practical. These findings also demonstrate that the Malaysian government urgently needed to implement this new social protection system policy without forfeiting household head savings or monthly income for sustainable livelihood.

Keywords: inequality, cost of living, inclusive development, Employees Provident Fund, new social protection system; subsidy

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The Development of DeJiao and Its Impact to Malaysian Chinese Community Social Transformation

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MR. GENGYE WU

Abstract

DeJiao originated in Chaoshan, China in the late 1930s and spread all over the world. It is considered to be an emerging Chinese folk religious organization that integrates the tenets and virtues of five religions, namely Confucianism, Buddhism, Taoism, Christianity, and Islam. Along with the immigrants from Chaoshan, DeJiao spread to Southeast Asia, where it is the most prosperous in Malaysia. Although in the past 30 years, through DeJiao's root-seeking activities and China-Malaysia non-governmental exchanges, DeJiao has re-emerged in mainland China, the power of DeJiao in China is still not comparable to that in Malaysia. DeJiao is based on the ancient Chinese belief that humans and nature are interconnected. This holistic approach to life is reflected in the DeJiao rituals which involve the veneration of ancestors, offering sacrifices to the gods, and maintaining harmony between humans and the natural environment. DeJiao is particularly popular among the Chinese communities of Malaysia. It is a communal tradition that is centred around the family and includes the practice of ancestor worship, the observance of filial piety, and participation in various festivals and rituals. In addition, DeJiao also includes the celebration of traditional Chinese festivals such as Chinese New Year, the Mid-Autumn Festival, and the Qingming Festival. This helps to reinforce the values of family and community among Chinese Malaysians. Many of religion movement in Malaysia were set up to attract the structural layer to support respective agenda. It can be seen many community-based organization in Malaysia particularly religion oriented are derived by the state system and its constitution that facilitate the religiosity activities. Notwithstanding this research will focusing DeJiao as a religion, or it role as a Chinese association in Malaysia, it will thoroughly adopting historical perspective of DeJiao development in discover that current religion movement with Chinese community social transformation in specific aspect. This study will systematically and rigorously examine its achievements in its development, as well as its impact on the Malaysian Chinese social transformation.

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The Joint Development Partnerships of China's Belt and Road Initiative and its Impact to Malaysia

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MISS NOOR ILIE ZUHAILI BINTI YAHAYA

Abstract

China has proposed a new Silk Road plan known as One Belt, One Road (OBOR) or also known as Belt and Road Initiative (BRI) a development framework and strategy introduced by President Xi Jinping. Simply expressed, the establishment of the 21st-century Maritime Silk Road and Silk Road Economic Belt concept, it seeks to establish an economic and political sphere of influence on the Eurasian continent through the land and the sea. Specific regulations relating to the BRI idea were made public in May 2013. BRI began as a concept and evolved into more concrete actions throughout time while offering financial aid, technology transfer and many more through BRI's collaboration. It emphasizes communication and collaboration between nations, especially between China and the rest of Eurasia. In 1974, Malaysia became the first nation in the ASEAN to formally recognize the People's Republic of China. Since then, China and Malaysia have enjoyed a strong commercial, investment, and interpersonal interaction that has strengthened bilateral ties between the two nations for decades. With the launch of the BRI, the developing BRI trade network has rekindled interest in researching global trade networks within the context of establishing free, open, and inclusive international trade relations. Malaysia's location at the intersection of land-based and marine East-West trade routes makes it crucial to China's BRI objectives. Malaysia, which borders the South China Sea to the east and the Straits of Malacca to the west, is strategically significant to China's 21st Century Maritime Silk Road. One of the most important maritime routes in the world and one of its busiest waterways is the Straits. The current progress of few projects under Joint Development Partnership under China's Belt and Road Initiative not only benefitted to Malaysia as a beneficiary, but it also comes with significant back breaking that led to new dependency.

The Treatment of Migrant Workers Post-Covid in the Context of SDG 8: Malaysian and Indonesian Perspectives

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Abstract

The deadline for achieving the Sustainable Development Goals (SDGs) is approaching. Despite the fact that many countries are executing on their commitments to the 17 SDGs, many have been affected by the Covid-19 saga since 2020. The COVID-19 crisis has a devastating impact on the global economy, markets, and employment. As numerous nations recover from the pandemic, migrant workers are the most vulnerable group left behind during this difficult time. Numerous migrant workers are subject to unemployment, termination, and other forms of discrimination. Some known SDGs objectives speak directly to migrant issues, demonstrating that countries are obligated to protect migrant workers in order to achieve the SDGs. The purpose of this paper is to analyse and compare the treatment of Migrant workers in the context of SDGs (post covid) Goal 8 – Decent Work and Economic growth by examining the policies, laws, practises, and perspectives of two countries that are heavily involved in Labour Migration, Malaysia and Indonesia. Migrants often bring significant benefits to their new communities in the form of skills, strengthening the labour force, investment and cultural diversity. They also play a role in improving the lives of communities in their countries of origin through the transfer of skills and financial resources, contributing to positive development outcomes. However, if migration is poorly managed, it can also negatively impact development; migrants can be put at risk, communities can come under strain and development gains can suffer. As much as migration has an impact on development, migration is also affected by development. The development contexts in which people live, where they move to, and the places they go through to get there play a role in shaping people's resources, aspirations, motivations and opportunities to migrate. Conflict, climate change, labour markets and other development-related factors can all impact the drivers and nature of migration. The 2030 Agenda for Sustainable Development provides an overarching framework to address this complex and dynamic relationship between migration and development and to better understand how migration and migrants can shape development outcomes and vice versa. This paper will then provide a recommendation based on the comparative findings.

TOWARDS SUSTAINABILITY IN ASEAN: STUDY CASE OF THE MALAYSIAN ANTI-CORRUPTION ACT: ITS PROSPECT AND CHALLENGES

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Abstract

Corruption is the misuse of power for private benefit which occurs both in the public and private sectors. It erodes economic growth and slows development. Many countries across the globe are suffering from the adverse effects of corruption and Malaysia is one of these countries. The development of corruption in Malaysia dates to the Barisan National (BN), a coalition of parties that ruled the country from 1957 after independence to 2018. The purpose of the study is to examine the development of Malaysia's anti-corruption regulations, its prospects and challenges over the years and to proffer suggestions that would strengthen the fight against corruption in Malaysia. The research theoretically analyzed developments of the anti-corruption legislations and reviewed discussions on anti-corruption and measures/strategies developed by government to combat corruption. Corruption is caused by many factors but the most visible ones in Malaysia are money politics, corruption culture, family, and individual as well as institutional opportunities. Although, there exist a comprehensive legislation against corruption – the Malaysian Anti-Corruption Act (Act 694) 2009 with its 2018 amendment and the inclusion of Section 17A, providing a good atmosphere to combat the problem, yet corruption is on the rise in Malaysia with high level corruption perpetrated without restrain. This study further found that leadership/political unwillingness, lack of effective enforcement procedures, symbiotic relationship between politicians and big business owners, as well as public passivity are some of the challenges to achieving success in the fight against corruption. Hence, the study suggest independence of the enforcing bodies like the MACC and the courts to act without fear or favour, as well as a standardized and clear procedure for enforcement so that the existing legal framework can be effectively implemented to minimize the problem of corruption.

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STRENGTHENING VILLAGE-OWNED ENTERPRISES IN EQUITY AND ECONOMIC GROWTH FOR THE REALITY OF SUSTAINABLE DEVELOPMENT GOALS IN INDONESIA

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NURHANI FITHRIAH



DIMAS DWI ARSO

Abstract

The village is the closest government agent in reaching the community. The government realizes national development, one of which is by gradually carrying out village development. The village is given the authority to implement programs to support the village economy. The existence of a village-owned business entity is an excellent program in the community's efforts to advance their village by carrying out many business activities. With the existence of a village-owned enterprise, the village can manage the natural potential contained therein for the village's progress. It follows the SDG's target, which is to provide space for the community, in this case, to increase the community's standard of living to avoid poverty. One of the villages in Indonesia has natural potential, namely Napal Jungur Village. Napal Jungur Village has a lot of potentials, namely its natural beauty, fertile soil, coffee plantations with abundant yields and so on. The natural beauty potential of Napal Jungur Village can become a tourist spot for tourists who want to enjoy it if it can be appropriately managed. The method used in this research is the qualitative method. Village-owned enterprises are the main key in mobilizing the community to manage their natural wealth. Communities can issue their abilities in managing nature tourism. In this village, it can be developed into a tourist spot for waterfalls, tubing, and it can also sell natural products from its plantations to tourists who come. So, with authority possessed by village-owned enterprises to manage natural wealth in Napal Jungur Village, it can improve the economy of its people. It is in line with what is stated in Law Number 10 of 2009 concerning Tourism Article 5 letter C, namely, tourism is organized based on providing benefits for people's welfare, justice, equality and proportionality. Based on this, the existence of Village-Owned Enterprises as community mobilizers in improving their economy is realizing Village SDGs No. 8, equitable distribution of development results and creating jobs for rural communities, especially in Napal Jungur Village, Bengkulu Province, Indonesia. The results of this study show that Village Owned Enterprises are very important. With good Badan Usaha Milik Desa management, managed capital can be channeled to the community through capital programs and good cooperation, which can improve a prosperous village economy.

Keywords: SDGs; Village Owned Enterprises; Tourism

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Optimizing Village-Owned Enterprises (BUMDes) in Creating Dynamic Village Institutions and Adaptive Culture

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WULANDARI WULANDARI



KIKI AMALIAH

Abstract

The village is given the freedom to manage the village according to the potential that exists in the village, therefore the village needs media to develop the village. One of these media is the Village-Owned Enterprise (BUMDes). Management of Village Owned Enterprises is carried out by the Village Government together with the community. BUMDes management by directly involving the community is expected to be able to encourage the community's economy in improving people's welfare. Businesses managed by BUMDes are in accordance with the conditions and potential that exist in the village. Villages that have natural potential to be used as tourist areas, or products from village community agriculture can be managed by BUMDes. The Village Sustainable Development Goals (SDGs) policy or village sustainable development goals in Indonesia are derivatives of the existing provisions in the Sustainable Development Goals (SDGs). This formulation can be found in point 16 of SDGs Peace, Justice and Resilient Institutions which is then reformulated with Village SDGs in point 8 of Cultural Responsive Village letter b Number 18 namely Dynamic Village Institutions and Adaptive Village Culture. BUMDes which is interpreted as an institution at the village level has several problems, namely, BUMDesa management is not optimal, BUMDesa managers do not understand their duties and responsibilities, lack of good communication between the village government and BUMDesa managers. This research has the aim of strengthening dynamic village institutions and adaptive village culture through optimizing BUMDes in the management of existing businesses in the village, so that it will have a positive impact on village communities. This research is a normative juridical research with a focus on the positive law of the Indonesian state which regulates BUMDes based on the SDGs of the Village and provisions of international law. The results of this study, first is formulate the optimization of BUMDes by looking at the strategies that have been mentioned in the Regulation of the Minister of Village, Development of Disadvantaged Regions and Transmigration Number 3 of 2021, and the second is Optimizing Village-Owned Enterprises (BUMDesa) in Creating Dynamic Village Institutions and Adaptive Culture by using a normative local governance framework for a village-owned enterprise, highlighting the required coordination/collaboration between the village government and the BUMD managers. Furthermore, the research is expected to be useful for BUMDesa managers to be used as a guideline for BUMDes managers so that existing BUMDes can optimized institutional functions as stated in the Village SDGs.

Keywords : Village-Owned Enterprise (BUMDes), Village SDGs, village institutions.



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Exploring the Risk Factors of Corruption in Enhancing Sustainability in Malaysia's Telecommunications Sector

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Abstract

The telecommunications sector ceaselessly been subject to regulatory scrutiny. It is an industry that is vulnerable to a numerous economic crime threat, including bribery and corruption due to the intricate interactions with government officials, the potential for the telecommunications network to be used to facilitate illegal activity, and the risk of fraud and misstatement faced by large corporations. This is aggravated by the evolving governmental priorities, political cycles, and changing paradigms of public ownership. Apart from a regular monitoring of anti-corruption policies and exhaustive anticorruption due diligence, it is advocated that at the core of every anti-corruption initiative, lies the need to identify specific risk factors that increase vulnerability and exposure to corruption at both the public and private levels. Therefore, this research aims at identifying and exploring the critical risk factors leading to the risk of corruption in Malaysia's telecommunications sector to further facilitate the design of an effective anti-corruption measures. This is significant in ensuring the sustainability of

the telecommunications sector in ensuring substantial reduce or corruption and promoting transparency and good governance as enshrined in the Sustainable Development Goals. Adopting a mixed method approach of quantitative and qualitative research, semi- structured interview questions and questionnaires were employed as the main tools of the research. Thirteen (13) risk factors were inferred from the literature and formed the basis of the questionnaire constructs. This questionnaire was then distributed to 1059 respondents with 390 of the respondents working in the telecommunications sector. A semi structured interview with 18 respondents comprising of representatives from government ministries/department, government-linked companies, telecommunications companies, and academia was also conducted to verify and confirm the findings from the questionnaire survey. Findings from both instruments were subsequently triangulated and analysed using the thematic approach. The research findings indicated the critical risk factors of corruption in the Malaysian telecommunications sector which are Personal Gain, Complex Governance Systems, Political Interference, Competitive Market, Bureaucratic Requirement, Inefficient Organisational Administrative Structure, Low-Income Level, Complex Interactions Between Various Actors in the Industry, Lack of Anti-Corruption Measures in the Organisation, Lack of Monitoring in the Workflow, Weaknesses of the Law and Sanctions Against Corruption, Lack of Awareness on Incidents of Corruption and Lack of Awareness/Understanding on the Laws Against Corruption which are ranked according to the most critical risk factor to the least critical. As one of the ASEAN countries, it is hoped that the exploration of risk factors of corruption in the telecommunications sector in Malaysia aligns with SDG Target 16.5, which aims to substantially reduce corruption and bribery in all forms. By identifying and understanding the specific risk factors contributing to corruption within the sector, effective strategies can be developed to combat these illicit activities in ASEAN. Given that we are halfway through Agenda 2030, this research output focuses on the 5Ps of the SDGs - People, Planet, Prosperity, Peace, and Partnerships and will pave the way for targeted actions and partnerships that promote transparency, accountability, and sustainable development, ensuring progress towards the ambitious goals set for 2030 especially in ASEAN.



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Breaking Barriers, Building Bridges: Women's Political Engagement for Sustainable Development in Malaysia

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Abstract

This study explores the current state of women's involvement in the political and agricultural sector and how this assist in safeguarding their economic rights in Malaysia. Findings indicate that while some progress has been made, women in Malaysia still face significant challenges in achieving equal rights and opportunities. In the political sphere and women are underrepresented in high positions and face barriers to participation in decision-making processes. This impacted their economic rights where women are often paid less than men and are disproportionately represented in low-wage jobs. Additionally, women in Malaysia face significant social pressures, including discrimination and violence. Hence, the main objective of this study is to critically investigate women's rights in politics and decision-making and the extent of women's empowerment through political involvement in Malaysia. Adopting a doctrinal approach, this study focuses on the analysis of both primary and secondary sources of data including the Federal Constitution of Malaysia and various policies at all levels of governance. This study found that more efforts should be geared towards promoting the involvement of women in decision-making process to ensure equal rights and contributions of women are more valued. The prospect of transformation out of these efforts may contribute to the progressive economic growth of a country and reduce issues of discrimination against women. Thus study proposes few recommendations in order to ensure party politics are more inclusive. First,

officials should embrace strategies for enlisting equal numbers of women and men. Second, it is important to create methods for tracking gender in politics. Third, training should be implemented in the areas of leadership, decision-making, capacity building, and emotional intelligence. Last but not least, funding ought to be set aside for more analysis of the application and results of gender equality, women's political engagement, and decision-making. In conclusion, the study suggests that while progress has been made, there is still much work to be done to ensure that women in Malaysia have equal access to political, economic, and social rights. It is hoped that the findings and recommendations of this study will contribute to SDG 5: Gender Equality: Women empowerment in politics and decision-making which is a fundamental aspect of achieving gender equality. This alignment is significant in ensuring that women have equal opportunities to participate in political processes, hold leadership positions, and contribute to decision-making at all levels especially in Malaysia as one of the ASEAN countries. Hence, addressing the target of ensuring women's full participation and equal opportunities for leadership, effectively employing the 5Ps framework is pivotal in making this aspiration a reality. By examining barriers, informing policy, fostering partnerships, monitoring progress, and raising public awareness, this study contributes to accelerating efforts to achieve gender equality and emphasizes the importance of targeted actions and policies to overcome existing challenges, especially considering we are halfway through the SDG 2030 timeline.

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FOOD SECURITY OF ABORIGINAL PEOPLES (ORANG ASLI) OF PENINSULAR MALAYSIA: CHALLENGES IN ACHIEVING SUSTAINABLE DEVELOPMENT GOALS

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Abstract

The Orang Asli are indigenous peoples in Peninsular Malaysia who are not classified as homogeneous but heterogeneous due to their uniqueness and distinctiveness in perspective, socio-cultural, and psychosocial-cognitive features. However, they are one of the most vulnerable groups in society and remain marginalised due to the control of the majority. From a legal standpoint, laws in Malaysia, including the Orang Asli Act 1954 (Act 134), do not expressly provide food security for Orang Asli. The National Agrofood Policy 2021-2030 (NAP 2.0) was insufficient because it did not comprehensively address the issue of Orang Asli's food security compared to international legal standards. Thus, the main objective of this article is to analyse issues and laws related to food security for Orang Asli based on human rights principles and international law standards. This study uses doctrinal methods. This study found that the government should have a comprehensive legal framework for food security for the aboriginal peoples in Peninsular Malaysia because it needs to integrate the uniqueness of the customs and aspirations of Orang Asli, human rights principles and international legal standards into one policy document. This effort will offer a complete and practical model to guarantee food security to all Orang Asli. It fulfils the Malaysian obligation related to food security and further helps Malaysia fulfil the second Sustainable Development Goal (SDG) agenda, which is to end hunger, achieve food security, and improve nutrition in particular, the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round by the year 2030.

TRACK 10

Special themes

*10d. Religion and Sustainable
Development*

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SYSTEMATIC LITERATURE REVIEW ON BEHAVIORAL INTENTION TOWARDS ISLAMIC CROWDFUNDING USAGE AMONG MALAYSIAN BUMIPUTERA SMES

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MS ENSKU HUDA MURSYIDAH ENSKU HASSAN ASHARI

Abstract

SMEs are critical components of the Malaysian economy, and access to financing is extremely crucial for the sustainability of SMEs. Banks and official lender organizations are hesitant to disburse any financing due to the risk of SME business failure and default payment risks. Bumiputera SMEs' involvement in entrepreneurial activity are insignificantly low and they are facing challenges to obtain financing which eventually affect their growth, despite being the majority populations in Malaysia. However, there were still insufficient studies that systematically review the existing literature on behavioral intention towards alternative financing to fund SMEs' business. Hence the present article conducted a systematic literature review on behavioral intention towards Islamic crowdfunding usage among Malaysian Bumiputera SMEs. The present study integrated multiple research designs and the review was based on the publication standard, namely PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses). This study selected articles using two leading databases namely Scopus and Web of Science. Based on the thematic analysis, this review has seven main themes namely 1) Financing Accessibility Among SMEs; 2) Intention to use Islamic Crowdfunding; 3) Performance Expectancy (PE); 4) Effort Expectancy (EE); 5) Social Influence (SI); 6) Facilitating Conditions (FC) and 7) Trialability. The study offered several significant contributions for practical purposes and the body of knowledge. The findings explained the importance of integrating indigenous knowledge into adaptation strategies, as follow: 1) to generate significant impact to the existing body of knowledge in the field of Islamic crowdfunding as one of the Islamic financing alternatives plus in the area of Fintech expansion; 2) to conjecture the SMEs' awareness towards financing alternatives and hence drafting the applicable regulations and policies in accordance to the analysis; and 3) to inform on the specific areas and content of researches that should be the focus of the future studies.

ECOLOGICAL RESTORATION OF URBAN LAKES THROUGH SYNTHETIC SEED-BASED PHYTOREMEDIATION: INSIGHTS FROM ISLAMIC ETHICS.

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Abstract

Urban lakes are crucial components of urban ecosystems as they serve various functions such as flood control, groundwater replenishment, biodiversity preservation, and habitat protection. However, urban lakes are also prone to pollution, particularly heavy metal contamination, which affects the water quality of downstream water channels and poses a significant threat to the environment and human health. In Islam, maintaining a clean environment, including air, land, and water, is mandatory for the benefit of all living things on earth. To address this issue, aquatic plants, particularly small-sized species like *Glossostigma elatinoides* (small mud-mat) and *Bacopa caroliniana* (blue water hyssop), are promising candidates for phytoremediation in slow-moving or stagnant water bodies such as urban lakes. Synthetic seed technology, an advanced technique that uses encapsulated meristematic tissues like shoot buds or somatic embryos, provides long-term storage capacity, easy handling, economical mass propagation, and an environmentally friendly approach to delivering phytoremediating plants. This study reviews the mechanisms of heavy metal uptake, translocation, and detoxification in plants, the potential of small-sized aquatic plant species for heavy metal remediation in urban lakes, and proposes the use of synthetic seed technology to remediate urban lake contamination. The principles and ethics of environmental sustainability, as explained by the Quran and Sunnah, can guide this study and all stakeholders in their efforts to preserve the environment and address the critical issue of urban lake pollution.

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THE ROLE OF RELIGION IN DECISION MAKING RELATED TO MODERN BIOTECHNOLOGY BREAKTHROUGHS

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Abstract

Advanced techniques of modern biotechnology in the 21st century empowers the geneticists to modify living organisms for various purposes. In Malaysia, biotechnology is one of the prime technology identified to accelerate the country's transformation into a highly industrialized nation (8th and 9th Malaysia Plan, Malaysia's Sn & Tech Policy for the 21st Century). Although modern biotechnology has huge potential for the betterment of Malaysia's economy and improvement of people's lives, its "too rapid" advancement have become the object of doubts, fears, concerns and as well as an intense and divisive debate locally and worldwide. It has been suggested that the main reason in the emergence of controversies surrounding biotechnology has been the neglect of the needs, interests and concerns of the primary stakeholders - the commoners. Modern biotechnology has been classified as a complex emerging issue that exhibits high salience combined with limited knowledge on part of the public. Various studies have shown that consumer acceptance of modern biotechnology tend to be conditional and dependent on many factors. It has been reported by social scientists that any complex object may be located in a variety of general classes where its evaluation may also be strongly affected by extraneous concerns. The complexity of issues related to modern biotechnology make it difficult for people to decide whether to support the technology or vice versa. Our studies have shown that consumer acceptance of modern biotechnology tends to be conditional and dependent on many interrelated factors such as perception of risks and benefits, trusts in institutions representing these as well as the value systems and cultural idiosyncrasies of societies. This presentation will highlight the role of religion in decision making related to modern biotechnology applications.

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Bridging the Digital Divide in Addressing Inequality and Social Discrimination Through Robotic Programming Training

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ASSOC. PROF. IR. DR. NAZRUL ANUAR NAYAN

Abstract

Education in the fields of Science, Technology, Engineering, Arts, and Mathematics (STEAM) and enhancing computational thinking (CT) skills are important factors in accelerating progress in various sectors to achieve the Sustainable Development Goals (SDG). Therefore, it is important for students to be exposed to these skills in preparation for future challenges as well as improving social and economic injustice in society, in line with SDG 11, which is Sustainable Cities and Communities. A significant digital divide leaves many students in rural areas marginalized and unable to learn and move forward. These limitations can cause them to lose interest in STEAM fields and exacerbate social and economic inequality. If hands-on programs and STEAM activities can be carried out continuously, proactively involving more participants, this may increase the interest and tendency of more rural students to continue their studies in the field. This research aims to measure problem-solving skills using the concept of computational thinking as well as students' interests and tendencies in STEAM after following a robotic programming course. The study was carried out in Sebuyau, Sarawak in collaboration with Yayasan Bank Rakyat. A total of 116 students, aged 11 to 14, and 25 teachers were involved in this program, which lasted for 12 days. The students and teachers were divided into three groups, and each group was trained for four consecutive days. The four teaching modules used are CT concepts; Scratch, Arduino microcontroller, and mBot2 robot programmings, as well as a final competition held to encourage competitive learnings. As a result of the pre- and post-student psychometric test results, there is a 32% increase in problem-solving skills after applying the computational thinking module. In addition, the results of the survey showed a 21% increase in the positive tendency of students to study in the STEAM field. This program contributes to a better understanding of computational thinking and programming concepts. Apart from promoting STEAM education among teenagers, the competitive learning method gives students the opportunity to collaborate and learn problem-solving skills through mini-projects and hands-on activities. This project can equip students with the necessary tools to excel in today's world as well as provide motivation to bridge the digital divide. In essence, the heuristic skills developed through these initiatives can help students become more creative, analytical, and solution-oriented, which can ultimately drive progress and improve the quality of life for all.

Thematic Analysis of the concept of Equity in the Quran and its Relevance towards achieving Sustainable Development Goals

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Abstract

This paper explores the concept of equity based from Islamic sources and further contrasts the definition of this concept with contemporary development issues such as the sustainable development goals. Sustainable development goals have focused on the concept of equality within the 5th, 10th and 16th goals to counter global socio-economic issues. However, there is a lack of importance highlighted on the application of equity to counter such issues. The aims of this paper are (1) to use qualitative inductive approach to analyze thematically the concept of equity from the perspective of Islamic sources, namely the Quran; (2) to compare the findings of this thematic inquiry with conventional sources of literature on equity; (3) To analyze equity from both Islamic-based and conventional sources in relation to how this concept can contribute towards the sustainable development goals. The findings show more results on the word equity appeared in the Quran compared to the word equality. Furthermore, the main themes derived from the Quran correlated with the 5th, 10th and 16th sustainable development goals by enjoining the concept of equity in line with Islamic practices as a mechanism towards the realization of these goals.

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Religious Approach in Addressing the Effects of Social Media Usage on Adolescent Psychological Well-Being

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PROF DR FARIZA MD SHAM

Abstract

Social media is the main medium for adolescents to communicate, connect and spend leisure time. The use of social media among adolescents is becoming increasingly popular with the rise of social media influencers. There are several viral and popular social media content themes and lifestyles among young people today, such as fashion, fitness, adventure, beauty, and self-development. By following these social media influencers, young people aspire to achieve the same lifestyle success as these influencers. The inability of some adolescents to achieve the lifestyle portrayed on social media can lead to depression, low self-esteem, and affect adolescent emotional well-being. Therefore, this study aims to examine the religious approach in addressing the effects of social media usage on adolescent psychological well-being. This study uses a quantitative method involving 294 adolescent respondents aged between 13 and 20 years. The instrument used in this study is a set of questionnaires to assess the effects of social media usage on adolescent psychological well-being and the religious approach in addressing them. Descriptive and correlation analyses were used to analyse the data. The results of the study indicate that the effects of social media usage on adolescent psychological well-being include feeling guilty, sleep disturbance, and inability to concentrate in class. This study found a significant relationship between the effects of social media usage on adolescent psychological well-being and the religious approach ($r = -.253$; $p = 0.000$). This proves that the religious approach can help in addressing the effects of social media usage on adolescent psychological well-being.

LEVERAGING NIGELLA SATIVA-BASED NANOPARTICLES IN THE FIGHT AGAINST NEURODEGENERATION: A GREENER APPROACH TO A SUSTAINABLE FUTURE

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Abstract

Neurodegenerative diseases such as Alzheimer's disease and Parkinson's disease are major public health problems affecting millions of people worldwide, and their prevalence is expected to increase as the world's population ages. For decades, various therapeutic approaches have been explored to treat neurodegenerative diseases, focusing on the regulation of cell differentiation and survival, neuroprotection and neuroregeneration through the use of neurotrophins, nerve growth factors, and therapeutic compounds. However, since these substances reach the central nervous system only to a limited extent due to enzymatic degradation and impermeability of the blood-brain barrier, neurodegenerative diseases cannot be effectively treated. To circumvent these problems, this study aimed to develop a neurotrophin substitute from *N. sativa* oil encapsulated in nanoparticles and investigate its neurotrophic effects on neuro-2a murine neuroblastoma cells (N2a cells). *N. sativa*, a miracle herb in Prophetic medicine is known for its neuroregenerative, neuroprotective, and antioxidant activities, making it the best candidate for neurodegenerative treatment purposes. In this study, *N. sativa*-based nanoparticles were prepared using the diffusion-solvent-evaporation method. The obtained nanoparticles were characterised in terms of particle size distribution and surface morphology. The neurotrophic effects of the *N. sativa*-based nanoparticle formulations were evaluated based on cell attachment, neurite outgrowth, growth behaviour, and polarity of the projections following loading of the nanoparticles into the N2a cells. The results showed that treatment with the *N. sativa*-based nanoparticles was able to induce neurite outgrowth, changes in morphology, and behavioural changes in N2a cells cultured in serum-free media without significant toxicity effects. The developed system for delivering the therapeutic compounds of *N. sativa* in the form of nano-scale particles successfully improved its water solubility and thus its uptake by aqueous cell lines. In conclusion, the *N. sativa*-based nanoparticles formulated in this study provide a promising therapeutic approach for the treatment of neurodegenerative diseases by promoting neurite outgrowth and neuroprotection. As this greener approach to neurodegenerative diseases promotes well-being and ensures healthy lives for people of all ages, it is in line with SDG 3: Target 3.4 and the 5Ps (people) of the SDG, which are essential to address global health challenges and thus promote a sustainable and healthier future worldwide.



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PSYCHOLOGICAL CHALLENGES OF WOMEN WORKING FROM HOME (WFH) DURING THE COVID-19 PANDEMIC

PSYCHOLOGICAL CHALLENGES OF WOMEN WORKING FROM HOME (WFH) DURING THE COVID-19 PANDEMIC NURHAZIQA HISHAMUDIN, A'DAWIYAH ISMAIL, FARIZA MD SHAM, NORSHARIANI ABD RAHMAN, ROZIAH SIDIK @ MAT SIDEK, ERMY AZZIATY ROZALI

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PSYCHOLOGICAL CHALLENGES OF WOMEN WORKING FROM HOME (WFH) DURING THE COVID-19 PANDEMIC NURHAZIQA HISHAMUDIN



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Abstract

In fulfilling the demands of work and responsibilities, women had to face various challenges during the Covid-19 pandemic. From a psychological point of view, some of these challenges include fatigue caused by too much time spent working on the tasks given by their employers and the amount of workload that affects their ability to balance between work and emotional stability. This article examines the psychological challenges faced by women working from home (WFH) during the Covid-19 pandemic. As described in this article, this study uses the qualitative methodology. Analysis of research findings is made based on interview data through a Round Table Discussion (RTD) involving interested parties and parties who can provide information. The findings of the study show that women who work from home (WFH) have a heavy workload and are psychologically challenged with regard to work performance, finances, as well as time and family management. The various impacts faced by working women due to the challenges in their career is undeniable, yet this situation has

become more prominent during the COVID-19 pandemic. This study found that mental health needs to be really emphasised to balance the responsibilities that women have to bear. Hence, this study needs to be empowered so that women may continue pursuing their career even by working from home, and actions and solutions can be taken in guiding them.

Keywords: psychology, women, working from home, Covid-19 pandemic, challenge



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THE ROLE OF WAQF DEVELOPMENT IN COMMERCIAL HOUSING IN ACHIEVING SUSTAINABLE DEVELOPMENT GOALS (SDGs)

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Abstract

Wakaf is a transformation of the property system to open up opportunities for Muslims to continue contributing towards the development, empowerment and economic stability of the community. Wakaf plays a very important role when the distribution of waqf assets as a result of the investment will cover many projects of a social and community development nature such as education, health, economic empowerment and the environment. Statistics show that almost 88% of the 30,000 hectares of waqf land worth RM1,177,084,450.59 throughout Malaysia have yet to be developed. The development of commercial housing waqf is the solution to the turmoil that has plagued the country, especially the issue of rising house prices every year, homelessness and houses that are not conducive for families to live in. These issues can contribute indirectly to the increase in crime statistics and social problems among the community. Among the housing projects that have been implemented on waqf land in Malaysia are Al- Ehsan Flats in Melaka, Seetee Aisah Housing Park Project in Penang, and PWS-UME Housing Project in Selangor. These projects are in line with the Sustainable Development Goals (SDGs) 2030 for the advancement and welfare of people and the environment. 17 goals have been set, including several forms of sustainable development like ending poverty, enhancing health, and combating climate change. Therefore, this study aims to analyze how commercial housing waqf development functions as a vital tool in accomplishing the objective of sustainable development. This qualitative study collects primary data from semi-structured interviews and secondary data from books, journal articles, papers, and other sources. The data was then analysed inductively and

deductively through content analysis. As a result, the first (eradicating poverty) and third (promoting good health and wellbeing) of the 17 designated Sustainable Development Goals (SDGs) were most closely related to the contribution and function of commercial housing waqf development. Hence, it is envisaged that this study would help policymakers in Malaysia determine if waqf development is acceptable for meeting the 2030 Sustainable Development Goals (SDGs).

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Legalising Micro-Takaful to Achieve Inclusivity And Sustainability In The Islamic Financial System.

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Abstract

Micro-takaful is a type of Islamic insurance with the potential for financial inclusion and social welfare. It has the characteristic of risk sharing, cooperation, and affordability. The target market is to protect low-income individuals and marginalized communities. Zakat is a mandatory form of charitable giving to Muslims. The objective of zakat is poverty alleviation, wealth redistribution, and community development. The Islamic Financial Services Act 2013 ("IFSA 2013/Act") is the authoritative law in Islamic finance and regulates and supervises Islamic financial institutions, including takaful. The current market did not meet the demand for takaful and protection for low-income populations, including zakat recipients. There is a lacuna in the legal framework of the micro-takaful and zakat relationship. This study aims to unfold the initial intention of micro-takaful and explore the potential of enacting micro-takaful into the Islamic Financial Services Act 2013 for the sustainability of zakat recipients. The qualitative method is used to determine the suitability of the Islamic Financial Services Act with micro-takaful. The findings revealed that applying the zakat fund to micro-takaful is a sensitive issue. Therefore, the application of zakat fund to micro-takaful was complex. Integrating micro-takaful within the Act is recommended to enhance the impact of zakat distribution and widen the takaful market.

TRACK 10

Special themes

*10e. ICT for Sustainable Development in
IR4.0 Era*

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UNIFYING INFORMATION DASHBOARD DESIGN: EXPLORING SHARED PRINCIPLES, PRACTICES, AND CHALLENGES

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Abstract

In the era of data-driven decision-making, information dashboards have emerged as a powerful tool for consolidating and displaying vast amounts of data in a single, unified visual display. These dashboards provide valuable insights to decision-makers, supporting business success through improved efficiency, growth, reputation, risk management, and sustainability. However, the effectiveness of an information dashboard depends on its design and visual presentation. Despite their importance, the universal standard method to govern dashboard design is unavailable, resulting in varied and heterogeneous approaches. This study represents a preliminary investigation into the potential for unifying the design of information dashboards by adopting a narrative review method to identify commonalities among principles, practices, and challenges associated with the information dashboard design. The findings reveal that a user-centric dashboard is the pillar of numerous commonalities in information dashboard design, with design principles, best practices, and challenges serving as the building blocks. This strengthens the argument for the feasibility of unifying approaches. By unifying the information dashboard design method, the effectiveness of these critical decision-making tools can be improved, ultimately supporting business sustainability through more informed and accurate decision-making.

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Blockchain Technology for Traceability Monitoring in Food Supply Chain

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Abstract

Food supply chain can be referred to the network of companies, individuals activities and resources involved in the creation and delivery of food product to customers. The food chain include all the stages of the food process, from raw material acquisition to final delivery of the finished food product. In Malaysia, food supply in a critical issue because the country is heavily reliant on food imports to meet its domestic demand. The country's food supply chain in Malaysia is complex because of involving various stakeholders including farmers, producers, wholesalers, retailers, and logistics providers. The factors influence the food supply chain in Malaysia are Malaysia dependence on imports food, climate change, infrastructure and logistics, food safety and security and consumer demand. Based on this issues, rising prices of food are happened in Malaysia. Rising prices, known as inflation, is a common issue faced by many countries, including Malaysia. There are some causes the issue of rising prices such as increased demand, shortage of supply, fluctuation in exchange rates and global commodity prices. From this causes, Malaysia government introduce food subsidies where the government provides subsidies on essential food items such as rice, flour, cooking oil, and sugar to ensure that they remain affordable for consumers or particularly low-income households. Government also implement price controls on food to limit the extent to which prices can rise. Based on this issues many retail or seller in supply chain are take advantages and irresponsible increasing the price more than commodity price. Malaysian Enforcement have been taking action but rising price issues still happen because of lack of monitor, where enforcement out of hand because of seller can raise the food anytime when enforcement not on their places. There is some technology and application we can applied form this situation that is blockchain. The Blockchain technology has the potential to change the food supply chain by providing an efficient, secure, and transparent system for tracking and verifying the movement of food products from the farm to the table. Here are some ways that blockchain can be used in the food supply chain to control the prices. Feature like traceability in Blockchain can provide end-to-end traceability of food products, allowing consumers to track the entire journey of a product from the farm to the store. This can help improve food safety

and prevent food fraud by identifying the original price state by government. Second feature is transparency in Blockchain can provide greater transparency in the food supply chain by enabling stakeholders to share data on the movement and handling of food products. This can help improve efficiency in sharing information of the food product including the price. Blockchain technology are the solution can be suggested to against rising price without permission among reseller and seller. Target of a food supply chain is to create value for the customer by delivering the product or service in the most efficient and cost-effective way possible.

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Application of New-Age Technology 5G and drones in Disaster Risk Reduction in India

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Abstract

Digitisation and transfer of data over wireless means is taken for granted today. This gains importance with the recent introduction of cutting-edge technologies like 5G and drones in India and policies of the government pro-actively supporting their usage. Combined with other new-age technologies like Big Data, Machine Learning, Artificial Intelligence and IoT, the scope for using data in a digital form opens up a new paradigm in Disaster Risk Reduction and Management. They enable us to assign repetitive activities to machines via algorithms and combine it with pre-determined well-thought out targeted action(s) with zero time delay. Here, only the information on action taken by the system is shared with all concerned. Further, their usage makes early warning of disaster a reality. This, gives the personnel involved in disaster management time to ideate, learn and work on newer and more creative aspects of disaster management and benefit the people. In pre-disaster situations, drones can be used in risk assessment, mapping and planning.

This paper is an attempt to explore the application of new-age technology in the domain of disaster risk reduction in the Asian continent, while analyzing the feasibility of usage of these technologies in our country. The paper refers to the disaster situations in Bihar and attempts to draw parallels for the usage of these technologies in disaster risk reduction. The paper emphasizes on collaborating efforts required from all the concerned stakeholders in this regard.

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Artificial Intelligence and the Social Dimension of Sustainable Development – Obstacles and opportunities

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Abstract

Artificial Intelligence, or AI, has been described as one of the greatest threats and hopes for human society (Saetra, 2022). When viewed in relation to the social dimension of the Sustainability Development Goals, algorithmic processes have been suggested to produce new knowledge on how to prevent and correct environmental and human health challenges (Song et al. 2017), bolster social transformation (Boyd and Holton 2017), and lead to enhanced self-realization and increased human agency (Floridi et al. 2018). These propensities can thus arguably be a force for “good” where the development of “trustworthy” or “responsible” AI can advance the fulfillment of United Nations Sustainable Development Goals (Floridi et al., 2018; Saetra, 2022; Theodorou et al., 2022). In this frame, AI harbors a great potential that can help to identify unused capacity and spread resources more fairly, thus assisting society in creating a social environment that is more sustainable and inclusive. At the same time, there is a growing concern that algorithmic applications steer society in the opposite direction by reinforcing biases and unfairness which can consolidate and amplify inequalities (Benjamin 2019; Browne 2015; Eubanks 2017). Because of the entangled nature of AI and its social context, there is a propensity at the heart of this technology to absorb and reflect society’s default norms and power structures (Benjamin, 2020), which can reproduce sociotechnical harms (Shelby et. AI 2022), while normalizing specific kinds of responses to social instabilities (McQuillan, 2022). Conclusively, the increasing reliance on AI for solving complex problems related to the social dimension of the SDGs is a contested phenomenon.

This presentation explores the opportunities and obstacles of AI to either support or hinder the progress of social goals in the SDG. It proceeds from a literature review and case studies that highlight the connection of AI, social norms and its potential consequences for the realization of the social goals of Agenda 2030. The link between technology, society and sustainability is imperative to consider because it highlights the complex process of the materialization of social values where AI in particular functions as a co-creator and mediator of societal norms and moral frameworks (Mittelstadt et al., 2016); thus, effectively shaping the perception of sustainability too. Understanding this link can open possibilities for developing technology that contributes to fortifying the “good society,” including ideals associated with social sustainability, while identifying propensities in these systems that breed “sociotechnical harms,” where bias can lead to increased polarization, intolerance, and, ultimately, a deteriorated security situation.