S/R/I 2023

Let's discuss the pros and cons of connecting with nature, culture, tradition, and indigenous knowledge for sustainability.

27, June 2023
3:00PM-4:30 PM

Session hosted by the Research Isntitute for Humanity and Nature

Discover 5 interesting case studies and enjoy discussion!

Research Institute for Humanity and Nature
大学共同利用機関法人 人間文化研究機構 総合地球環境学研究所

Cultural related air pollution and health: case of the urban city of Bamako in Mali

Presented by *Alimata Sidibe*
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Abstract

Air pollution has long been recognized as a major problem affecting environment and health. In Africa the population growth and the attendants' requisite generate tremendous pollutants including $PM_{2.5}$. Yet, information on $PM_{2.5}$ exposure concentration is scarce in Africa. Bamako Capital of Mali, located in West Africa is not an exception. In this study Bamako's inhabitant's exposure to $PM_{2.5}$, one of the most health threatening air pollutants was investigated duriçng different daily activities and in different microenvironments.

Local inhabitants carried palm size optical $PM_{2.5}$ sensors around their neck near to the breathing zone for three days. The collected data were analyzed to determine $PM_{2.5}$ concentration, emission and exposure sources.

We found out that the major exposure sources were related to the lifestyle including cultural activities such as the combustion of incense, the combustion of insecticides to prevent malaria and cooking usig wood and charcoal. The highest average sample recorded concentration in households (267 $\mu g/m^3$) was observed during the use of incense and insecticide (mosquito coils); commonly used in wide area (Africa, Asia, South America). Cooking represented another high emission source (39 $\mu g/m^3$). The average daily exposure in the participants was 53 ± 20 $\mu g/m^3$; much higher than the daily exposure limits recommended by the World Health Organization (WHO).

The study highlights high risks of households' air pollution, especially the ones related to the lifestyle and cultural activities. Moreover, it demonstrates the urge to reduce particulate matter emission and protect public health that is an important factor for sustainability.

Digitalization in smallholder faming in the Global South for a sustainable future

Presented by *Sidi Amar*
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Abstract

This presentation outlines the journey of coffee and cocoa beans on their way to becoming the final product. The overall goal is to identify the bottlenecks of transparency and traceability in the global supply chains of these commodities and to explore their potential solutions.

Transparency and traceability in the supply chain have become increasingly important in recent years due to a growing concern for social and environmental sustainability, corporate social responsibility, and regulatory compliance. A transparent and traceable supply chain can lead to creating a more balanced and sustainable industry while simultaneously creating additional value in both producing and consuming countries as well as the consumer end.

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Vernacular architecture application for sustainability; Case of the Japanese traditional thatch architecture

Presented by *Celine Jamin*
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Abstract

This presentation focuses on the potential sustainable aspects of the work performed on Japanese traditional thatched roofs. The case study analyses the results of the monitoring from re-roofing work operated by professional thatchers within the village of Miyama-Cho Kita. The research investigates various aspects of the thatch roof culture from the lenses of three dimensions of sustainability: Environmental, Economics and Socio-Cultural. The sustainable building mechanisms related to the thatch culture are investigated from process of the built conservation work (tangible components) and the technological adaptation carried out by the thatchers (Intangible aspects). To understand how such mechanisms are applied and how they impact the sustainability path of our contemporary times, comprehensive monitoring work on conservation sites of buildings with thatched roofs was carried out. The monitoring investigation was realized from the conservation process of buildings over 100 years old that was carried out in 2021 and 2022, mainly in the village of Miyama-Cho Kita, but also at other sites across the Kansai region in Japan. Interviews with village residents, building owners and professional craftsmen were also conducted along the on-site observation. Finally, participation in community events centered on the culture of Kaya (plants used for the realization of thatched roofs in the region) allowed a thorough understanding of the community systems in place, vital to the conversation and continuity of the architectural heritage. Through these investigations both positive and limiting aspects of thatch culture sustainability have been identified and recommendations in producing a more sustainable path for Japanese thatch culture could be articulated. This presentation analyses the contemporary techniques of thatching in the traditional rural architecture of Kansai, as well as their sustainable potentials in terms of ecology, economics, culture and temporal evolution of the Japanese rural environment.

How can we eliminate or reduce the impact of urban heat through sustainable measures?

Presented by Fong Ghng Saun
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Abstract

The impact of global warming has made its mark in the tropical climate. This is evident supported with record breaking temperature levels and prolonged heatwaves phenomena. The heating intensity is worse in urban areas due to the urban heat island effect. On top of that, the year-long hot and humid climate possesses a higher threat to the health and well-being of the urban community. Hence, research is now focusing on sustainable measures to eliminate or reduce the impact of urban heat in a tropical climate. There are few prominent solutions. One approach is through the integration of green infrastructure, such as urban forests, green roofs, and vertical gardens, which provide shade, evaporative cooling, and improve air quality. The use of cool materials for buildings and pavements can also help reduce surface temperatures and heat absorption. Secondly, passive design techniques, including natural ventilation and shading, should be incorporated into building design to minimize the reliance on energy-intensive air conditioning systems. The promotion of energy-efficient technologies and the use of renewable energy sources for cooling purposes further contribute to sustainable heat reduction. Thirdly, an effective multistakeholder collaboration between urban planners, architects, policymakers, scientists, and the local community is essential. This integrated approach considers local climate conditions, socio-economic factors, and cultural aspects to ensure the successful implementation of sustainable measures. In conclusion, addressing urban heat in a tropical climate requires a comprehensive and context-specific approach that emphasizes green infrastructure, passive design, energy efficiency, and community engagement. By implementing these sustainable measures, tropical cities can create more comfortable and resilient urban environments while reducing their ecological footprint.

Valorization of urban waste for tackling the desertification: "Cleaning the cities, greening land" campaign in Republic of Niger, West Africa

Presented by Shuichi Oyama
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Abstract

Municipalities in the urban areas of sub-Saharan Africa face waste management challenges. The urban population is rapidly increasing, and urbanization promotes enormous food consumption. Cities accumulate nutrients due to solid waste management problems whereas rural areas face desertification and land degradation issues caused by soil nutrient depletion. With the support of JICA (Japan International Cooperation Agency), I have launched the "Cleaning the cities, greening the land" campaign in cooperation with the Ministry of Environment of Niger from 2021.

In this campaign, we aim to emphasize the chemical and physical effects of urban waste and termite biological activity on land restoration. Urban organic waste is slightly alkaline, neutralizes soil acidity, and adds nutrients to the soil. Termites build shelters over organic matter, elevate small grains of silt and clay in the soil, and mix them with wind-blown sand. Termite tunnels penetrate the hard sedimentary layer, allowing rainwater to easily infiltrate it. In addition, termites create an aggregated soil structure, which is porous, allows plant roots to grow and penetrate the ground as well as contains oxygen and moisture. To develop sustainable cities and land management, we need to create organic matter circulation between cities and rural areas.

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Enjoy conversation time with Stephane Grumbach on how cultures contribute to resilience!