Center for Southeast Asian Studies
Kyoto University

UNIVERSITAS INDONESIA
SCHOOL OF ENVIRONMENTAL SCIENCE

Indonesian Dynamics and Socio-environmental Challenges - Multidisciplinary Study's Perspectives

July 26, 2023

09:30-10:55

Opening Remarks

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Session 1: 9:40-11:05

How People Live in a World of Uncertainty and Adversity: A Case Study of Disaster Risk Management at Urban Kampung of Yogyakarta

Mao Higami
Graduate School of Asian and African Area Studies, Kyoto University

Abstract
This study aims to examine the dynamism of people living in a world of uncertainty and adversity. To achieve the purpose, this study will focus on disaster mitigation and risk management adopted by people living in urban kampung at Yogyakarta. Yogyakarta as one of the important cities in Indonesia, in terms of history and tourism, has various kind of hazards such as flood, volcanic lahar and earthquake. In 2010, a large-scale eruption occurred at Mt. Merapi and volcanic lahar flew into Code River adjacent to the urban kampung inside the city of Yogyakarta. In that sense, urban kampung of Yogyakarta along the riverside can be considered as a highly prone site to disaster. Urban kampung is used to describe the phenomenon of village housing in urban areas that has been built by migrants from the countryside and considered as unorganized and informal settlement without infrastructure. Although it has been said that poverty and poor quality of life are the features of kampungs, residents make a living strategically by making full use of some functions and values inside the community. What are the features of resilience in such informal environment? The presentation is based on reviewing the debates around urban kampung and disaster mitigation, and on my research plan.

Session 1: 9:40-11:05

The Contemporary Significance and Role of Gotong Royong in Yogyakarta, Indonesia

Mayu Okuda

Graduate School of Asian and African Area Studies, Kyoto University

Abstract

The village practice of mutual aid exists in every community, and is considered the most primitive
form of social relationship between people. In resent years, however, the rapid urbanization and globalization have progressed not only in urban areas but also in rural areas, and people's lives have become more dependent on the market economy, and it is generally pointed out that the functions of mutual aid has declined.

Mutual aid, called Gotong Royong, has existed in Indonesia anciently, but the origin is not clear. The origin of the term is cleary Javanese, but the process by which the term spread not only to Java but also to all of Indonesia is unique. Numerous previous studies have focused on the process of using the term "Gotong Royong" to controll in transition of the Indonesian political system. Those studies are important in understanding how the concept spread throughout Indonesia. On the other hand, many recent studies and reports about mutual aid worldwide, not only Gotong Royong, have focused on how mutual aid activities based on residents organizations can be useful in times of disaster. It is clear that mutual aid is an essential and very important tool in such as situations which government assistance is inaccessible.

However, this study would like to focus not only on the action taken in emergency situations such as disaster, but also on the daily actions of how mutual aid are carried out and relationships are built within the community. That will allow for a comprehensive clarification of the mutual aid that exists today and the changes have occurred over time. Futhermore, this will lead to clarify of the contemporary significance and role of mutual aid in local communities where market economies are on the rise. The research will be conducted in and around the city of Yogyakarta. By conducting research in two locations with completely different land use patterns and economic conditions, a conprehensive understanding about Gotong Royong in the modern will be possible. The presentation will mainly focus on the literature review on Gotong Royong and future research plan.

Session 1: 9:40-11:05

Local Challenges in Preserving Their Housing and Livelihood

Hafia Luma Munira
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Abstract
The rapid development of tourism in Labuan Bajo as a global tourism destination poses challenges for the local community in preserving their traditional homes and way of life. The population growth and rapid urbanization in Jakarta City have led to numerous phenomena of slum settlements and unhealthy urban environments. The objectives of this research are: 1) to identify the condition of traditional homes and the way of life of the local community in Labuan Bajo, and 2) to identify the challenges faced by the Jakarta city government in addressing slum settlements. The method used is visual observation of the conditions in both locations. The research results indicate difficulties in providing affordable housing for the lower to middle-class population in Jakarta. Meanwhile, tourism activities that have led to the emergence of many hotels and commercial areas in Labuan Bajo have contributed to gentrification and displacement of the local community. In the case of Labuan Bajo, the local community is increasingly marginalized. In the case of Jakarta, there are efforts by the local government to transform the slum conditions through physical changes and improving the city's image.

Keywords: traditional houses, livelihood, local community, urbanization, tourism

Session 1: 9:40-11:05

Sustainable Mycelium Biocomposite Artworks

Syaiful Aulia Garibaldi
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Abstract
SDG Goal 12 aims to significantly reduce waste production through prevention, reduction, recycling, and reuse. Art has played a role by utilizing creativity and waste to create sustainable artwork. Cultural innovation and creativity are crucial for finding sustainable solutions. Recycling art has increased the economic and symbolic value of waste. In agricultural countries like Indonesia, agricultural waste provides opportunities for repurposing. With its vast agricultural land, particularly 36,212 hectares of rice fields, Bandung Regency offers significant potential. Utilizing agricultural waste to create biocomposites by combining mushroom mycelium and agricultural residue offers competitive strength, cost efficiency, and biodegradability. However, previous research has mainly focused on durability and mechanical properties, with limited exploration of the artistic value of mycelium-based biocomposites. This study aims to design environmentally friendly sculpture artworks using biocomposites from agricultural waste in Bandung Regency and investigate the art community's perception of this sustainable alternative. The research shows that mycelium biocomposites can be a viable eco-friendly medium for sculptures, accepted in the Indonesian art scene, and add value and meaning to agricultural waste.

Keywords: agricultural waste, mycelium, biocomposite, art, environmental art.

Session 2: 11:10-12:35

Monetary valuation of urban green open space using the Hedonic price model

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Abstract

Background and Objectives: Urban green infrastructure, particularly green open spaces, is of increasing importance in rapidly urbanizing areas. These spaces provide environmental, social, and economic benefits to urban ecosystems, contributing to community health and well-being. However, the economic value of green spaces is often overlooked in urban planning. This study aims to conduct an economic valuation of green spaces using the Hedonic Price Model to provide decision-makers with a comprehensive understanding.

Methods: A questionnaire was distributed through the Google Forms application via an online survey on social media from March to April 2021. The collected data from 1,592 respondents in Jakarta were analyzed using cluster analysis and the SPSS software. The Hedonic Price Model was employed to create a valuation model for green spaces in 42 districts and 239 sub-districts across five cities administrative.

Findings: The study empirically demonstrates that urban parks and forests increase land prices, while the presence of cemeteries decreases land prices in Jakarta. These findings shed light on the economic value of green spaces, including impact on land value and tax revenues. The rate of land value increase such as the imposition of a "Beneficiary Zoning Levy," with values of 9.2%, 17.1%, and 19.2% within the affected value area (0-2 km) for urban parks and parks. The study suggests policy implications, such as exploring alternative financing mechanisms and considering public preferences in urban development and financing policies.

Conclusion: The study confirms the applicability of the Hedonic Price Model in Jakarta's mature and privatized land market. It highlights the importance of considering environmental factors and green spaces in land transactions, land conversion, property development, conservation, and urban green space design. The findings provide valuable information for policymakers, property developers, and land use planners, preventing the undervaluation of green spaces and facilitating informed decisions on land use planning and public investment. Future research should explore additional aspects, such as the size of green spaces, social functions, and ecosystem services, to gain a more comprehensive perspective on the planning and management of green spaces in Jakarta.

Keywords: Green open space (GOS); Hedonic price model (HPM); Economic valuation; Land value; Urban Sustainability.

Session 2: 11:10-12:35

Study of Kampung Hijau as a green urban-village in the urban community environment in Indonesia. Case study: Surabaya City, Indonesia

Muhammad Amin Shodiq

Graduate School of Global Environmental Studies, Kyoto University

Abstract

Increasing in number of populations with the persistent space in city caused the increasing number of dense settlements in urban area. In the case of big cities in Indonesia, this dense settlement will be inhabited by low-income community with various background based on different culture. This area will also tend to be unhealthy place for living. This condition will make the community more stress and increasing risk of depression. One of the solutions to make the more livable high-density cities could be achieved by draw nature closer to the people. This effort could be done by providing the green spaces. Green spaces also could make neighborhoods healthier and more esthetically attractive. In the current situation in Indonesia there is a trend and the existence of Kampung Hijau as one form of green spaces in the urban dense settlement. The objective of this study is to analyze plant biodiversity and home garden structure in Kampung Hijau. The data for this research was collected by field survey on 193 home garden in 5 selected Kampung Hijau in Surabaya City, Indonesia. Subsequently, the data underwent analysis using three different types of plant diversity indices. The first set of indices pertained to species evenness, encompassing the Shannon Wiener Diversity Index and the Pielou Index. The second set focused on species heterogeneity, utilizing Simpson's Index. The third set involved species richness, which encompassed the Menhinick Index and the Margalef Index. Then the plant diversity indices was classified to understand the plant diversity status in each Kampung Hijau. The data was also analyzed by using R-based analysis called as iNEXT to compare the plant diversity among the Kampung Hijau based on the interpolation and extrapolation of species diversity. Based on the data collected, a total of 12.162 plant abundance were found, consisting of 94 plant families and 454 unique species. There are 71 species that classified as native species, 378 species are introduced species, and 5 hybrid species. According to the study, Kampung Hijau was discovered to provided spaces for the plant biodiversity. Based on the classification of diversity indices, generally Kampung Hijau in Surabaya could be categorized as high degree of plant species diversity. However, it predominantly consisted of introduced species, highlighting the need for increased education and promotion regarding the utilization of local or native plants. Another discovery resulting from this study is the home garden structure in Kampung Hijau is dominated by small size home garden less than 10 sqm that mostly planted in planter and located in front garden. Besides that, each Kampung Hijau have their unique characteristic and pattern based on the settlement and home garden structure.

Session 2: 11:10-12:35

Spatial Planning and Land Use System Conformity in Indonesia: Image and Fact

Citra Fadhilah Utami

School of Environmental Science Universitas Indonesia

Abstract

Spatial planning and land use systems are essential for sustainable development and efficient land management. However, there are significant obstacles in Indonesia to achieving conformity between these two systems. The presentation's objectives are to capture Indonesia's land use and spatial planning systems as policy and to reflect the facts that occurred in one of the case studies in Depok City. A general explanation of the connections between agrarian law, spatial planning law, and environmental law opens the presentation. The following sections describe facts of the conformity of spatial plan and land use using the Pancoran Mas sub-district of the Indonesian city of Depok as case study. By using the overlay method and GIS assistance, the conformity is analysed. A case study of Pancoran Mas district shows four main conclusions from each applied analysis. First, there is an inconsistency between the spatial plans in the first decade and the second decade. Second, every plan that has been adjusted will still cause land sprawl. It indicates that the plan is still unable to direct the development, and land permit practices are not under the spatial plan. Third, the spatial plan continues to change based on the development, shown by an increasing level of implementation and legality in each period. Fourth, spatial planning conflicts occur on owned land, showing the need for better land administration. Improving the quality of local governments, both in planning and granting permits, is an endeavor that must be reformed in Indonesia. Reflection on the success of agrarian reform also needs to be profound. Planning aims to balance the public interest and the market, considering the environmental, economic, and social interests to achieve sustainable development.

Session 2: 11:10-12:35

Regional Variations of Kos-kosan's Rental Contracts in Jakarta: A Focus on Cohabitation

Genta Kuno

Graduate School of Asian and African Area Studies, Kyoto University

Abstract

Kos-kosan, also known as *inde kost*, *kos* or *kosan* refers to boarding houses or rented rooms in Indonesia. Kos-kosan provides affordable accommodation for individuals who are studying or working away from their hometowns. In-house rules are often established by the owners as part of the rental contract, and such rules may include the prohibition of cohabitation for unmarried couples. Premarital cohabitation in Indonesia is considered a violation of cultural, religious, and legal norms. These norms emphasize the sanctity of marriage (or virginity) and promote traditional family values, supported primarily by conservative religious groups. This presentation aims to investigate whether there is socio-spatial variation in how such a majoritarian moral value is translated into Kos-kosan's rules. Jakarta, the capital city of the country is set as the study area. Using data extracted from a rental housing advertisement website, properties of Kos-kosan with explicit restrictions related to premarital cohabitation are identified. Spatial distribution of such properties is examined in conjunction with other aspects of rental contract such as rental period and prices. In particular, it is found that the properties with restriction are concentrated in the southern regions of the city. Such regional variations are discussed in relation to the growing influence of moral conservatism in the sociopolitical sphere.

Keywords: Kos-kosan, Jakarta, Rental Contracts, Cohabitation

Session 3: 13:25-14:50

The Creation of Islamic Environmental Law: A Study on Muslim Scholars' Commitment to Climate Change

Natsuki Chubachi

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Abstract

This study aims to reveal the role of Islamic law in the context of climate change in Indonesia. Although classical Islamic materials do not explicitly mention climate change, decarbonization, or even energy, there has been increasing commitment by ulama (Muslim scholars) from policy to grassroots activities based on Islamic principles since 1990s. Some studies see this as a trend out of moral demand among Muslims, and others see modern and secular pressure from the national and global movement. This presentation highlights a process of introducing "eco pesantren" (Islamic boarding school promoting ecological awareness) as a case of jurisprudential response to environmental issues by ulama in Indonesia. Through this, we shed light on the significance of environmental commitment based on Islamic jurisprudence.

Session 3: 13:25-14:50

The Assessment of Socio-hydrological System Resilience Based on Vulnerability Index Analysis in Citarum River Basin

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Abstract
The Citarum River Basin (CRB) is one of Indonesia's rivers with essential socio-economic and ecological functions. However, changes in land use and high pollution loads due to climate change, population growth, and rapid economic development have caused vulnerability to the socio-hydrological system in the CRB, indicated by the disruption in its function as a source of freshwater for ecological and socio-economic activities. Research with a socio-hydrological perspective to assess resilience based on the Vulnerability Index (VI) of the CRB is applied as a reference for the formulation of better water governance. The method used in the research is a mathematical formula to calculate the vulnerability index using secondary data from various institutions managing the Citarum River Basin (CRB) and statistical modelling of Structural Equation Modelling (SEM) to determine human resource capacity. The study results show that the vulnerability index (VI) in the Citarum River Basin is 1.80 in the upstream zone, indicating that the socio-hydrological system is in a moderate vulnerability status. Whereas in the middle zone, the value of VI is 2.52 and in the downstream zone is 2.06, indicating that the socio-hydrological system in the two zones is significantly vulnerable. However, the community resilience analysis results showed that people in the Citarum River Basin were resilient. This was assessed based on the results of measurements of social capital and values, beliefs, and norms (VBN) that shape pro-environmental behaviour in the community. It can be concluded that people in the CRB have the potential to be actively engaged in the water governance system in this area.

Keywords: Socio-hydrological Resilience, Vulnerability Index, Water Stress Index, Adaptive Capacity Index, Community Resilience

Session 3: 13:25-14:50

Actor-network theory approach for forest coverage management in the upper Citarum watershed

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Abstract

Background and Objectives: Citarum watershed, the longest and largest river in West Java Province, is vital in providing raw water for drinking purposes, irrigation for rice fields, and electricity supply. However, it faces various challenges and degradation due to population growth, leading to increased spatial and water resource demands. During its previous management, the Citarum watershed had met challenges due to conflicts of authority and interests between institutions. The need for coordination between sectors in environmental management in Indonesia is reflected in the Citarum watershed management case. The purpose of this research is to analyse the pattern of interaction between the parties (central government, local government, state-owned enterprises, private sector, and community groups) in the management of forest cover in the upstream Citarum watershed and to recommend a pattern of interaction between the parties in managing sustainable forest cover in the upper Citarum watershed.

Methods: The research method used to analyze the interaction patterns of the parties in managing forest cover is an institutional analysis using the Actor-Network Theory (ANT) from the results of interviews with informants. The network pattern was described using the UCINET Version 6.722 for Windows software.

Findings: The results showed that the pattern of stakeholders formed a weak actor network with a value of 7.02% Betweenness Centrality. Another research finding is that the budget planning and realisation are not yet optimal and the forest coverage in 2019 was 24.51%. This indicates that the sustainability of the watershed has not been achieved.

Conclusion: The Governor, Ministry of Environment and Forestry, and Perum Perhutani as key actors need to provide a platform for bringing together ideas and budgets from all stakeholders to increase the relationship between actors so that centrality in the network becomes strong and funding needs can be fulfilled. The sustainable pattern of stakeholder interaction in forest coverage supports increasing forest coverage that increases the carrying capacity of the watershed, protects biodiversity, and supports the sustainability of the upper Citarum Watershed.

Keywords: Actor-network theory, forest coverage management, pattern of interaction, Upper Citarum Watershed, West Java

Session 3: 13:25-14:50

Impact of Climate Change and Landscape Alteration on Avian Migration: An Overview

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Abstract

Migratory bird species have a complex life cycle. During the migration, they encountered several obstacles in their route. Such constraints are closely related to climate change and habitat destruction due to landscape alteration. Many studies and research have been conducted on the impact of climate change and habitat alteration on migrant birds. The impact can be seen clearly in some species of migratory birds. Migratory birds connect the ecosystems, people, and cultures in every region in their path. Maintaining the sustainability of migratory birds along with climate change and landscape alteration requires collaboration and action at the international scale, national scale, and local scale. Community-based migratory bird management is necessary among migratory flyway countries.

Keywords: Community-based migratory bird management; migratory bird; migratory flyway countries.

Session 4: 14:55-16:00

Sustainable Food Estate in the Peat Hydrological Unit

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Abstract

The development of food estates in peatland ecosystems as an effort to increase food security and sovereignty is expected to reduce the level of dependence between the central and local governments. But in fact, the failure of technical and non-technical aspects in its implementation increases dependence both socio-culturally, economically, human resources, and the environment. Neoliberal policies and industrial agricultural approaches through peatland clearing and large-scale cultivation of food commodities have proven to eliminate biodiversity and cause a very detrimental multiplier effect. Therefore, a comprehensive peat-friendly approach is needed in the development of peatland food commodities that are socially acceptable, economically feasible and in accordance with ecological conditions. This study aims to conceptualize a food estate development model through increasing the scale of food commodities produced from sustainable livelihoods. There are four stages in the preparation of the model concept, namely identifying the livelihoods of natural resource-based communities that produce food commodities by the triangulation method, analysing the suitability between arable land for community livelihoods and land typology in peat hydrological units using the overlay method, analysing the sustainability of community livelihoods using the Rap-livelihood method, and analysing the increase in scale of superior food commodities that qualified economies of scale. Through the implementation of the cluster concept and people's economic institutions, a sustainable food estate development model concept is formed that is suitable for peatland ecosystems.

Keywords: food estate, sustainable community livelihoods, scale up, economies of scale, rap-livelihood.

Session 4: 14:55-16:00

Life cycle assessment of hospital wastewater treatment Process

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Abstract
The Wastewater Treatment Plant (WWTP) serves to reduce pollutants contained in hospital wastewater. The problem in this study is that WWTP operations use energy and materials that can contribute to other potential environmental impacts, so an environmental impact assessment of the hospital's WWTP is needed. The purpose of the study is to determine the scenario of developing a wastewater treatment process based on the concept of a life cycle that can be applied to manage the environmental impact category of the wastewater treatment process at RSUP Persahabatan. The methods used are Life Cycle Assessment (LCA) and Analytical Hierarchy Process (AHP). The results showed that the potential environmental impact resulting from the life cycle of the cradle-to-gate scope of hospital wastewater treatment is freshwater eutrophication (53.36%) and global warming potential (25.58%) caused by the use of national electricity of 99.7% with an economic valuation of the impact cost generated by Rp 270,028.15 per 1 m3 processed wastewater. The chosen alternative scenario for the development of hospital WWTP is to replace energy sources with solar power which can reduce 5 out of 8 environmental impacts with an economic valuation of impact costs of Rp 218,782 per 1 m3 of processed wastewater. The conclusion of this study is that the use of solar power can reduce the potential environmental impact of existing WWTP based on the concept of life cycle.

Keywords: wastewater, hospital, WWTP, LCA, AHP

Session 4: 14:55-16:00

Sustainability Study of Co-firing (A case study of co-firing at X Steam Power Plant, Indonesia)

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Abstract

Energy use is currently dominated by fossil energy, to minimize emissions from burning fossil by mixing biomass or co-firing. The problem is there is no comprehensive assessment sustainability of co-firing at X steam power plant. The challenges are continuity of co-firing, goals of this study to evaluated sustainability of co-firing. The method used is Life Cycle Assessment (LCA), descriptive, and Analytical Hierarchy Process (AHP). The research by comparing of full coal and co-firing, the result is decrease in Global Warming Potential 0,13%. Co-firing give affects 81,56% of the risen jobs potential, 3,47% saving cost raw materials. The selection of alternative types of sawdust biomass from the assessment sustainability of co-firing 41,15%. The conclusion of this study is the assessment of sustainability co-firing using sawdust biomass in the moderately sustainable category.

Keywords: Co-firing, Sustainability, Sawdust, Steam Power Plant, LCA, Socio-economy