Nawasona

2022

Publication of Research, Community Services, and Innovation (PPMI)
School of Architecture, Planning, and Policy Development
Institut Teknologi Bandung

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PPMI Committee of SAPPD ITB

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Compiled by PPMI Committee of SAPPD, ITB

Foreword

The Nawasona book is a publication for the Program Penelitian (Research), Pengabdian kepada Masyarakat (Community Service), dan Inovasi (Innovation) ITB (PPMI-ITB) held in SAPPD in 2022. The book's title is inspired from Sanskrit and can be approximately translated as nine souls, nine orientations, nine strengths, or nine life supports, which symbolise the nine scientific / research groups within the School of Architecture, Planning and Policy Development (SAPPD).

The goal of producing this PPMI SAPPD 2022 book is to disseminate SAPPD research findings to the public, particularly the academic community at large. The adoption of English as the working language of this book is envisioned to assist the book reach a larger audience and circulate its positive impacts, which are driven by SAPPD ITB's mission for research, teaching, and community involvement.

With the publishing of the 2022 PPMI book, it is intended that research efforts can be accelerated. Moreover, it is anticipated that the synergies between SAPPD's study fields would result in the creation of joint road plans and the generation of new subjects. We believe that students will get more familiar with the research subjects and study areas being researched by SAPPD ITB instructors, allowing them to align their thesis and dissertation topics with the lecturers' research road map.

In addition to research and teaching, SAPPD ITB lecturers apply their research results to community service initiatives. PPMI SAPPD's activities include the promotion of start-ups and new businesses, which led to inventions and the registration of patents. PPMI products, which include policies, models, and designs, have a substantial potential for innovation and intellectual property rights, such as patents. The establishment of PPMI 2022 is intended as a service to the community, so that the findings can be utilised directly through already established research, service, and innovation activities.

The potential for innovation and intellectual property claims such as patents is quite vast on PPMI products, which range from policies, models, and designs. Establishment of PPMI 2021 activities are intended as a service to the community so that it can utilize the results directly through previously designed research, service, and innovation activities.

The PPMI SAPPD 2022 committee thanks the whole SAPPD academic community for their contributions to this publication. This book will hopefully contribute to local, regional, and national development.

Bandung, December 15, 2022
PPMI Committee of SAPPD
Institut Teknologi Bandung

Message from the Dean

Greetings from SAPPD,

NAWASONA 2022 highlights the outputs of research and community services by faculty members at the School of Architecture, Planning and Policy Development (SAPPD), Institut Teknologi Bandung in the year of 2021, funded by PPMI (Penelitian, Pengabdian Masyarakat, dan Inovasi) ITB Research Grant.

Alongside other research funding schemes, the PPMI grant provides our faculty members the possibility to enhance research-based teaching. This grant also encourages interdisciplinary research collaboration with different research groups within the SAPPD.

The research and community service topics of PPMI 2022 are extremely diverse; yet, they may all be categorised as policy, planning, and built environment design. Resilience, sustainability, and equity are also extensively covered subjects in PPMI 2022. The COVID-19 pandemic setting continues to dominate this year's research. However, most research have shifted to the post-pandemic context and how the pandemic habit or norm become the new normal today.

This book will hopefully contribute to the advancement of education, research, and community services in the policy, planning, and design of the built environment fields.

Bandung, December 15, 2022

Dr. Sri Maryati, ST, MIP

Table of Content

Regional & City Infrastructure System

Those who interested in transportation and infrastructure planning, also its implication on urban development.

Regional and City Infrastructure System Research Group

Dr. Ir. Heru Purboyo Hidayat P., DEA
Ibnu Syabri, B.Sc., M.Sc, Ph.D
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Lisna Rahayu, S.T., M.Sc.
Ulfah Alifah Rahmah, S.T., M.T.
Fika Novitasari, ST, M.T.

Regional and City Infrastructure System (RCIS) is one of the research groups in School of Architecture, Planning, and Policy Development that consists of professors and researchers that interested in transportation and infrastructure planning, also its implications on urban development. Alongside other research groups in SAPPD, it supports academic activities in the Urban and Regional Planning Program, as well as Transportation Postgraduate Program. Students interested in topics related to infrastructure and transportation planning, policies, and management are supported to do their activities under our supervision. With all due respect, we invite you to collaborate with us, mainly in research, seminar, or exchange programs related to transportation and infrastructure planning, policy and management. We offer collaborative activities based on mutual benefit.

1.1 Formalizing the Informal: Infrastructure and Land Arrangements in Informal Settlements in Indonesia

Head of the team : Dr. Ir. Heru Purboyo Hidayat Putro, D.E.A

Team members : Dr. Ir. Binsar Parasian Naipospos, M.S.P.; Dr. Ninik Suhartini, S.T., MURP.

Research assistant : Mahfira Azka Maharani, S.T.; Muhammad Sulton Asofyan, S.T.; Rima Yulia Mirhadi, S.P.W.K.

ABSTRACT

Planning remains foreign in informal cities of the Global South as the formal systems have not prioritized development in such settlements in its spatial and development plans arrangement. Cities of the informal have grown rapidly and claimed to contribute to increasing problems in provision of public services and quality of live in urban areas. Land becomes part of the dispute as residents of informal settlements are seen as “land grabbers” and need to be evicted. Nonetheless, this paper explores how infrastructure and land development have contributed to address main issues in urban areas regarding access to public service and land provision over time. Using a case study of Kampung Tamansari, Bandung, Indonesia, a study on land status development and access to basic infrastructure are observed to understand how different processes of planning and development occur in the informal city. This includes exploring the change of land status and arrangements regarding infrastructure provision for the residents.

1.2 Learning from Passenger Adaptive Behavior in Transit Service Disruption: Literature Review

Head of the team : Ibnu Syabri, B.Sc., M.Sc., Ph.D.

Team members : Dr.Eng. Puspita Dirgahayani, S.T., M.Eng.; Ulfah Aliifah Rahmah, S.T., M.T.

Research assistant : Muhammad Rizki Rayani Ramadani, S.T. Irma Yusfida; Hanna Dwipaningtyas Boru T.

ABSTRACT

Public transport as a transport backbone is fragile to service disruption. Service disruption in the public transport network will lead to limited available public transport options. The passengers must modify their trips by selecting the most efficient available modes and considering the trade-off. On the contrary, not every commuter can select their preferred modes due to personal constraints, geographical location, and available public transport networks around their neighborhood. The captive user is usually more satisfied with the quality of services, but the satisfaction could be biased because there is no other option (travel captivity). The research about disruptive events related to adaptive passenger behavior is still limited. Most research focuses on network perspectives, and make passenger perspectives are overlooked. This perspective is essential caused most policymaking does not include passenger perspectives. The policy and development without an understanding of the bottom-up approach will be less valuable. This research proposes a general conceptual framework between transit service disruptions and adaptive behavior. This research highlighted a connection between disruption impact, the severity level, and adaptive passenger behavior. The methods in this article are literature reviews for adaptive behavior research from 2008 - 2022 (15 years) using science mapping and comparative analysis.

Keywords: adaptive behavior, disruption, public transport

1.3 Opportunities Challenges in the Transportation Sector during the Endemic Period and Their Policy/Strategy Reformulation

Head of the team : Dr. Miming Miharja, S.T., M.Sc.Eng.

Team members : Shanty Yulianti Rachmat, S.T., M.T., M.Sc., Ph.D.; Dr. I Gusti Ayu Andani, S.T., M.T.

Research assistant : Renny Desiana, S.T., M.P.W.K.; Dian Nur'afalia, S.T., M.P.W.K.; Fika Novitasari, S.T., M.T.

ABSTRACT

COVID-19 pandemic that spread out in the whole Indonesia regions has created various impacts on people's lives such as limiting public activities (work, study, and others) as well as closing or reducing goods distribution facilities operating hours such as ports, airports, and terminals. Other impacts have also caused many companies to experience policy changes, such as changes in working hours and communication processes that switched to online media. These changes have created an impact on the pattern and frequency of public trips. With these changes, it is necessary to set up the public transport policies to adjust transportation service system. The formulation of policies during this endemic period is expected to be able to maintain a good performance of public transportation. Therefore, this study aims to understand the public trips pattern and frequency changes as well as maps the opportunities and challenges in the transportation sector during the endemic period and its policy-strategy reformulation. The scope of this research is the Bandung City and the Jakarta City. The methodology of research is descriptive statistics and binomial logit. The research reveals that there are some factors which stimulated both temporary and permanent travel pattern and frequency changes. By adjusting the transportation system to the new trips character, it is hoped that the system will be able to maintain adequate, comfortable, and safe public transportation in the endemic period.

1.4 Utilization of Smart Mobility Indicators in Supporting Post-Pandemic Sustainable Community Mobility

Head of the team : Shanty Yulianti Rachmat, ST., MT., M.Sc., Ph.D.

Team members : Adenantera Dwicaksono, S.T., M.Ds., Ph.D.

Research assistant : Nilam Atsirina

ABSTRACT

The main purpose of technology and innovation is to support people's activities, including in the transportation sector. With transportation technology, people's mobility is expected to be smarter, more efficient, and more sustainable. During the COVID-19 pandemic, the pattern of people's mobility was changed due to restriction policies on many people's activities. One of examples is people also avoid using public transportation, which is at high risk of transmitting the virus. They were switching to using private vehicles, bicycles, or walking. Meanwhile, smart mobility with its ranging criteria has been introduced before the pandemic. Then, the changing pattern of people's mobility during pandemic require some adjustment on smart mobility criteria that not just in line with the initial concept, but also supports health protocols enforcement. This study aims to provide recommendations in utilizing smart mobility indicator to support sustainable people's mobility during and after a pandemic. Taking as a case is in Semarang, one of the cities in Indonesia with high acknowledgment for smart city programs. There are three objectives that need to be achieved. First, identify people's mobility pattern during the post-pandemic period. Second, elaborate smart mobility indicators that are relevant to people's mobility during and especially post-pandemic. Third, assess the benefits of utilizing one of smart mobility indicators, as a sample, in Semarang. Based on this study, we found that the usage of private vehicles is getting higher (around 60% respondents who returned to normal mobility). The effort to shift private vehicle users to public transport is getting challenging, some of them due to health protocol reasons. However, many smart mobility indicators are very relevant to support a sustainable people mobility after the pandemic which can be grouped into 4 categories. First is indicators related to assessment, prediction, and personalization of traffic conditions. Second is related to Mobility as a Service (MaaS), especially in the integration of public and commercial (online/sharing) transportation. These two categories are mainly to control traffic load. Third is related to automatic monitoring, assessment, payment, and authorization in public transport, mainly to enforce health protocols. And the fourth is related technology in supporting emergency vehicles during critical situations such as automated priority signal.

1.5 Road Development in the framework of Increasing Tourism to Reduce Poverty in the Dieng Region, Central Java

Head of the team : Dr. Ir. Heru Purboyo Hidayat Putro, DEA.

Team members : Dr.Eng. Puspita Dirgahayani, S.T., M.Eng.; Ulfah Aliifah Rahmah, S.T., M.T.

Research assistant : Dr.Eng. Titus Hari Setiawan, SE., MT.; Yesi Pandu Pratama, S.Par.

ABSTRACT

The existence of infrastructure gaps is one of the main causes of poverty, and can make it difficult for an area to develop. The absence of infrastructure can make people's living costs expensive. In Wonosobo Regency, the condition of the hilly area causes the distribution of the population in the area to be uneven. The government then carried out the construction of road infrastructure in Wonosobo Regency, including in Kejajar District which is part of the Dieng Area which is the main tourism destination in Wonosobo Regency. This study aims to determine the direct and indirect impacts of road infrastructure development in the Kejajar District and other areas in Wonosobo Regency on the development of tourism in the Kejajar District which then also has an impact on the economy of the people in the Kejajar District. The method used in this research is a literature study with descriptive analysis. Secondary data is fully used in this study for in-depth exploration of road infrastructure, tourism development, and poverty reduction in Kejajar District. The results show that there has been a significant increase in the number of tourists along with the construction of road infrastructure in the Kejajar District and its surroundings. Although there is no detailed mention of the contribution of tourism to the GRDP of Wonosobo Regency, there has been a shift in people's livelihoods from originally cultivating potatoes, switching to other types of crops and working in the tourism sector. This was accompanied by a decrease in the number of families in the Pre-Prosperous and Prosperous Category I.

1.6 Towards Sustainable Water Supply Management: Coherence Typology of Community-based Water Provision

Head of the team : Fika Novitasari, ST., MT.

Team members : Dr. I Gusti Ayu Andani ST., MT.; Arini Murwindarti, S.Si., M.Sc.

ABSTRACT

Public transport as a transport backbone is fragile to service disruption. Service disruption in the public transport network will lead to limited available public transport options. The passengers must modify their trips by selecting the most efficient available modes and considering the trade-off. On the contrary, not every commuter can select their preferred modes due to personal constraints, geographical location, and available public transport networks around their neighborhood. The captive user is usually more satisfied with the quality of services, but the satisfaction could be biased because there is no other option (travel captivity). The research about disruptive events related to adaptive passenger behavior is still limited. Most research focuses on network perspectives, and make passenger perspectives are overlooked. This perspective is essential caused most policymaking does not include passenger perspectives. The policy and development without an understanding of the bottom-up approach will be less valuable. This research proposes a general conceptual framework between transit service disruptions and adaptive behavior. This research highlighted a connection between disruption impact, the severity level, and adaptive passenger behavior. The methods in this article are literature reviews for adaptive behavior research from 2008 - 2022 (15 years) using science mapping and comparative analysis.

Urban Planning & Design

Those who promote more humane and sustainable urban development, encouraging innovation in respose to development of urban areas.

Urban Planning and Design Research Group

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Urban Planning and Design is one of the research groups in the School of Architecture, Planning, and Policy Development that focuses on urban planning and design research and practices. Activities of this group are intended to promote more humane and sustainable urban development, understanding rapid urbanization and encourage innovation in response to policies, planning, and management of economics development, also improvement of social and environmental aspects of urban and regional areas in Indonesia. The main purpose of the Urban Planning and Design research group is to disseminate accumulated knowledge from applying advice and policies to government and private sector, into academics and teaching activities in the Urban and Regional Planning Department.

2.1 Preference of Public in Provision of Transport Infrastructure During and After the COVID-19 Pandemic

Head of the team : Prof. Ir. Haryo Winarso, M.Eng., Ph.D

Team members : Dr. Ir. Denny Zulkaidi, M.U.P.; Dr. Ir. Iwan Kustiwan, M.T.; Ir. Sugiyantoro, M.I.P., Ph.D.; Ridwan Sutriadi, S.T., M.T., Ph.D.; Dr. RM. Petrus Natalivan Indradjati, S.T., M.T.; Dr. Niken Prilandita, S.T., M.Sc.; Bagas Dwipantara Putra, S.T., M.T., Ph.D.; Lanthika Atianta, S.T., M.Sc.; Naya Cinantya Drestalita, S.T., M.Arts.; Afrizal Ramadhan, S.T., M.P.W.K.

Research assistant : Rose Fatmadewi, S.Si., MURP; Bungaria Ramadhani, S.T., M.P.W.K.; Naimah Putri Kamila, S.T., M.P.W.K.; A'lam Hasnan Habib, S.T.; Anandhika Arifianto, S.T.; M. Ihsan Yudanto, S.T.; Ruhkhis Muhtadin, S.T.

ABSTRACT

Since the beginning of 2020, the spread of COVID-19 has been remarkable in terms of pace, scale, and economic and social impact. COVID-19 has emphasized the relevance of various infrastructure systems and services in preserving economic and social activity and enabling responses to unforeseen threats and challenges while also being a potential source of vulnerability. Transport has played a significant role in people's daily lives and the spread of the virus. Consecutive global lockdowns have resulted in a dramatic drop in global demand and supply of goods and services. Global lockdowns compelled all non-essential workers to work from home virtually almost overnight and schools to switch to e-learning. With these behavioral changes, the provision of public transportation may not be the same as before the pandemic. Several aspects need to be considered to provide such services and goods for the public nowadays. The true transportation infrastructure needs due to the reduced dead during and after a pandemic is still a big question in the urban and transportation study field. However, most studies focus on the impact of COVID-19 on the aggregate number of ridership or the overall impact on the flow of transport, while they do not consider the users' preference for the provision of public transport itself. In this study, we aim to explore the user's preferences for transport infrastructure during and after a pandemic. This study focuses on a situation in Jakarta, Indonesia, where more than 48.6% of users said that COVID did not affect the frequency of their public transportation usage (Moovit, 2021). We attempt to develop a survey for public transport users and model their preferences by using a multinomial logit model to comprehensively understand the impacts of COVID-19 on users' preferences for public transport provision, especially in Indonesia. Although this is still an ongoing study, we believe that it is important to share the importance of users' preferences in providing transport infrastructure during and after the pandemic so that it will be resilient, sustainable, and socially equitable in the future.

2.2 Successes, Imperfections, and Failures of Megaproject Planning in Indonesia

Head of the team : Prof. Ir. Haryo Winarso, M.Eng., Ph.D

Team members : Dr. Ir. Andi Oetomo, M.PL.

Research assistant : Mandra Lazuardi Kitri, S.T., M.B.A.; Chrisna Trie Hadi Permana, S.T., M.Sc., ME., PhD; Akhmad Gunawan, S.T.; Marisa Sugangga, S.T, M.T.; Moniq Adinafa, S.E, M.PWK, M.Sc.; Ruhkhis Muhtadin, S.T.

ABSTRACT

As a manifestation of current approaches to global planning, megaproject planning is an open-ended process that unfolds through the contestation, negotiation, and contradiction of social (power) relations. However, recent studies still perceive local government authorities as elusive actors in shaping megaproject planning and development processes. This article uses two case studies to investigate the multifaceted roles that local government played in dealing with actors' overlapping interests in two Indonesian special economic zone (SEZ) megaprojects. This article shows that rather than acting as e entrepreneurial agencies that serve state or private actors, local government authorities can articulate and negotiate community interests in developing megaprojects. Moreover, the 'social relation' framework allows explanation of the conditions under which local government units can engage in political negotiations and demand equitable planning processes.

2.3 Simulation of Eight Layers of Smart Cities for the Implementation of SWK Development Themes in the City of Bandung

Head of the team : Ridwan Sutriadi ST., MT., Ph.D.
Team members : Prof. Dr. Ir. Benedictus Kombaitan, M.Sc.
Research assistant : Anandhika Arifianto, S.T.; Muhammad Ihsan Yudanto, S.T.; Muhammad Alif Alwinutama, S.T.

ABSTRACT

The development of the smart city concept has been widely applied in cities around the world with the aim of reducing urban problems. This concept continues to develop by clearly defining the concept and its implementation in a city, however, the output aspect is still not widely discussed as a concrete impact of implementing a smart city concept. This article is able to explain the implementation of the smart city concept that adopts the eight-layer smart city conceptual framework. Bandung being one of the metropolitan cities in Indonesia is able become a role model for the development of the smart city concept which was initiated in 2013, with the aim of reducing problems that are growing rapidly. Two SWKs were selected which have different characteristics in terms of innovation, culture, and economic sector dominance which are expected to explain the externalities of this comparative study. This article uses a qualitative comparative study of primary and secondary data, which is expected to be able to explain the interrelationships between layers and the differences between case studies.

2.4 Preparation of Thematic Planning Training Modules in the Context of Completing the Metropolitan Living Lab Roadmap

Head of the team : Ridwan Sutriadi, S.T., M.T., Ph.D.

Research assistant : Anandhika Arifianto, S.T.; Muhammad Ihsan Yudanto, S.T.; Muhammad Alif Alwinutama, S.T.

ABSTRACT

The Living Lab Metropolitan Road Map is an alternative formulation for the national urban policy framework. The road map is prepared based on the National Urban Policy Framework, where each strategy is compared with a Next Generation Cities concept layer. The RPJMN document is also considered in determining the implementation period of the strategy based on the implementation year of the RPJMN Major Project. This community assistance activity aims to ensure the continuation of the collaboration with the Garut Regency Government through thematic planning assistance and training. The Garut Regency Government's contribution to this activity is in-kind in providing seminar rooms, resource persons, and data related to activities. This activity is expected to increase the understanding and capacity of community governments in preparing thematic planning products, especially to fill in the metropolitan living lab road map. This community assistance activity is expected to establish relations between the community and universities in implementing the Tri Dharma of Higher Education, especially in contributing to the city of Bandung, where ITB is located. This activity involved Lecturers and S1 PWK students of the Ganesha Campus. This activity is expected to enrich lecture material PL 3002 Special Topics of Planning and PL 4102 Regional and City Innovation Systems.

2.5 Assistance for Data Collection and Mapping of Village Resources Supports the Achievement of Village SDGs in Kebonturi Village, Arjawinangun District, Cirebon Regency

Head of the team : Dr. Iwan Kustiwan, MT. Ph.D.

Team members : Arini Murwindarti, S.Si., M.Sc.; Lanthika Atianta, ST., M.Sc.

Research assistant : Munirul Anam; Muhammad Rizki.

ABSTRACT

In the fifth year of implementing the SDGs (Sustainable Development Goals), the Indonesian government is making efforts to accelerate the achievement of the SDGs targets by implementing it down to the smallest governance level, namely at the village level with Village SDGs. Through regulation of the Minister of Villages and Development of Disadvantaged Regions of Transmigration No. 7 of 2021, priorities for the use of village funds for 2022 are set to support the acceleration of the achievement of Village SDGs through national economic recovery, national priority programs, as well as mitigation and management of natural and non-natural disasters by village authority. One of the priority programs is data collection and mapping of village resources. This program is upstream of other priority programs because the data generated from this program is expected to be the basic data and information for other programs. However, not all villages have the capacity to independently collect data and map village resources, especially for the villages with developing, underdeveloped, and very underdeveloped statuses. Therefore, the purpose of this community service is to assist in data collection and mapping of village resources as the input data for village development plans. Thus, this program supports the achievement of Village SDGs. The location of the community service activity is in Kebonturi Village, Arjawinangun District, Cirebon Regency, West Java. Service activities in the form of assistance to the community to identify and map the potential also problems that exist in Kebonturi Village using the participatory planning method. This activity was held on October 30th,2022 at the Kebonturi Village Hall and was attended by the village government, the community, village-owned enterprises (BUMDES) managers, and the community service implementation team. The result of this activity is a map of potentials and problems in Kebonturi Village that will be used as input for the village development plans.

Keywords: community services, participatory mapping, village SDGs

Regional & Rural Planning

Those who promote intergrated, equal and sustainable rural and regional areas

Regional and Rural Planning Research Group

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Arini Murwindarti, S.Si, M.Sc.

This research group aims to be the center of research in regional and rural planning, promoting regional research groups, integrated, equal, and sustainable rural and regional areas. This research group covers broad aspects, divided into three main topics, namely Environmental Management and Planning, Regional Policies and Governance, and Transformation of Rural and Society Development. Every topic consists of diverse research interest. Environmental Planning and Management covers disaster management, climate change and regional development, watershed management, ecotourism development, and marine development. Regional Policies and Governance covers regional economics, local economic development, and Megaurban and Periurban development. Rural Transformation and Social Development cover endogen development, rural development and planning, and community development as its main focus.

3.1 Social-Ecological Resilience for Peat Ecosystem Planning

Head of the team : Prof. Ir. Djoko Santoso Abi Suroso, Ph.D
Team members : Ir. Tubagus Furqon Sofhani, M.A., Ph.D.
Research assistant : Muhammad Alkaf, S.Hut., M.Si.

ABSTRACT

Resilience theory is starting to enter debates in planning theory and practice. The fusion between resilience theory and social-ecological system (SES) has brought a new concept, namely social-ecological resilience (SER), which aims to bridge the concepts of natural and social sciences in a complex socio-ecological system. Recent studies of SER, especially in sensitive ecosystems, still require empirical evidence. One of the characteristics of the rural areas, which is unique, sensitive, and complex, is the tropical peatland ecosystem on the island of Sumatera, Indonesia. These ecosystems store enormous carbon stocks and have experienced severe disturbances in the last few decades. Peatlands are becoming increasingly complex and dynamic due to the strengthening of the socio-economic aspects by human activities for development, which has proven to cause degraded peat. This degradation leads to a negative impact on national and international development. Increasing carbon emissions from the development of peatlands are outside the line with sustainable development and climate change mitigation and adaptation. This study applies a resilience perspective to complex social-ecological systems of sensitive tropical peatland ecosystems. The method used in this research is a case study in the Giam Siak Kecil - Bukit Batu Biosphere Reserve in Riau Province, Indonesia, with a qualitative approach. The results show that there has been a complex relationship between social-ecological systems in this area due to the massive use of space in recent years. The buffer and transition zones of the Biosphere Reserve are moving towards a new equilibrium that is different from their natural conditions as human action in ecosystems strengthens. Stakeholders in this area must strive to carry out collaborative planning to prevent further changes leading to uncertainty. Collaboration in landscape management, particularly in water management, is unique in managing tropical peatlands and maintaining the resilience of sensitive social-ecological systems.

Keywords: resilience, social-ecological system, peatland ecosystem, planning

3.2 Urban Sprawl Mitigation Policy Model in Indonesia

Head of the team : Prof. Dr. Delik Hudalah, S.T., M.T., M.Sc.

Research assistant : Arsan Nurrokhman, S.Si., M.A.P.

ABSTRACT

This study aims to examine the phenomenon of urban sprawl in Indonesia, especially those that impact the conversion of agricultural land into housing. The hypothesis put forward is that the phenomenon of urban sprawl occurs in almost all cities in Indonesia. The influence of policies not oriented towards compact cities, the population's preference for landed houses and the provision of housing handed over to the private sector makes urban sprawl even more uncontrollable. The proposed mitigation model is based on the assumption of failure of the market mechanism in housing supply. A striking indication is an increase in vacant houses in almost all the cities studied. The model created generally seeks to integrate land, housing and spatial planning policies in Indonesia. Restrictions on land ownership in urban areas are urgently needed, and the provision of housing does not always have to go hand in hand with the provision of land. In addition, fiscal incentives in the agricultural sector and progressive taxes on home ownership and motor vehicles are viable alternatives.

3.3 Deciphering Urban Regions of Indonesia: Finding Roots in the Global South

Head of the team : Ir. Teti Armiati Argo, M.E.S., Ph.D.

Team members : Dr. Delik Hudalah, S.T., M.T., M.Sc.; Arini Murwindarti, M.Sc.

Research assistant : Muthahhari Wali Hidayatjati, S.T.; Hesti Prawati, S.T.

ABSTRACT

Some large cities of Indonesia have become major centers of agglomeration, concentrating on expanding the economic activity within, known as the term of mega metropolitanization, and mega urban regions. Greater Jakarta, with population no less than 29 million people has become the epitome of metropolitan region where urban features and lifestyles disperse to the surrounding cities and regencies outside the capital city. Many cities in the global south have been largely auto constructed by the residents. The processes are progressive, resulting in heterogenic urban landscape on the hinterland of the city or even beyond the city boundaries. Studies of experiences and experiments of forming urban growth centers and empowering cities through policies, formal logics versus cities developed spontaneously, situationally have not been well identified. This research aims to formulate Indonesia's urban trends and dynamics based on the 'transversality' concept. Inviting understanding of cities not only from formal logics such as through planning and policies but also from situationally, improvisation, transgressing and boundary crossing redefine urban in Indonesia. This research uses spatial and quantitative analytical methods to examine the pattern of existing urban regions in Indonesia. Spatial data analysis is carried out by comparing the area and pattern of urban areas with the metropolitan areas that have been planned and delineated by the Indonesian government. The term urban region refers to a region with two or more interconnected cities or urban areas. In this research, the spatial data of urban region is derived from Global Human Settlement Layer (GHSL) database representing both urban centers and functional urban areas. In relation with 13 metropolitan areas stipulated by Indonesia's government, it is found that not all urban areas grow following planned metropolitan areas. In the case of Java Island, where four metropolitan areas are defined, it is found that the urban development has established a mega urban region exceeding the delineation of the metropolitan area. The region consists of 47 cities and municipalities where 68% of the population of Java Island live. Moreover, the result shows that some metropolitan areas are spatially expanding in the opposite direction as planned, some of them also too small to be considered as metropolitan area. Furthermore, the evidence of transversality in urban development is observed in an urban region that grows organically even before being planned by the government.

Development Management & Policy Planning

Those who contribute to the theoritical and practical knowladge of policy planning and development management of urban areas.

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Development Management and Policy Planning is a research group founded to accommodate faculty member with experience and research interest to development and management of urban areas and regions, and also policy planning. Founded in 2005, this research group intend to contribute to the theoretical and practical knowledge of policy planning and development management. This group has continually improved, manage, and distribute knowledge, relevant skill sets, outlook to policy, and relevant plan to respond to current issues and local, regional, and national problems. Supported with competent human resources, this group attempt to broaden society's horizon to realize prosperity, modernity, and sustainability.

Keywords: Metropolitan Governance, Urban Management, Development Management, Urban Public Finance, Development Finance, Planning Evaluation, Smart City Development, Urban Government Institution, PublicPrivate Partnership, Fiscal Impact Analysis, Local Preferences Analysis, Urban Politics, Policy Analysis, Disaster Mitigation.

4.1 The Role of Personality Type and Knowledge in Moderating the Effect of Attractions and Accessibility to Tourists' Preference in Protected Area

Head of the team : Dr. Eng. Puspita Dirgahayani, S.T., M.Eng

Team members : Dr. Fitri Rahmafitria M.Si.

ABSTRACT

Tourism in a protected area has become a problem in many countries because of the impact of unkind tourist behavior. The easiness of accessibility and comfort facilities have caused an increase in tourists' hedonistic preference and led to a more massive physical development in a protected area. This paper explains how personality type and knowledge could moderate the impact of accessibility and comfort facilities on increasing tourists' hedonistic preferences. The study was conducted in Komodo National Park (KNP), Indonesia's popular destination. A set of questionnaires was shared with 534 domestic and international respondents who have visited KNP to explore their perceptions about accessibility, attraction, conservation, knowledge, type of personality, and hedonistic preference. Through a statistical analysis using SEM-PLS, it is proved that pleasant tourist facilities and accessibility could improve tourists' hedonistic preference, while natural attraction and knowledge can lower their hedonistic preference. The study has demonstrated that knowledge about the regulation and sensitivity of conservation areas in developing and marketing nature tourism destinations is crucial in educating tourists. This paper also shows the need to research the impact of personality type on tourist behavior to validate the classic theory of the psychographic model in tourist behavior.

4.2 National and Local Practice in Mainstreaming Tsunami and Pandemic Risk Reduction into Urban Planning in Indonesia

Head of the team : Ir. Harkunti Pertiwi Rahayu, Ph.D.

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ABSTRACT

Indonesia is an archipelagic country that is vulnerable to earthquakes and tsunamis due to its location in an earthquake-prone region. In 2020, the world, including Indonesia, was shaken by the COVID-19 pandemic. The disaster risk reduction system is not prepared to deal with pandemic disasters. Indonesia continues to take various measures to contain Covid-19's spread. Currently, urban planning does not consider the COVID-19 pandemic. The challenge of reducing disaster risks, including those associated with tsunamis, arises during a pandemic. Therefore, it is necessary to take specific actions to increase cities' resilience to tsunamis under pandemic conditions. Integrating tsunami risk reduction and pandemic preparedness into urban planning can help overcome these challenges. This study aims to identify national and local practices for reducing tsunami risk and de-escalating Covid-19 in the context of policy and urban planning. This study uses stakeholder analysis and document analysis to identify tsunami risk reduction and pandemic preparedness key actors and initiatives. According to the study, disaster resilience is a major concern in all planning documents in tsunami-prone areas. For Covid-19, action has been taken in response to COVID-19 through policies that apply nationally and regionally, including public activity restrictions (Pemberlakuan Pembatasan Kegiatan Masyarakat - PPKM). However, study results showed that policies implemented to de-escalating Covid-19 were a response rather than a preventative measure. Stakeholders need to consider disasters and pandemics in planning documents, including considering tsunamis during the pandemic scenario to prevent the spread of the epidemic. Public awareness of the tsunami and Covid-19 pandemic can be increased through online socialization. In pandemic situations, tsunami simulations can be organized following strict health protocols. Mainstreaming tsunami risk reduction and handling the Covid-19 pandemic needs to involve pentahelix stakeholders: the government, community, private sector, academia, and media. Further studies are needed to determine existing collaboration networks to achieve regional resilience towards natural disasters during a pandemic.

4.3 Optimizing Public Transport Service Coverage Through Integration with Bicycles

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ABSTRACT

Bicycles as non-motorized transport vehicles can be utilized to overcome the weakness of the First Mile Last Mile (FMLM) public transport network and improve the network's service coverage. The provision of connected bicycle lanes and bicycle parking to/in proximity to transit points to bike-and-ride or use bike-sharing can reinforce this mode's attractiveness. However, bicycle facilities and infrastructure may not sufficient. This study hypothesizes that psychological aspect/latent variable could increase the accuracy in predicting choice behavior, particularly in the context of a country that has not established cycling culture like Indonesia. This research aims at examining the potential development of bicycle infrastructure scenarios (namely, integrating public transport and bike-and-ride infrastructure; integrating public transport and bike-sharing infrastructure, and cycling superhighways) by associating with latent variables (perception and attitudes) as well as demographic and trip characteristic into an Integrated Choice Latent Variable (ICLV) Model by applying Hybrid Choice Model (HCM) analysis. This study focused on a case study of Sudirman-Thamrin corridor which is one of the main corridors in Jakarta's city center, Indonesia, and where cycling dedicated lanes are available. It found that the more experienced someone is in cycling, the higher their cycling motivation is in terms of maintaining their body health. Furthermore, the results show that the main factors include safety and comfort, through the availability of separated lanes and sufficient cycling facilities. In addition, explanatory variables such as gender, age, and travel distance can affect the cyclist's attitude in allowing themselves to face extreme conditions during a cycling trip, such as heat and rain. This study also demonstrates that the scenario of cycling superhighways is preferred depending on the availability of separated bike lanes which are relatively flat, shady, and safe from criminal risk. Meanwhile, bike-sharing and bike-and-ride mode choices are more related to travel cost, time, and bicycle lane width.

4.4 The Impact of the Pandemic in the Tourism Sustainable Livelihoods Framework in Indonesia (Case Study: Priority National Tourism Strategic Areas

Head of the team : Alhilal Furqan, B.Sc., M.Sc., Ph.D.

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ABSTRACT

Global tourism is considered to significantly impact socioeconomic development, including development in Indonesia (WTO, 2011). In 2019, the Tourism Sector became the largest contributor with a score of 5.5% of Indonesia's GDP. In 2020, the Tourism sector in Indonesia experienced major challenges due to the COVID-19 Pandemic. This pandemic has an impact on the implementation of social implementation policies that are used to reduce the number of victims of the COVID-19 virus. Under these conditions, the tourism sector experienced a major decline, especially in provinces where the tourism sector was the main driver of their economy, one of which was in the Provinces of Bali and West Nusa Tenggara. This research is an escalation and continuation of research conducted in 2020 & 2021 in the Province of Bali. This research aims to identify the impact of the COVID-19 Pandemic and efforts to restore the tourism sector through case studies in the Provinces of Bali and West Nusa Tenggara. This study uses a qualitative research approach that is descriptive in nature with a multiple case study model. Data collection methods used include secondary data collection. The data collected is from statistical data, information from research, popular news, and legal policies. Factor analysis emphasized quantitative and qualitative descriptive statistical analysis to compare the impact of the COVID-19 Pandemic on tourist visits, influencing factors, and economic recovery efforts carried out in the Provinces of Bali & NTB. Comparative studies were carried out on cases in the Provinces of Bali & West Nusa Tenggara because the two locations have different characteristics of tourism development. Bali Province is a major tourist destination in Indonesia and has played a significant role in the development of tourism in Indonesia. Meanwhile, West Nusa Tenggara Province has the Lombok National Tourism Strategic Area (KSPN), one of the 5 Super Priority KSPNs in the 2020-2024 RPJMN. The number of tourist visits has decreased significantly in the two Provinces from 2019 to 2021. Tourist visits to the Province of Bali in 2020 have decreased by -66.43% from the total in 2019 since the discovery of the COVID-19 case and the disclosure of activities in March 2020. In fact, in 2021 there has been a further decline in the number of tourist visits to the Province of Bali by -23.82% compared to 2020. In 2020, the number of visits in the Province of NTB has decreased from 2019 which is quite drastic compared to the Province of Bali. Different things happened in the Province of NTB in 2021 because there was a significant increase to 140.65% of total visits due to domestic. Total summary of tourist arrivals from January 2020 to May 2022 show that tourist arrivals in Bali Province exceeded the total visits in 2019 and NTB Province just reached 51.42% of visits in 2019. In 2022, the total number of visits from January to May has increased, indicating that there are tourism players even though they are still in a pandemic. The main factors influencing the significant increase in tourist arrivals in 2022. Factors in the two provinces include: the opening of international

airports, organizing MICE and international sports events, and promoting tourism. However, these factors have a different influence on tourist visits in the Provinces of Bali and NTB. Even though an international sporting event was held in NTB Province in March 2022, tourist visits to NTB Province have yet to exceed the number of tourist visits to Bali Province sufficiently. The number of foreign tourist arrivals in Bali Province from January to May 2022 has exceeded the total in 2021 and the total in NTB Province. The research results have shown that the comparison of tourist arrivals in 2019 to May 2022 has significant differences in the two Provinces.

4.5 Effects of Land and Property Transaction Tax Reduction on House Sales Conversion

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ABSTRACT

As a response to sluggish demand in the property market post-Chinese stock market bubble burst at the end of 2015, the government of Indonesia took the initiative via increasing their tax expenditures. The government decided to discount the land and property transaction tax (PPh Final atas pengalihan bumi dan bangunan) by 50% in the middle of 2016. We question the policy's effectiveness by investigating the causal impact of tax reduction on property conversion. The impact of tax reduction on the property market remains understudy in the empirical economics literature. The most relevant are Besley, et.al. (2014) and Best & Kleven (2018) studies where they found the housing market positively responded to the tax cut, while the volume of property transactions and property prices increased after the tax rebate policy was applied. However, the impact of actual policy on tax expenditures in developing countries remains understudied due to the lack of data. We try to fill the gap by taking advantage of Indonesian property transaction tax cuts in 2016 and investigating the impact of tax cuts on house sales conversion. Earlier relevant studies on this topic observe the causal effect of tax reduction on property sales volume and price, but none of them investigates the policy impacts on property conversion. We utilize a randomized selected one-million ads from a famous Indonesian online property marketplace during the implementation of tax expenditures and employ a differences-in-differences methodology to answer the causal inference of the effects of land and property transaction tax reduction on house sales conversion. For research methods, we randomly withdrew a million property ads from 1st week of 2016 to 56th week of 2016 in Indonesia largest property e-marketplace. We then estimate the house conversion rates using a random Forest algorithm, a machine learning approach, then we estimate the impact of the implementation of land and property transaction tax reduction on property sales conversion by utilizing Differences-in-Differences methodology. We seek the differences of conversion rates before and after the implementation of tax reduction (in the week 36th of 2016) and differences of special discount rates for eligible property. As a result, random Forest has an accuracy of 96% to predict house conversion, then we estimate the effect of transaction tax reduction policy on house sales conversion probability. We find that transaction tax reduction increases 4.83 percent probability of house sales conversion. Furthermore, the

effects are larger about 0.62 percent for the property that receives a higher discount. However, we do not find the impact of transaction tax reduction for land and apartment sales. Conclusion and Policy Implication: Our results should contribute to evaluate the effectiveness of property tax expenditures and tax amnesty packages in the global south. Our result suggests that the reduction of land and property transaction tax had increased the property market demand, which is expected from the policy goal; however, the actual impacts are not as large as expected.
Keywords: tax expenditures, housing, Indonesia

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Architectural Design research group focused on learning, development, and teaching sciences that came as basics in architectural education. This group develops architectural sciences and research, that related to the design as topics, with developing and tropical countries as a basis. Also, study design theories and skills developed by experienced architects and professional practitioners. The scope of knowledge covers four main fields: Design of Building; Design of Urban Areas; Landscape Architecture; and Environment and Behavior. This group develop skills related to forming manipulation, spatial forming, design theory, approaches in design, design methodology, facilities programming, and strategic planning for design and architecture. Activities in this group are not only in research, but also in other activities, such as contests, workshops, and teaching. This group also involved in collaboration with the various institution and diverse other skills.

5.1 Study of Connectivity and Availability of Infrastructure in Tondo Permanent Shelter in Palu City

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ABSTRACT

This community service aims to conduct a Connectivity and Availability Study of Infrastructure at the Tondo Talise Permanent Shelter in Palu City. The aim is to map urban problems from the Tondo Talise permanent residential area whose output is in the form of suggestions and input for the Palu City government as a development work step to improve the quality of life in the area. This community service was carried out with Tadulako University and the Palu City Government, through literature review activities, data analysis, and area observations. Several methods have been developed to measure accessibility in urban structures. These methods are based on various definitions and/or approaches to the accessibility concept and have different (levels of) data requirements and complexity. (Geurs and van Wee, 2004; Lee and Miller, 2018; Liu and Zhu, 2004). The study was conducted using a questionnaire with 180 respondents from a permanent residential complex, namely Huntap Tondo 1. The questionnaire sought respondent profile data, and patterns of goals for work, school, shopping, and recreation. The pattern of distribution of health and worship facilities aimed at walking and using vehicles as well as open questions to explore the problems of Huntap Tondo 1. The results of the questionnaire found that 66% of the respondents worked outside Tondo 1 permanent residences, 16% worked in Tondo 1 and 33% worked in uncertain locations. The pattern of using educational facilities, in general, is 98% of the school-age population outside Tondo 1 and only 2% attend school in Tondo 1. Most of the respondents use the worship facilities in the Tondo hunting complex, namely 82%. Shopping patterns 53% use the facilities in Tondo 1. From the results of this research, it was found that school and work facilities have not changed from their old housing pattern. They also hope that a secondary center with quite complete city facilities can be built between Palu City and the Huntap Tondo 1.

5.2 Transnational Company Changes – A Tale of Sugar Factories in Java

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ABSTRACT

Transnational companies in the colonial era were built simply for the commercial gain of the ruling country, including all of the regional-level infrastructure and facilities that were intended only to support the occupied area. This phenomenon occurred in the Asia Pacific region and the Far East (Dick 2003; Nilsson 2011; Tjoa Bonatz and Hard 2021). The experience might not have been the same in each case. One case proceeded with trading and slowly created a system of forcing crop rotation culture (Dick 2003; Tjoa Bonatz and Hard 2021), while others were direct cases of land exploitation that led to slavery. This encounter has transformed into a multitude of unequal city facets today that can be observed in the disparity of supplies of water pipes, railway networks, and road networks. Those facilities mostly aimed to support the factories whose products were to be sent back to colonial-ruler countries. However, this experience also created exchanges of ideas in the shape of technology and material. The trading created an interwoven culture; one of its forms is architectural uniqueness in the city caused by a transcultural transformation process—the same process that happened in New York City with the arrival of new citizens of diverse nationalities in the 1930s (Smith 1979). This research tries to capture this process through observation of architectural transformation. In order to produce sound and holistic research, there are several methods and approaches used in this paper, together with their different aims. The qualitative method is used to explain the underlying meaning socioeconomic aspects within industrial heritage in Java, Indonesia, and a multidisciplinary approach is used to establish the research framework (Cassinary and Molaert 2015) and to understand the multiple stakeholders' points of view, both at the macro and micro levels. In conclusion, firstly, the different design of the two factories was determined intentionally. The elaborate designs in Colomadu resulted from the sense of belonging, the pride of the traditional rulers, and the intention to bring prosperity to the people. Meanwhile, Gondang Winangoen was built simply for purposes of economic gain; hence, efficiency was the aim. Secondly, this research found international material encounters: the iron sheet roof of the factory buildings and merchant houses, which was transported from Britain. Later, the encounter was also demonstrated through the exchange of technologies mixed with local craftsmanship. Thirdly, the encounter has relevance to today's socioeconomic development, in line with the concept of eigenlogic of the city. It shows what constitutes the city: the aesthetic experience of its people shown in its architecture. This logic explains why cities are different from one another (Berking 2012). The research findings answer the question of heritage scholars of whether such encounters and exchanges might have real implications. They show that actors, institutions, and knowledge networks were involved in the design and building practice. A transnational company is an assimilation of culture; in creating it, a new subculture emerged because it united complex typology and culture. The transnational companies' cultural value also portrays a linkage between the heritage environment and the rootedness of its people.

5.3 Study of Changes in Architectural Design Principles of Hospitals in Indonesia in View of Thermal Comfort After the Covid-19 Pandemic. Case Studies in the Cities of Bandung and Jakarta

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ABSTRACT

The COVID-19 pandemic hits Indonesia and all over the world and had an impact on changes in hospitals' requirements and standards. Hospital inpatient rooms for treating COVID-19 patients have different architectural requirements from existing standards. The most critical requirement for inpatient rooms is air ventilation, given that the COVID-19 virus spreads through droplets and airflow. This study examines the placement of the intake and exhaust air supply as well as the placement of patient beds in the safest inpatient rooms for patients, nurses, and doctors. To deal with the increasing number of COVID-19 patients being treated in hospitals, many hospitals in a short time had to renovate the inpatient department to be able to treat COVID-19 patients with a fairly high level of health security. This study will compare the existing airflow of the existing inpatient room from one of the hospitals in the city of Bandung and compare it after changing the layout and placement of the intake and exhaust air supply. A comparative study of airflow in the inpatient room will be carried out quantitatively using the Ansys simulation tool. The benefits of this study are expected to be an input for better air ventilation requirements and architectural standards for inpatient rooms at hospitals for types of airborne diseases. This study involves two phases to generate numerically the airflow movement; (a) identifying the variables and factors from the regulation of the inpatient wards before and during COVID-19, (b) constructing variables and simulation of the computational fluid dynamics through using Ansys Fluent 2021. Comparing the processing of the CFD analysis for all of the scenarios it can be concluded that negative air pressure in the isolation inpatient room that treats COVID-19 patients resulting from a combination of a mechanical ventilation system, namely pressurized from the entrance or anteroom to the isolation inpatient room and an exhaust fan that sucks the air out. isolation room will reduce the risk of COVID-19 virus contamination. The existence of natural ventilation by opening the window can be a contradiction because when the window is opened to enter fresh air into the isolation inpatient room and the exhaust fan is turned off, the air in the room that has been contaminated with the COVID-19 virus which may not move so that it can cause accumulation of virus in isolation. This is an interesting finding because so far, what many people believe is the way to reduce the virus in a room that uses mechanical ventilation is to open the window with the air conditioner on.

5.4 Preferences for Utilization of Open Space at ITB Ganesha Campus After the Covid-19 Pandemic

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ABSTRACT

The current campus concept plays an important role in providing space and facilities for educational activities and student development through social and cultural activities important factor in everyday life on campus, which can be easily accessed and allows it to be used to strengthen socialization relationships. Campuses do not only provide formal spaces for students to carry out academic activities, such as education, teaching, research, and application rooms but also provide informal spaces for activities that ensure students' personal and social development. The open space is a place for students to carry out their activities, both activities that support academic and non-academic needs. Students spend a lot of time in the campus area outside of formal activities, so they have their own preferences in utilizing the campus open space. In the campus open space, many activities can be done, such as just relaxing to enjoy the atmosphere or waiting for the next lecture hour, studying, gathering, discussing, chatting, exercising, or taking a walk that can affect student preferences for using campus open space. The criteria in the campus open space affect the pattern activities carried out.This is also influenced by the quality of space and landscape elements in the campus open space that support the activity pattern. During the Covid-19 pandemic, there were restrictions on activities and implementation of policies not to gather and maintain a distance which resulted in the loss of activities and use of open spaces. All physical activities on campus both academic and non-academic, are not permitted. However, along with the gradual recovery of physical activities during the post-Covid-19 pandemic, campus activities have slowly begun to be carried out offline, including student activities in campus open spaces. For this reason, it is necessary to review whether there is a change in preferences and related activity patterns, the limitations of joint activities are still carried out as a form of pandemic prevention. The research on changes in preferences requires an initial study of the preferences and patterns of student activity towards campus open spaces before the pandemic and conducting a literature review on various articles that have been carried out on changes in behavior patterns in activities during the Covid-19 pandemic related to restrictions on activities in open spaces. So, form the various literature studies that have been carried out, this will be the basis for further seeing whether there are changes in preferences in the use of open spaces and activity in the period before the Covid-19 pandemic and after the Covid-19 pandemic. Campus open space is where various activities and interactions between humans can occur. Campus open space has a role in social interaction and improving the integrated campus environment within a campus area. In its provision, campus open space is adjusted to the functions and needs of students for outdoor space. The development of campus open space criteria according to student needs is carried out by identifying factors, indicators, and elements of the landscape forming open

spaces needed to support activities in campus open spaces. Furthermore, zone mapping and determination of campus open space sample points were carried out with landscape elements that were considered to be able to support activities on campus open spaces. The identification, zone mapping, and determination of sample points were used to design a questionnaire as a data collection tool. The data obtained represents an overview of the general use of campus open space. The questionnaire results will determine the next research stage by statistically processing data. Statistical tests were carried out using factor analysis to see the relationship between the function of open space, landscape elements that make up the space, and the relationship between factors in open space. Then a comparative test analysis was carried out to see if there were differences in activity patterns in campus open spaces in two conditions, namely before and during the pandemic.

5.5 Causal Relationship between Criteria and Physical/Non-Physical Characteristics of Inpatient Units with Therapeutic Effects

Head of the team : Dr.Eng. Hanson Endra Kusuma, S.T., M.Eng.

ABSTRACT

Healing pain can be done medically or non-medically. Non-medically, inpatient units' architectural and non-architectural qualities can provide a therapeutic effect that helps the patient's psychological healing process. This study aims to develop a hypothetical model of design criteria and physical/non-physical attributes of inpatient units that have a therapeutic effect on patients and their relationship with the treatment and healing process. The research was conducted in two stages. The first stage is exploratory qualitative, and the second stage is explanatory quantitative. From the results of the analysis of qualitative research text data, a hypothetical model was developed which contained six criteria for a therapeutic environment: positive distraction, personal control, natural environment, eliminating stressors, social support, and positive feelings. From the results of numerical data analysis, quantitative research revealed a causal relationship between the six criteria and the treatment and healing process.

5.6 Evaluation of Urban Greening Schemes in Indonesia

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ABSTRACT

The provision of green open space (RTH) in urban areas of 30% of the city's total area has been mandated in Law no. 26 of 2007 concerning Spatial Planning. However, until now, the target of providing green open space to cities in Indonesia has not been achieved optimally. Based on the results of studies in the first year, various big cities in the world have made innovations in their urban greening schemes through the realization of quality green open space by utilizing all the potential of space as green open space. The green factor-based green space calculation scheme is an excellent precedent to be applied in the urban context in Indonesia. Thus, this second year of research examines the feasibility of implementing green factors as a new idea in urban greening schemes. The qualitative method with a case study approach is carried out through benchmarking against various green factor schemes implemented in several selected cities. The results show that the urban greening scheme through the calculation of the green factor, has the potential to be used in urban areas in Indonesia. At least 15 types of land cover in the ecological context of the City of Jakarta were tested qualitatively to determine their green factor value according to ecological function with a value range of 0 for non-porous land cover types to 3 for land cover with complete vegetation stratification from grass, shrubs, to tall trees. For application in other urban ecological contexts, it is necessary to consider aspects of local plant species, evapotranspiration level, average temperature and humidity, as well as the location and position of the city relative to latitude and longitude, which affect the level of sunlight intensity.

5.7 Millennials' Working Attitudes towards a Sustainable Environment

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ABSTRACT

Millennials are currently a matter of discussion. Because they grew up with computers, the millennials are thought to be a distinct generation. As a result, millennials are expected to live in different ways than prior generations. Millennials will make up the majority of the population in the future, thus it is interesting to discover how the present generation prefers to live. It is recognized that millennials' desire to live in the future are influenced by their daily routine. The purpose of the study is to investigate Indonesian millennials' living preferences as well as the reasons behind those millennials' daily working environments, such as the location wanted, nearby facilities desired, and the transportation requirements. Due to the fact that social culture and the rate of change vary by location and the most important influences would occur in metropolitan areas, this study used an online survey to investigate 562 millennials who lives in major cities in Indonesia, such as Jakarta, Bandung, and Surabaya, via an online survey. The results will help us learn more about how Indonesian millennials tend to make decisions and judgments about the work environment of millennials in urban design.

5.8 Transcultural Heritage Lasem

Head of the team : Dr.-Ing. Erika Yuni Astuti, S.T., M.T.

Team members : Prof. Dr.-Ing Ir. Widjaja Martokusumo; Dr. Eng. Arif Sarwo Wibowo, S.T., M.T.

Research assistant : Feysa Poetry, MSc.; Leyna Ayushitarum, S.T, MRK; Angela Upitya, S.T, MRK; Zuhdi Allam, S.T., M.Hum; Hakam Kurniawan, S.T.

ABSTRACT

This research examined the role of the infrastructure and city element of Lasem which not merely form the appearance of its city but also shape its identity. The distinctive architectural element is a reflection of its richness of culture, and hundred years of transactional living in the area. Whereas the infrastructure - the streets, greenery, and rivers are the enabler of this process. Lasem famously produces batik, jewelry, and ship, these craftsmanship are living evidence of a harmonious transcultural process. Equal roles of women and men are also shown in the making of living. Even though ship craftsmanship is dominated by men, both genders have the same opportunities to design batik and jewelry for instance. The ancient river transported goods while at the same time delivering its technique and exchange of creativity between the island and also continents. An interdisciplinary approach was used in this research; meanwhile, a case study method was applied to gain a lesson learned from the Lasem case. The results show that the city is able to retain its transcultural heritage due to its harmonious living. Even though there are diverse religion and sub ethnics living in Lasem peaceful living are generated from mutual understanding over hundred of years of generation.

Keywords: historical settlement, ancient infrastructure, urban heritage conservation, the memory of the city, healthy living environment

5.9 Public Space as "Rurban Commons": A Study of Village Community Collaborative Learning Spaces in Facing Economic Acceleration in Terracotta Themed Villages

Head of the team : Dr. Agus S. Ekomadyo, S.T., M.T.

Team members : Nurrohman Wijaya, M.Sc., Ph.D; Zuhdi Allam, S.T., M.Hum.

Research assistant : Kevin M. Oktafarel; Bintan Z. Hayya; Munirul Anam.

ABSTRACT

With the enactment of the Village Law, village authority and leadership will become more strategic because village heads can initiate various creative and innovative efforts in village development by involving external actors. With the development and availability of facilities and infrastructure, physical and virtual, the interconnection of villages with other areas is becoming more intensive which creates pressure on villages due to economic acceleration, which on the one hand, can create opportunities for villages to develop more advanced. However, on the other hand, there is a threat of resource exploitation: nature and village people. By paying attention to the readiness of village communities to face economic acceleration, this research is proposed to see how the concept of "governing the commons" in rural public spaces as a communal learning space, where village communities interact, exchange information and knowledge and show their existence towards fellow villagers and people outside the village. By taking the case of the terracotta-themed village in Jatiwangi, Majalengka, Jatisura Village, this study intends to see public space in the village as "Rurban Commons", shared property as a place to learn to face change. The Terracotta theme became the chosen issue because of the Terracotta City discourse in Jatiwangi-Majalengka, which intends to pay attention to local rural culture as a New Rural Agenda in facing global economic pressures. This research was conducted using a mixed methods approach: quantitative and qualitative. A quantitative approach was carried out to evaluate co-production and co-creativity in the Jatisura public space, where the terracotta-themed square is being built. The evaluation will see whether the residents' sense of belonging has been created and what changes in awareness have occurred after the construction of the terracotta square. While the qualitative approach is carried out by reading the role of public space as rurban commons and a mediator of collective learning using the rhytmanalysis method, by looking at how the rhythms that exist in the village (isorhythmia) can resonate (eurhytmia) and do not contradictively collide (arrhythmia) with the rhythms that will result from economic pressure. It is hoped that this research will produce a model for how to optimize the role of village public space as a mediator for collective learning within the framework of "governing rurban commons" in the face of economic acceleration. Based on the results of the analysis we obtained, the built public space has created a means of mediating collective learning between communities through the formation of inclusive citizen interaction forums.

5.10 Senior Community Engagement through a Placemaking Approach

Head of the team : Widiyani, S.T., M.T.

Team members : Dr. Ir. Christina Gantini, M.T.

Research assistant : Yemima Sahmamura Vividia; Naila Hisana Amira.

ABSTRACT

Two basic socioeconomic changes are transforming communities around the globe: people are living longer, and the global population is urbanizing. Almost every country in the world, including Indonesia, is experiencing population growth and an aging population. The presence of a greater senior population than in previous years has required a redesign of the city in order to accommodate this changing environment. Because of this, it is important to know what the specific needs of older people are and to offer ways to change the urban environment to better meet these needs. The genuine city is appropriate for all ages. Cities are homes for everyone, but they are not always designed to accommodate the large and growing senior population. Contemporary designs for urban areas and facilities often emphasize their attractiveness to a younger working-age population, and in some cases, this focus on desirable groups results in the disregard of the needs and wishes of older generations. Aging increases the likelihood of physical or mental deficits, because physical and mental health are closely linked. Alterations in a person's mental health may have an impact on their physical health, and vice versa. Even if the definition of old age varies, according to the United Nations, 65 is considered old age for this activity. Those in the early stages of aging may be in the "recently retired" period and actively pursuing a cultural life in the city. In many settings in the industrialized world, people beyond the age of 65 are considered "elderly," and some attribute aging primarily to the accumulation of life experiences and changes in mental and physical capacities. The emphasis of the activity was mostly on challenges that elderly individuals may face. The activity examined ways to construct placemaking activities for elderly urban residents. In this regard, we used a placemaking approach. This strategy emphasizes the local user in terms of who they are and what they need (Kent, F. Stuart 2018). We sought to involve Indonesia Ramah Lansia (IRL), the senior population, by offering the event "Lunchia." It was anticipated that older individuals would perceive space via their senses. Therefore, the event is held at Gothe Park, a part of Saung Ujo famous for its angklung. The event included a culinary demonstration, singing, and playing the angklung. Some students participated in this two-hour-event's project-based organization. The results had many benefits: first, the event would make the elderly happy; second, the IRL might utilize a similar concept for their programs; and third, the students who helped with the event could implement their knowledge into practice while also enhancing their soft skills.

Keywords: placemaking, elderly, event, social interaction

Housing and Settlement

Those who pioneering research and study about housing and settlements as independent knowladge in indonesia.

Housing and Settlement Research Group

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Housing and Settlements research group is a pioneer in developing research and study about housing and settlements as independent knowledge to respond to current issues and problems in developing countries, such as Indonesia. This group develops relevant knowledge related to:

1. Planning in develop housing and settlements, and design processes related to the urban and rural context,
2. Environmental development formula and settlement development policies based on the community in urban or rural scale.

Four major aspects addressed in this research group:

1. Morphology or transformation process of housing,
2. Construction process and improperness of housing,
3. Environmental impacts and settlements
4. Demand, needs, and preferences of settlements

6.1 The Effectiveness of Housing Subsidies in Realizing Affordable Housing for the Middle and Lower Communities

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ABSTRACT

Housing Affordability, specifically in low-income households, is still a crucial issue in the provision of adequate housing. However, intervention in the form of housing subsidies has been established. This circumstance could be considered because of the incapability of housing subsidies to establish excellent housing affordability. Furthermore, it could be argued that it is caused by fundamental issues regarding the incomprehensive process of defining and measuring. It could be illustrated within the context of Indonesia's housing subsidy implementation that has yet to explicitly present the ideal condition of housing affordability and affordable housing that is aimed to be established. Thus, this research aims to evaluate the effectiveness of housing subsidies towards constructing ideal housing affordability conditions by exploring and identifying the relevant housing affordability variables based on the actual condition. The research implemented a qualitative approach using the strategy of the comparative case study. The case selection was determined in one subsidy housing complex from each central part of the Bandung Metropolitan Area, including Kabupaten Bandung, Kabupaten Bandung Barat, and Kabupaten Sumedang, which has a significant number of applicants and inhabitants compared to the other. The research results indicated that several variables should be included in the measurement of housing affordability relevant to the actual condition of the three study cases. It is related to the production of the housing unit and neighbourhood, and the household's condition is closely related to the household's needs and abilities. These variables illustrate the trade-off pattern depicted by the interaction of income and expenditure, which revolves mainly around the primary housing expenditure, the mortgage cost. This interaction between the variables showed the variety of household characteristics and the subjective value that must be enforced further within the housing affordability measurement. Thus, it could be considered that the measurement method must be more dynamic and comprehensively includes the households' distinctive characteristics and contexts. Lastly, based on the variable identification, it could be argued that the housing subsidy is ineffective in establishing the ideal housing affordability since there are still plenty of households burdened further by externalities of subsidized housing based on the actual condition of the cases.

Keywords: low-income household, housing affordability, housing subsidy, housing affordability variables, holistic approach, effectiveness, a trade-off

6.2 Training Modules for Data Processing and Analysis of Housing and Settlements: Some Cases from West Java Province

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ABSTRACT

In everyday life, we receive a lot of information from various media as source of knowledge. The information we receive is a collection of data that has been processed, so it is easy to understand. The information we have can be used as a reference in making decisions. The existence of information is very important to us, on the other hand, the right data and analysis processing method is no less important to produce information that is accurate, high quality, and easy to understand about housing and settlement subject. This book presents the principal and the implementation of data and analysis related to housing and settlement topic. Several data and analysis processing are explained in uncovering phenomena and issues of housing and settlement with variative sources, for example available maps, open-source public opinion, customize questionnaire, statistical analysis, etc. This book also contains summary of the processing data and analysis from various case studies in West Java Province using various methods. Hopefully, the book will give benefit for relevant stakeholder, especially for public sector that facing several issues and problem and need various basis for quality policy, planning and design of housing and settlement.

6.3 Housing Choice, Millennial Generation and Design Implication at the Post Covid-19 Pandemic Context

Head of the team : Dr. Allis Nurdini, S.T., M.T.

Team members : Dr. Eng. Hanson Endra Kusuma, S.T., M.Eng

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ABSTRACT

The housing supply and development program from the Government, followed by the industrial, private and community sectors are always driven by the data called as the housing backlog. The construction of houses or the provision of housing has not been based on the details of the backlog of houses for whom, what type and where is needed or in essence has not focused on the implications for housing design. Ironically, some of the supply of new housing products, such as apartments in big cities or landed housing on the peri-urban area, are actually not utilized by the end-users who need the most and/or end up becoming vacant properties. This condition of unclear direction of housing provision systems caused by the lack of understanding of housing needs based on user choice or user point of view. The lack of clarity on the basis for fulfilling housing supply should be prevented in the midst of Indonesia's situation, which is experiencing demographic bonus, where 50.3% of the productive age group is made up of the millennial generation (BPS, 2020), which means a new surge in housing needs. The condition of the Covid-19 pandemic can be a determining point in the direction of the choice of housing for the millennial generation, which is very likely to be different from the direction of their choice of housing or that of their previous generations. Therefore, it is important to conduct a study to identify housing choices for the millennial generation, especially the implications for the direction of housing design in Indonesia. The data collection method was carried out using an online questionnaire to the working community or potential millennials in Greater Jakarta and Greater Bandung as representatives of very high-density cities in Indonesia. The data is analyzed qualitatively and quantitatively to identify the millennial needs and the relationship between affordability (ability to pay) as the dependent variable with the indicator of the user profile characteristic and the residential design characteristics as the independent variables. The results of this study are expected to provide directions for providing housing based on a millennial perspective and implications for housing design directions that are appropriate for high-density urban areas in Indonesia.

Keywords: housing choice, millennial, urban, high density

6.4 Forest Edge Tourism Village Settlement Transformation From a Theory of Cultural Ecosystem Service Case Study of Cibeusi Tourism Village and Nagrak Village, Subang Regency

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ABSTRACT

This research analyses the trade-off in cultural and provisioning services as part of ecosystem services within the context of rural Bandung City, Indonesia. Cibeusi Village and Nagrak Village are selected as case studies due to the significant role of both as part of important watersheds, productive land, leisure destinations, and other materials for Bandung City. The cultural and provisions services were analyzed based on questionnaire responses from 27 selected experts and maps generated using desk study and surveys were also conducted to comprehend the data. The study found that there are gaps in evaluating the ecosystem services between the spatial analysis and the expert's evaluation results. These do not hinder the fact that Nagrak dan Cibeusi villages in peri-urban Bandung can be the potential to serve Bandung metropolitan areas.

Building Technology

Those who concern and interested about building structure, construction management, and building science.

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Building Technology research group focuses on six primary fields:
1. Building System,
2. Building Performance,
3. Architectural Projects and Construction Management,
4. Building Control and Environment,
5. The architecture of Disaster Mitigation, and
6. Architectural Computation and Modelling.

All six primary fields of study are the product of three main fields of study, namely building structure, construction management, and building science, expanding into diverse professional activities and current research. It is common knowledge that architectural academics and education cannot advance without professional activities as a field of practices and technology implementation in architecture.

Rapid advancements in building technology today are encouraged by numerous factors, such as environmental degradation, scarcity of energy and natural resources, and advances in management science and computation.

7.1 Potential Substitution of New Renewable Solar Energy Sources in Vertical Residential Development in Indonesia

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Team members : Prof. Dr. Ir. Sugeng Triyadi S., M.T.; Dr. Ir. Lily Tambunan, M.T.; Dibya Kusyala, S.T., M.T.; Dr.Eng. Ir. Yuli Setyo Indartono

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ABSTRACT

The building sector generates one-third of total global carbon emissions from the excessive use of fossil fuels in electrical energy sources. This impacts environmental damage, so conversion is needed into new renewable energy (EBT), one of which is solar energy. Solar energy can be converted using the Building Integrated Photovoltaic (BIPV) approach, which uses solar panel modules integrated directly into buildings. Unfortunately, the use of BIPV in Indonesia was found to be minimally applied, whereas Indonesia has a high level of solar radiation. This study describes the conditions and policies for implementing BIPV in Indonesia and five other tropical countries, namely Singapore, Thailand, Cameroon and Brazil. The research was carried out by exploring an in-depth literature review to identify the strategies applied in each country to apply BIPV. Data is collected from various scientific journals, national energy reports, and government regulations regarding the use of BIPV by each country. The results show that Indonesia has good potential, such as high solar insolation, compared to other countries. However, challenges such as high tariffs, shortage of experts and high maintenance have resulted in ineffective energy conversion and must be overcome in the future.

7.2 Development of BIM Workflow in Green Building Performance Evaluation Process in Order to Accelerate BGH Policy Implementation

Head of the team : Prof. Dr. Ir. Sugeng Triyadi S., M.T.

Team members : Dewi Larasati, S.T., M.T., Ph.D.; Ir. Robby Dwiko Juliardi, M.T.

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ABSTRACT

Green building is an innovation expected to contribute significantly to sustainable development by improving building performance, considering health, environmental, social and economic aspects and avoiding the impact of environmental damage. Therefore the implementation of green building is needed from the initial design stage. However, in actual practical conditions, the assessment process in ensuring the implementation of green buildings can only be carried out when the design stage of a project is almost complete. This is due to the characteristics of a fragmented project consisting of various phases (schematic to detailed engineering design) and involving many stakeholders (multi-parties) from various fields of expertise. This research will develop a workflow design with an integrated green building approach using Building Information Modeling (BIM) from the early planning stages. The BIM system can enter and manage various categories of building information, making it easier for planners to ensure the green performance of their designs. In this research, a workflow will be developed as an integrated system for assessing green building performance at each design stage based on the Green Building Rating System (BGH) criteria.

7.3 Design Digitization Application Development of Architectural Geometry Research Based on Modular Wood Design System Algorithm Principles

Head of the team : Permana, S.T., M.T.

Research assistant : Thomas Handoko, S.Ars. Muhammad Barkah, S.Ars.

ABSTRACT

The design of the modular wooden house from the beginning of the research until this year was drawn using the following software: sketchup, autocad and revit. Through this software, it has been easy to produce design work and produce precision image sizes supported by accurate volume recapitulation of modular wood blocks. Making for an even easier design process is needed to support mass and fast production of building component profiles, while maintaining and increasing the ease, precision and scalability of the previous design process. For this reason, the development of architectural geometry research was prepared based on the algorithm principles of the building component unit modules which are the uniqueness of the modular wood block system. Some of the parameters used to develop this algorithm are: (A1) building length, (A2) building width, (B) building height, (C) module size, (D) fin length. With these 5 (five) design parameters, various floor plan geometries can be constructed in a costume manner. In fact, the resulting floor plan configuration is in the form of a 3D (three-dimensional) spatial space. The development of this geometry application is supported by Grasshoper/Rhinosourus Software by going through some steps. As the end result of this geometric design development process, every 3D design can be uploaded to the website http://blog.blockwood.org. The design process through the development of this algorithm makes it easier, more precise and accurate design as well as the speed of producing many alternatives design in a short time following the intuition of application users. Illustration of the results of the design drawings obtained can be seen below. To get a better visual experience, users can observe objects in 3D and feel comfortable moving the cursor to explore the design via: http://Block-wood.blogspot.com/2022/11/3rd-experiment-with-our-modular-block.html. This algorithm-based architectural geometry research development activity is still very rarely carried out because it contains different challenges to the usual logical order of architectural design thinking. This architectural digital research output will facilitate further exploration of modular wood block-based designs. Digitizing the design process using this algorithm can only be completed in the parametric wall design engineering first. As for the parametric design engineering on the roof, it is necessary to carry out further research development through a method approach and the development of different design parameters.

7.4 Optimization of One-sided Natural Ventilation Strategy for Healthy Shelters Post-Pandemic: A Case Study of Shelters in Dense Taman Sari Areas

Head of the team : Dr. Eng. M. Donny Koerniawan, S.T., M.T.

Research assistant : Rizki Armanto Mangkuto Permana; Fathina Izmi Nugrahanti; Deny Wahyu S.W; Vini.

ABSTRACT

Residential is the sector with the highest electricity consumption in Indonesia, mainly used for indoor air conditioning. On the other hand, the conditions of the Covid-19 pandemic have increased the frequency of human activities indoors, so good indoor air quality (IAQ) is becoming increasingly important. One solution to reduce energy consumption while achieving thermal comfort and good indoor air quality is natural ventilation. However, it must be applied carefully to determine its effectiveness. Natural ventilation, besides bringing fresh air into the room, can also cause the transmission of pollutants from the outside environment and cross-transmission between spaces and occupants. Natural ventilation is part of a passive cooling strategy in buildings (passive cooling). Poor ventilation, such as imperfect air exchange, inadequate ventilation rate, and uneven ventilation, can result in the accumulation of pollutants in the space which has the potential to cause health problems for the occupants. One type of ventilation with poor performance is single-side ventilation. However, in reality VSS is widely applied to various building typologies, including offices, high-rise apartments, to row dwellings in densely populated areas. Single-sided ventilation is often chosen for space effectiveness in a limited area. However, poor ventilation results from the limited supply of clean air from only one side of the building facade. Several studies have related to VSS on the topic of physical mechanics phenomena, building evaluation, or one-sided ventilation research methods. However, most discussion is limited to air movement behaviour, thermal profiles, or energy efficiency. In contrast, indoor air quality performance and its relation to occupant health are rarely touched upon. What is more, existing studies have focused on European, American, and North Asian countries. Seeing the important role of ventilation on indoor air quality and occupant health, this research will focus on strategies for optimizing single-sided ventilation to achieve healthy occupancy in tropical climates, especially in urban-village areas.

7.5 Development of Plastic Waste-Based Wall Materials for Simple Residential Houses

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Team members : Dr. Allis Nurdini, ST., MT.; Dewi Larasati ZR, ST., MT., Ph.D.

Research assistant : Roiswahid Dimas Pangestu, S.Ars.; Chibhatul Mufrida, S.T

ABSTRACT

Community efforts in Indonesia to reduce waste by utilizing plastic waste as building materials need to be supported by higher education institutions through research programs. Existing plastic waste-based building material products are still in limited use and have not been tested. The objective of this study is to determine the performance of plastic bricks as a construction material for the walls of a simple residential building. The stages of the research included testing the physical and mechanical properties of multi-layer package (MLP) plastic bricks with various mixed material compositions, identifying the level of constructability and construction costs of plastic brick walls, and identifying the flexibility of residential design from processed plastic waste materials. The results of testing the physical and mechanical properties of multi-layer plastic bricks which include compressive strength, water absorption, and fire resistance tests show that multi-layer plastic bricks (100% MLP) have an average compressive strength of 27.80 kg/cm2, the most lower compared to plastic bricks mixed with sawdust (average compressive strength 67.20 kg/cm2) and those mixed with stone ash (average compressive strength 78.52 kg/cm2). Even the average compressive strength of 100% MLP plastic bricks exceeds the compressive strength of standard bricks, which is 25 kg/cm2. The average absorption capacity of 100% MLP plastic bricks is 1.06%, while the absorption capacity of plastic bricks mixed with sawdust (11.35% average) and plastic bricks mixed with stone ash (1.51% average). On the fire test results, it is known that 100% MLP plastic bricks will burn within 90 seconds, and MLP bricks mixed with sawdust ignite within 6 minutes. MLP bricks mixed with cement and sand and MLP bricks mixed with rock ash did not light up at all after 10 minutes of burning. This shows that 100% MLP plastic bricks are very dangerous when burned on the side because they produce flames in a short time, the presence of hot melted plastic can also threaten the safety of the occupants' lives. The cost of constructing a plastic brick wall is Rp. 100,000/m2, this cost is slightly lower than the construction cost of red brick walls (Rp. 120,000/m2) and light brick walls (Rp. 117,000/m2). However, the time needed to install plastic brick walls is shorter than light brick walls. The shorter construction time is caused by a plastic brick wall construction system that uses an interlocking system that does not require mortar as a joint between the bricks. Apart from the strength and cost aspects, the advantage of multi-layer plastic bricks as residential wall material is the flexibility in the shape of the bricks and the variety of mixed materials. The flexibility of plastic bricks provides an opportunity for architects to produce varied and affordable residential wall designs.

7.6 Local Prefabricated Development Model in Providing Housing for the Community

Head of the team : Dibya Kusyala, S.T., M.T.

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Research assistant : Mars Valleryn Horlanso, S Ars; Naila Hisana Amira

ABSTRACT

Procurement of livable housing has always been a challenge in Indonesia. Various problems related to geographical conditions, distribution of development and the economy impact the slow number of housing that can be built, which cannot keep up with population growth and the need for housing every year. Small and medium enterprises engaged in construction adopting traditional and vernacular architecture are potential alternatives that can be developed further. The system they developed is proven to answer various housing problems related to local conditions, such as response to climate problems, building affordability, and material availability. On the other hand, the archipelago's timber industry is increasingly widespread along with developments in technology and knowledge. With a mechanized approach, the industrialization of residential components using processed wood could reduce residential backlogs. On the other hand, technological innovation requires mapping the acceptance level of the target user group. The approach to measuring acceptance from the aspect of quality assessment is carried out by considering cost and time efficiency while still providing a broad scope to provide affordable choices adapted to modern lifestyle developments. To explore the various processes that occur, a research proposal is submitted to identify the reliability of local prefabricated wood systems by recognizing the potential and possibilities for the future development of local modern wood craftsmen and industries. Studies on building systems in the form of assembly and disassembly, and opportunities to develop prefabricated component systems. At a further level, this research will also identify what factors and processes are the keys to the complexity of the problem of housing procurement for low-income groups that will contribute to reducing the number of backlogs.

7.7 Development of a Building Reliability Achievement System Based on Responses to the Impact of a Pandemic in Construction Changes Experienced in Residential Buildings

Head of the team : Ir. Robby Dwiko Juliardi, M.T.

Team members : Dr. Wiwik Dwi Pratiwi; Dr. Eliza Rosmaya Puri; Dibya Kusyala, M.T.

Research assistant : Yaseri D. Apritasari, Ir. M.T.; Hana Hali Nurrahmada, S.T. ; Yosnita Rachmawaty, S.T. ; Muhamad Barkah, S.T.

ABSTRACT

Currently, the whole world is experiencing conditions where a pandemic has had a significant impact on all aspects of life, including adaptations that have had a significant influence on changes in behaviour and adjustments to the physical conditions of buildings, housing, especially building reliability in terms of safety, health, comfort and convenience basic embodiment of the sustainable performance of a building. That adaptation in the face of enormous pressure is to make changes, one of which is the result of the incomplete reliability of buildings against the effects of current infectious diseases in-built buildings. So it is necessary to identify the current condition of the existence of built dwellings so that the building can have a good and sustainable performance age based on security, health, safety and ease in anticipating infectious diseases. Therefore, this study looks at differences in the performance and treatment of residential buildings in Indonesia by examining three occupancy categories: horizontal occupancy in urban villages, horizontal cluster occupancy and flat housing. Understanding the link between building reliability and the impact of infectious diseases (pandemic) is essential so that it can be reviewed as an achievement for the reliability of pandemic-based residential buildings. Methodology Changes in construction are essential to understand how building reliability is the basis for change in construction and behaviour. Lighting, air conditioning and sanitation are variables for healthy buildings in adapting to changes due to the impact of the pandemic. Moreover, lighting, air conditioning and sanitation as part of the reliability aspect of the building were formulated in the literature study. Meanwhile, the variable change due to the pandemic is the impact resulting from the response of the current occupants. Validation was carried out through dense residential, cluster residential and flat residential models in Indonesia. The validation stage was carried out in three stages, namely: firstly, identifying the physical characteristics of dense housing in urban villages, cluster dwellings and multi-storey dwellings, secondly identifying the reliability of buildings for residential functions in the aspects of air conditioning, lighting and sanitation, and thirdly identifying changes in construction, movement and behaviour on adaptations experienced due to the pandemic. The findings of this study are essential to the changes that have occurred in the overall reliability of built buildings due to the pandemic. In this adaptation, it can be seen that there have been changes in function, layout and air conditioning and lighting systems for residential buildings to adapt to the conditions of residents affected by the pandemic. This condition impacts responsiveness to the renovation and retrofit phase, which generally results from the performance and age of existing buildings (built).

7.8 Preparation of Work Guidelines on the Role of Modular Wood Workshop for Local Communities

Head of the team : Permana, S.T., M.T.

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Research assistant : Evan Munirul Hakim, S.T.; Thomas Handoko; Muhammad Barkah; Ali Arifin

ABSTRACT

Community Empowerment activities through the preparation of work guidelines are an operational strategy for modular wood block innovation research products to disseminate knowledge in order to increase community involvement in the development of the modular wood component production industry. The potential to produce modular wood blocks is realized by formulating a work manual through collaboration between various parties to produce a work guide that is easy for the community to use. The preparation of this work guide involves experts, practitioners, workers and local timber industry players in West Java. The resulting working guideline document is used by the parties to increase the quantity and quality of modular timber block production, increase product diversity and expand market opportunities that will increase the selling price of their wood products. To formulate these guidelines, periodic meetings are held between researchers, practitioners, and workshop workers to produce guidelines that are appropriate and applicable. This guide is in the form of a document drawing instructions for manufacture, wood product specifications, work procedures and production guideline videos that are easily understood by the communities. The process of compiling this guide was did through several stages, (1) determining the elaborated modular wooden building project, (2) arranging the stages of design, production and installation (3) implementing the strategy that was made. At each stage a collaborative design process, FGD and formulating an action plan were carried out. During the production process, documentation is worked out in the analyzed of evaluation accorded with suggestions for improvement and visual recording of activities through the videos. The formulation of all the stages of process are produces an illustrative guidance document as follows. In addition to the illustrative guide, a video guide for the practical technic, production process and construction assembly of modular wooden block buildings can be downloaded on the gadgets who need it, so that the output of this guide can be watched, studied, followed and repeated both digitally and manually. The community empowerment program through this work guide gives practical steps both physically and digitally. This work guide document can be applied in the community to provide tools for their work that can be used as a Standard Operating Procedure in a more massive production system of modular wood blocks.

7.9 Making Residential Components from Bamboo Materials in the Kampung Bambu Edutourism Area in Cianjur

Head of the team : Dibya Kusyala, S.T., M.T.

Team members : Dr. Ing., Andry Widyowijatnoko, S.T., M.T.

Research assistant : Naila Hisana Amira; Valleryn Horlanso, S.Ars.; Diva Iryanti Irsyad

ABSTRACT

With the development of tourist destinations as culinary spots and home industries for bamboo tables and chairs, the community service team is planning to develop expertise in building construction using bamboo materials. With the issue of limited affordability, plastered bamboo was introduced as a building material. Thus supporting efforts to create affordable housing with local materials. The transfer of technical knowledge in construction and financial assistance makes it easy to manufacture prototypes. The Community Service Team built a dwelling in the middle of a residential area to provide an overview of an easy, cheap and fast building system using a bamboo plaster system. This housing is intended for one village resident who lives alone and is completed with residents and local officials in the building for one month. The personnel deployed were two skilled builders and one kenek, completing the construction under a total budget of around 25 million rupiahs.

7.10 Bamboo Construction Design for Religious Facilities

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Team members : Dewi Larasati, Ph.D; Dibya Kusyala S.T., M.T.

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ABSTRACT

The location of the community service activity is in Kebonturi Village, which is located in Arjawinangun District, Cirebon Regency, West Java. Service activities in the form of assistance to the community to identify and map the potential problems that exist in Kebonturi Village using the participatory planning method. This activity was held on October 30 2022, at the Kebonturi Village Hall, which was attended by the village government, the community, Bumdes managers and the community service implementation team. The results of this activity are in the form of a map of potentials and problems in Kebonturi Village, which is used as input for the process of preparing village development plans.

Architectural History, Theory & Criticism

Those who concern and interested on the field of history, theory, and criticism of architecture and urban area.

History, Theory, and Architectural Criticism Research Group

Prof. Ir. Iwan Sudrajat, MSA, Ph.D
Dr. -Ing.Ir. Himasari Hanan, MAE
Ir. Budi Rijanto Surjosutrisno, DEA
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Dr. Eng. Arif Sarwo Wibowo, S.T., M.T.
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Architectural History, Theory, and Criticism is a group that focuses on the field of history, theory, and criticism of architecture and urban areas. There are five primary fields of study:

1. Dwelling culture, local wisdom, and vernacular architecture of ethnic in Indonesia,
2. Architecture development and Urbanism in Indonesia
3. Relevant application from a theoretical and methodological point of view,
4. Critics of architecture and urbanism based on formal and alternative paradigm, and
5. Documentation of ideas and works of Indonesian Architects and architect communities.

This group members attempt to contribute a better understanding of the architectural phenomenon with context and power that influence it.

8.1 Local Architecture of Highland and Lowland Indonesia

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ABSTRACT

The study of local architecture explores people's response in forming their house and settlements to the geographical setting of highland and lowland in Indonesia. Local architecture fulfills individual or social needs by tailoring to the local climate and resources through trial and error until building methods learned as tradition. The house seems simple in its form and material yet in fact quite complex in its spatial organization to fit the community aspiration. The important aspects that characterize local architecture is not only the product but also the process determines the establishment of a building and housing compound. For the highland people, family and kinship system is tactfully used as a reference in organizing space and building process, in which the teachings and continuation of ancestors is inseparable from the daily life of the inhabitants. The local context of growing rice creates settlements that unify spatial configurations with the scheduled ritual of farming process. At the lowland, people are more outward looking and sincerely build relationships with other parties through maritime trade and expansion of power. Cultural interaction and exchange occur dynamically in that house forms in many areas resemble each other. Roof forms are less expressive in comparison to the high land and spaces are hierarchically organized from the front to the back area. The result of this study indicates that architecture survives and evolves its locales according to its position and accessibilities towards maritime transportation routes. The lowland architecture is more vulnerable in maintaining its local character.

Keywords: local architecture, highland, lowland, Indonesia, family and kinship system, hierarchical spatial organization.

Economics System & Modelling

Those who focuses on supporting government and decision-maker to sort out their economic problems, and identify their relations to the related institutions

Economic System and Modelling

Prof. Dr. Ir. Yogi, M.S.

Prof. Dr. Eng. Pradono, S.E., M.Ec.Dev.

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Economic System and Modelling is a group of academics that experienced and interested in infrastructure development, marketing management, Visual Modelling of Economics, and Economic System Development. Founded in 2013, this group focused on supporting government and decisionmakers to sort out among complicated chain of cause and effect, also identify impacts from various institutions and related bodies. Supported by competent human resources, this group attempt to contribute and improve the relevant and sustainable knowledge to financial and economics organization.

Keywords:

Infrastructure Development, Economic and Infrastructure Management, Modelling and Methodology of Economics. Economics Development System, Economics Theory, Aggregate Supply-Aggregate Demand Model, Loan Model, Model Simulation, and IS/LM Model.

9.1 Strengthening Group Institutional Capacity to Encourage the Acceleration of Digital Technology Adaptation and Development of Oyster Mushroom Micro and Small Enterprises

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Team members : Pringgo Dwiyantoro, S.E., M.M., M.Si.; Dr. Munadjat, S.Pd., M.M.

Research assistant : Ari Munawar, S.Ds.; Candra Nadi Prabowo; Asri Pebrianti, S.E.

ABSTRACT

This community service activity is a form of service and support in community empowerment which aims to (1) develop the capacity and ability to master and apply appropriate technology (production process technology) in the business of mushroom breeding and cultivation as well as the development of processed oyster mushroom products to support the development and creation business opportunities, increased productivity and income of business group members; (2) increasing the institutional capacity of business groups in increasing knowledge and skills to help increase capacity and product quality and productivity which can encourage the acceleration of business digitalization (digital market) and business development. The method of implementing activities is carried out through collaborative training methods, mentoring and monitoring. The primary materials of the training include oyster mushroom breeding and cultivation techniques, mushroom product processing technology, product design and packaging, group business management and digital marketing with instructors from academics, local government agencies and oyster mushroom entrepreneur practitioners. Increasing the capacity and individual abilities of training participants in the aspects of knowledge, skills and behaviour in mastering the technology of the production process of mushroom nurseries and cultivation, appropriate technology for processing mushroom products, technical product design and packaging, as well as group business management and digital (on-line) marketing of oyster mushrooms supported by guidance and facilitation of assistance, namely social capital, economic capital and human capital in increasing the capacity and institutional capacity of business groups in encouraging the acceleration of digitalization of MSEs (Micro Small Enterprises) as well as business development and creation of business opportunities. For this reason, continuous coaching accompanied by the development of cooperation and assistance services for facilitating production infrastructure, digital technology and business or product legality (PIRT) is essential in strengthening group institutional capacity and increasing the income and welfare of oyster mushroom business actors.

Keywords: training, group institutions, digitalization, oyster mushroom micro and small enterprises

9.2 Comparison of Digital Marketing Adoption between Farmers and Rice Traders

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ABSTRACT

Rice marketing is generally still traditional where farmers sell their products to traders and then traders sell them to consumers. Currently the use of digital media is very developed in society. The use of digital media is also growing in rice marketing. The development of digital media can be used by farmers to shift traditional marketing to online marketing directly to consumers. The question is whether farmers can adopt digital marketing compared to traders. The purpose of this study is to compare the adoption of digital marketing between farmers and traders. If the adoption of digital marketing is higher, then there is a possibility that online marketing to consumers will shift traditional rice marketing. The research method was carried out by surveying farmers and traders in the rice production centers in Indonesia. The location of the research was carried out in Gantar District in Indramayu Regency, West Java province. The location was chosen because Gantar District is the highest area of rice production in Indramayu Regency, and furthermore this Regency is the largest rice producer in West Java. In Indonesia, the province of West Java is the ultimate rice production in Indonesia. The results show that the digital media adoption of traders is higher than that of farmers. So, the possibility of a shift to online marketing from farmers to consumers is low possibility.

Keywords: adoption of the use of digital media; online marketing; rice marketing; rice farmers and traders.

9.3 Digital Transformation and Behavioral Changes Model and Its Impact on Sustainability of Creative Industries in Adaptation to New Habits

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ABSTRACT

Exercise of policies and programs to contain and reduce the Covid-19 outbreak in Indonesia has been done by encouraging people to adapt to a clean lifestyle, such as using masks, washing hands, social distancing, working and schooling from home, no 'mudik' was allowed, and large-scale social restriction. It changes people's livelihoods as implemented. Many of them were unable to earn a living and have income. This impact is especially prominent in creative industries, making enterprises in this category go out of business. The outcome of these policies has made a dilemma in government decision-making. One of the selected policies is to seek prevention and reducing Covid-19 outbreak with an economic approach by implementing an enterprise sustainability model in the New Normal era. This approach is deemed to have a multiplier effect on another policy approach done by social and health perspectives correspondingly. This research aims to provide an alternative solution to creative industries, so they may continue to grow and become the main source of income with a corresponding model that conforms to new normal conditions through a productive economic approach. Field surveys and Focus Group discussions are carried out to collect data in this research, while the data itself is categorized into qualitative and quantitative approaches to analyzing it. The research took place in Sukabumi Regency, Sumedang Regency, and Majalengka Regency, West Java, Indonesia. The selected creative industries in those regions were invited to join the group discussion that took place between March to November 2022. The result shows that there are changes in the creative industries' behavior post-Covid 19 pandemics. Mainly the changes happened in company management in doing business others include how to interact with customers and customer services. The developed model of digital transformation for conventional to digital enterprises includes those that are based on government policy, digital security, digital media usage effectivity, demand for the product, collaboration with other enterprises, and enterprise needs. The working model for adaptation of new habits includes the considerations for substitution for production material, changes in marketing methods, modification to the product, diversification of the product, and shift to another product entirely. Sustainability strategy for creative industries developed in several steps. The first is to identify the condition of a particular creative industry post-Covid 19 pandemic. Secondly is to identify urgent and crucial problems faced by particular enterprises. The third is to conform to people's changes to fulfill their needs. Forth is to adapt to new demand from previous consumers. The fifth step is to develop a distribution pattern that conforms to customers' needs. The last step is to develop proper communication methods that conform to the consumer's needs to execute the transaction.

9.4 Digital Transformation of Women's Enterprises, Its Impact on Venture Resilience and Family Economic Recovery in Post-Covid19 Pandemic

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ABSTRACT

Social distancing policy as an effort to prevent the Covid-19 outbreak has caused a shift in the location of individual activity from public places to domestic places, such as homes. The shift made a significant impact on the center of household activities, especially individual mobility inside houses and domestic chores that usually were women's responsibilities in Indonesian households. Online schooling, usage of internet-based technologies, and working from home are a few significant changes in household activities to contain the Covid-19 outbreak. During these times, many women change their roles, not only as housewives that rely heavily on their husbands but also have active roles to support the family's economic activities by developing various enterprises. This research aims to develop a working model on the digital transformation of women's enterprises and its impact on venture resilience, also its effect on family economic recovery post-Covid 19 pandemics. We utilize exploratory surveys, experimental research, and applied research methods to gain more sound data. Descriptive analysis is applied to qualitative data, while AHP and Multivariate SEM technique is applied to qualitative data. Time series is applied between March and November 2022 to women who became small and micro business owners. This research took place at West Java's and East Nusa Tenggara's Productive Migrant Villages. The result shows there are four prominent digital transformation models. The first model is based on changes in values from the enterprises to customers, the second model is based on the integration of digital technologies in doing business, the third model is based on collaboration with other enterprises, and the last model is based on the needs of the enterprises. Various variables that potentially become enablers or disablers in the transformation of the conventional business to digital include the availability of communication network infrastructures, integration of digital technology usage in doing businesses, availability of proper human resources to operate digital devices, availability of compatible digital devices and digital media, consumer value changes, government policies to encourage the uses of digital media, the ability to reorganize businesses, and the cost to access the said digital media. This research also manages to gather the following findings. Digital transformation of women's enterprises has close linkages with the degree of inclusivity of women's SMEs. Digital technology usage has a significant impact on women's micro and small business ventures, and it also has a positive impact on family economic recovery in the post-Covid 19 pandemic. Both digital technology application and venture resilience affect the sustainability of family economics in post-Covid 19 pandemic recovery.

Keywords: digital, transformations, women, venture resilience, economic recovery