

# **Nawasona 2021**

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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e-mail: office@itbpress.itb.ac.id  
web: www.itbpress.itb.ac.id  
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Dean of SAPPD : Dr. Sri Maryati, S.T., M.I.P.,  
Vice Dean of SAPPD : Aswin Indraprastha, S.T., M.T., M.Eng., Ph.D.  
Dr.Eng. Puspita Dirgahayani, S.T., M.Eng.  
Editor : Dr. I Gusti Ayu Andani, S.T, M.T.  
Aida Ulfa Faza, S.P.W.K., M.T.



# | 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 2021. The book's title, 'Nawasona', is derived from Sanskrit and can be roughly interpreted as nine souls, nine directions, nine strengths, or nine life supports that represent the nine scientific / research groups at School of Architecture, Planning and Policy Development (SAPPD).

The purpose of publishing this PPMI SAPPD 2021 book is to introduce research results from SAPPD to the public, especially to the larger academic community. The use of English as the working language of this book is expected to help the book reach a wider audience and spread its positive impacts, which are fuelled by SAPPD ITB's vision in conducting research, teaching, community service, and innovation.

Through the publication of the 2021 PPMI book, it is hoped that research activities can be intensified. Moreover, the synergies between study areas in SAPPD are highly expected to construct joint road maps and generate new topics. We expect students to become more familiar with research topics and study areas that are being explored by SAPPD ITB lecturers so that they can synergize their thesis and dissertation topics with the lecturers' research road map.

In addition to research and teaching activities, research results of SAPPD ITB lecturers are oriented towards community service activities. Innovation activities led to discoveries and registration of patents; fostering of start-ups and new businesses were also a part of the activities in PPMI SAPPD. 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 2021 thanks the entire academic community of SAPPD for their valuable contributions to this publication. Hopefully, this book will benefit the nation as well as the state.

Bandung, December 8, 2021

PPMI Committee of SAPPD

Institut Teknologi Bandung



# Message from the Dean

Greetings from SAPPD,

**N**AWASONA 2021 consists of the results of research and community services by faculty members at the School of Architecture, Planning and Policy Development (SAPPD), Institut Teknologi Bandung in FY 2021, funded by PPMI (Penelitian, Pengabdian kepada Masyarakat, dan Inovasi) ITB Research Grant.

Along with other research funding scheme, the PPMI grant basically serves as an opportunity for faculty members from different research groups within our faculty to stimulate research-based teaching and foster interdisciplinary research collaboration with different research groups within the SAPPD.

The topics of research and community services of PPMI 2021 vary widely, however, all of them can be classified into policy, planning, and design of the built environment. The topics of resilience, sustainability, and equity are topics that are widely discussed in PPMI 2021. Topics related to data and information are also starting to receive attention. The Covid 19 Pandemic, which began in early 2020, caused several research topics to be diverted to the Covid 19 Pandemic. Hopefully this book could provide benefits to the development of education, research, and community services in the fields of policy, planning and design of the built environment.

Bandung, December 15, 2021

Dr. Sri Maryati, S.T., M.I.P.



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# **Regional & City Infrastructure System**

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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  
Dr. Miming Miharja, S.T., M.Sc.Eng  
Dr. Ir. Binsar P Hasoloan Naipospos, MSP  
Dr. Sri Maryati, S.T., MIP  
Shanty Yulianti Rachmat, S.T., M.T., Ph.D  
Dr. I Gusti Ayu Andani, S.T., M.T.  
Dr. Ninik Suharti, S.T., MURP.  
Lisna Rahayu, S.T., M.Sc.  
Ulfah Alifah Rahmah, S.T., M.T.  
Fika Novitasari, ST, M.T.

**R**egional 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 The Relationship and Integration of Urban Transportation System and Public Health

Head of the team : Ir. Miming Miharja, M.Sc.Eng, Ph.D.  
 Team members : Shanty Yulianti Rachmat, ST, MT, Ph.D ; Dr. I Gusti Ayu Andani, S.T., M.T.  
 Research assistant : Renny Desiana, S.T., M.PWK; Dian Nur'afalia, S.T., M.PWK.

### ABSTRACT

Urban transportation directly contributes to public health and the environment in DKI Jakarta in several ways. First, exposure to motorized vehicle emissions causes respiratory diseases and problems. Second, the use of active transportation such as walking and cycling is not as high as the use of private motorized vehicles. Third, there are differences in the level of accessibility to the nearest health facility based on the locational and individual capacity. The integration of public health aspects in the formulation of transportation policy in DKI Jakarta is needed to create an urban transportation system that is more equitable, adequate, and beneficial in promoting better urban public health. This study aims to identify the extent of the relationship between urban transportation and public health in DKI Jakarta. To achieve this aim, data collection was carried out through a questionnaire that combines revealed preference and stated choice approaches. The data was analyzed using contour measure analysis to determine the level of accessibility to the nearest health facilities, binomial logit analysis to determine the locational and individual vulnerability to respiratory diseases and problems, as well as multinomial logit analysis to determine the people's tendency to use active transportation. The final result shows Central Jakarta as the administrative city with the highest level of accessibility and East Jakarta as the administrative city with the lowest level of accessibility. Modeling related to locational and individual vulnerability as well as mode choice indicates that in general, transportation characteristics contribute 8- 11% more than socio-economic characteristics. In terms of locational and individual vulnerability, the probability value indicates that individuals living in East Jakarta and Central Jakarta tend to not have respiratory diseases (94%), but the individuals tend to have respiratory problems while driving (72%). In terms of mode choice, the probability value indicates the opportunity to use active transportation such as bicycles (29%) and walking (5%), although the use of motorized vehicles still dominates such as motorcycles/taxi bikes (58%) and cars/taxis (8%).

Keywords: accessibility, respiratory diseases and problems, active transportation, binomial and multinomial logit models, probability

## 1.2 The Impact of COVID 19 Pandemic to the Travel Behavior in Indonesia

Head of the team : Ibnu Syabri, B.Sc., M.Sc., Ph.D.  
Team members : Lisna Rahayu, S.T., M.Sc.; Ulfah Aliifah Rahmah, S.T., M.T.  
Research assistant : Muhammad Rizki Rayani Ramadani, S.T.

### ABSTRACT

Indonesia is one of the countries with the highest confirmed positive cases of COVID 19 in Southeast Asia. One of the sectors that closely related and significantly impacted by the COVID 19 pandemic is the transportation sector. Responding to this problem, the government established policy to regulate mobility and the application of health protocols in the transportation sector with the following formal documents: a) Minister of Transportation Decree No. 18 of 2020 concerning Transportation Control in the context of preventing the spread of COVID 19; b) Minister of Transportation Decree No. 25 2020 regarding the control of safe transportation for Eid Al-Fitr in 1441 H in order to prevent the spread of COVID 19; c) Minister of Transportation Decree No 41 of 2020 concerning Amendments to Minister of Transportation Decree No. 18 of 2020; and d) Circular Letter of Minister of Transportation No. 11 of 2020 concerning Guidelines and Technical Guidelines for the Implementation of Land Transportation during the Adaptation of New Habits to Prevent the Spread of Covid-19. It is suspected that the potential for transmission of COVID 19 in the transportation sector as well as the movement by the government will have an impact on changes in people's travel behavior patterns. In this regard, the purpose of this research is to identify the impact of the COVID 19 pandemic on people's travel behavior in Indonesia, by comparing the differences in travel behavior patterns between before and after the COVID 19 pandemic. This research aims to formulate a resilient transportation strategy upon the pandemic and able to accommodate future population's transportation needs. The goals in this study include a) The identification of differences in people's travel behavior in Indonesia between before and after the COVID-19 pandemic; b) The identification of criteria and indicators of resilient transportation (Resilient Transportation); and c) Formulation of a resilient transportation strategy against the Pandemic. To achieve those objectives and targets, data collection methods will be carried out through secondary data survey and primary survey in the form of distributing questionnaires to travelers using purposive sampling technique, as well as interviews with transportation experts and stakeholders in the transportation sector. Data and information collected from the survey results will be analyzed using quantitative analysis, hypothesis testing, multiple regression modeling and the analytic Hierarchical Process (AHP).

Keywords: resilient transportation, COVID 19 pandemic, travel behaviour

### 1.3 Toward Smart Mobility Policy: Estimation to Adopt the Characteristic of Online Transportation Services to the Public Transportation Services (Case Study: Bandung City)

Head of the team : Lisna Rahayu, S.T., M.Sc.  
 Team members : Dr. Tengku Munawar Chalil, S.T., M.I.P.P  
 Research assistant : Yovita Tisarda Febriani, S.T.

#### ABSTRACT

The inadequacy of the public transportation system in Indonesia has encouraged competition from the private sector in providing transportation services. Advances in information technology have affected the transformation of conventional paratransit into paratransit with online-based services. The existence of online transportation is considered useful by users in meeting transportation needs due to the nature of the service which tends to be flexible, can be used individually, and is door to door. Although in terms of demand it tends to benefit consumers/users, if examined from the perspective of Transport Demand Management (TDM), online transportation based on private vehicles tends to be less effective than mass public transportation systems. Assuming that online transportation users are rational users and optimize their satisfaction in choosing modes of transportation, the positive aspects of online transportation service operations can be adopted as the basis for determining the need for providing public transportation services by the government that supports the realization of smart mobility which is one of the concepts which many researchers believe can lead to the realization of sustainable and inclusive urban development. Thus, this study aims to identify the characteristics of online transportation services where the results of the identification of these characteristics will be the basis for determining positive criteria and indicators that can be adopted by the government in providing public transportation based on smart mobility. This research is important to do considering the current problem of public transportation which tends to be inadequate in supporting urban mobility. Through this research, it is hoped that alternative policies can be produced to realize smart mobility in the context of sustainable urban development. This research was conducted by taking a case study of the city of Bandung. The selection of Bandung City was based on strategic considerations of the role of Bandung City as the Capital City of West Java Province which in its existing condition grew as a center for the accumulation of regional-scale activity facilities for the Greater Bandung metropolitan area, which in the existing condition was still faced with major problems in the public transportation sector.

Keywords: smart mobility, online transportation services, public transportation policy

## 1.4 Basic Infrastructure and Land Provisions in Informal Settlements: Adaptation Versus Intervention

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.; Syahida Asma Amanina, S.T.

### ABSTRACT

Development approaches that have been applied in informal settlements areas in Indonesia are still based on planning that is rooted from foreign context and not in accordance with conditions in the field (Suhartini & Jones, 2019). This planning approach includes a top-down approach to basic land and infrastructure provision mechanisms. Informal settlement planning has so far been limited to evictions and resettlements that focus solely on procuring physical residential facilities with little regard for the complexity and evolution that has taken place within the region. In this context, the research explores and examines in depth the types of land supply and basic infrastructure in informal settlement areas to provide a comprehensive understanding of the different types and scales of planning and management of emerging development in the region. Furthermore, the research also records and identifies complex forms of adaptation, evolution and planning and development dynamics in informal residential areas within the broader framework of cities. The methodologies in this research include a) quantitative methodology to describe the type, amount, level of access, perception, preference of residents to the system of provision and governance of land and basic infrastructure; b) qualitative analysis to identify types of governance, mechanisms, innovations and adaptations in land management and basic infrastructure of settlements; c) spatial analysis to assess the location and distribution of land according to its status and governance, as well as the distribution and range of basic infrastructure at the study site; and d) Typological analysis to build typology of basic infrastructure and housing. To collect data and information in this study, primary survey will be conducted including interviews with development agencies, key actors in the provision of urban infrastructure, distribution of questionnaires for the residents, and observation of the quality, quantity, and continuity of the basic infrastructure. The output and results of this research will be a consideration for the government in urban planning in informal settlement, especially in land management and basic infrastructure, which is inclusive and equitable, as well as effective and efficient in budgeting development.

Keywords: informal settlement; basic infrastructure; land supply

## 1.5 Self Organized City in Indonesia

Head of the team : Dr. Ninik Suhartini, S.T., MURP.  
 Team members : Ir. Teti Armiami Argo, M.E.S., Ph.D.; Farida Khuril Maula, S.T., M.Sc.;  
 Lisna Rahayu, S.T., M.Sc.  
 Research assistant : Muhammad Rizki Rayani Ramadani, S.T.; Mahfira Azka Maharani, S.T.;  
 Syahida Asma Amanina, S.T.

### ABSTRACT

This research aims to analyze self-organized city governance which includes the type, scale, adaptation and evolution that develops in the provision of basic housing infrastructure in informal settlements in urban areas with a focus on SDG 6 and 11 target indicators in the context of the Global South. This research also includes the development of a typological analysis method as an alternative to contextual urban and regional planning analysis that can provide appropriate information and analysis to explain the development of urban informal settlement areas. The results of this research are intended to provide an overview of the type, scale, governance, adaptation, and evolution that develops in the provision of basic infrastructure in urban informal settlements that can contribute to the science of urban and regional planning in the context of developing countries and the basis for consideration for policy making. The analytical methods used in this research are quantitative, qualitative, and spatial methods. Quantitative methods are used to describe conditions, providing an overview of the number and level of access, perceptions, preferences of residents towards the system of providing and managing basic infrastructure and housing. Qualitative analysis is conducted to identify the types of governance, mechanisms, innovation, and adaptation in the management of basic infrastructure and settlements. Spatial analysis is conducted to assess access and distribution of basic infrastructure and housing patterns and structures in the study locations. In this research, the development of a typology analysis method was also carried out to build a typology of basic infrastructure and housing. Data collection methods used in this study will include interviews with relevant agencies and key actors in providing urban infrastructure, questionnaires for the community, and observations on the quality, quantity, and continuity of basic urban infrastructure.

Keywords: self-organized city, informal settlement, basic infrastructure, sustainability



# **Urban Planning & Design**

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

## Urban Planning and Design Research Group

Prof. Ir. Haryo Winarso, M.Eng., Ph.D  
Dr. Ir. Iwan Kustiwan, M.T.  
Dr. Ir. Denny Zulkaidi, MUP  
Ir. Sugiyantoro, MIP  
Ridwan Sutriadi, S.T., M.T., Ph.D.  
Dr. RM. Petrus Natalivan, S.T., M.T.  
Dr. Niken Prilandita, S.T., M.Sc  
Farida Khuril Maula, S.T., M.Sc  
Bagas Dwipantara Putra, S.T, M.T., Ph.D.  
Afrizal Ramadhan, S.T., M.P.W.K  
Lanthika Atianta, S.T., M.Sc  
Naya Cinantya Drestalita, ST, M.Arts

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 Longitudinal Study of Housing Provision in Metropolitan Cities in Indonesia (Bandung, Semarang, Surabaya)

Head of the team : Prof.Ir. Haryo Winarso, M. Eng., Ph.D.  
 Team members : Bagas Dwipantara Putra ST., MT., Ph.D.; Ir. Sugiyantoro, MIP;  
 Naya Cinantya Drestalita, S.T., M.Arts.  
 Research assistant : Pratiwi Prameswari, ST.; Ruhkhis Muhtadin, ST.; Anandhika Arifianto, ST.

### ABSTRACT

Cities in Indonesia are growing rapidly as the population increases every year. In 2020, the number of residents living in urban areas reached 151 million people and is projected to increase to 223,3 million people by 2045, making up 70% of the total population (Statistics Indonesia, 2020). As a result, the need for proper urban housing and adequate land supply as fundamental planning elements have increased over the years. This growing need for urban settlement and land provision is amplified by the importance of achieving goal number 11 of Sustainable Development Goals that emphasize ensuring access to adequate, safe, and affordable housing for all. The approach in providing housing has been much debated – particularly on the platform for delivering housing - private market-led or more public provision (see for instance: Kievani and Werna, 2001; Huchzermeyer and Misselwitz 2016). The government of Indonesia has applied different approaches to speed up the provision of housing, particularly that of affordable housing, however to what extent the government effort achieved its targets remain to be studied. The main question addressed is to what extent the government has been able to improve the quality of life through the provision of decent and affordable housing. The study utilizes a longitudinal comparison of housing and land supply and demand in selected cities, including housing provision quality and government policies. We seek to gain more understanding about different patterns in each city in providing proper urban settlement. Bandung, Semarang, and Surabaya are three Indonesian metropolitans selected as the case study cities. These cities are selected based on the population (more than 2 million), data availability, and accessibilities for an online interview. The study will use a mixed-method of quantitative and qualitative analysis. Amidst the covid-19 pandemic; it will focus on secondary data provided by the Central Bureau of Statistics, central and local governments, and other related agencies. Data crawling will also be conducted to obtain information from the internet and to enrich the analysis. Then, to produce more comprehensive results, we will also integrate the analysis results of primary data collected using online interviews. This study will highlight the need for housing and the housing provision, policy and programs adopted in Indonesia. Secondary data analysis based on statistical data will look at the changes in housing quality, affordability, price, and availability. In the end, a comparison between cities and critical analysis on the policy and

Urban Planning and Design Research Group

its result in the housing provision will be presented as input for improvement in policy instrument.

Keywords: land, housing, pattern, mix-method, Bandung, Semarang, Surabaya



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## 2.2 A Comparative Study on Socio-Demographic Factors in Correlation with Metropolitan Cities Development in Indonesia (Multiple-Case Study: Bandung, Semarang, and Surabaya)

Head of the team : Dr. Ir. Denny Zulkaidi, MUP.  
 Team members : Dr. RM. Petrus Natalivan Indradjati, ST., MT.; Farida Khuril Maula, ST. M.Sc.;  
 Afrizal Ramadhan, ST. M.PWK  
 Research assistant : Rose Fatmadewi, S.Si, M.URP.; M. Ihsan Yudanto, ST.

### ABSTRACT

Based on the United Nations projection in 2018, the world's urban population is estimated to reach 68.4% of the total population by 2050. At present, 56.1% of the Indonesian population, or approximately around 151.6 million people, concentrates on Java Island. Other than Jakarta, the present capital city of Indonesia, there are three provincial capitals which can be classified as metropolitan cities (more than 1 million people), namely Bandung (West Java Province, 2.5 million people), Semarang (Central Java Province, 1.81 million people), and Surabaya (East Java Province, 3.15 million people). Although a high urbanization rate has potential for urban growth and sustainable improvement of quality of life in urban communities, including the economy, standard of living, and cities' income improvements, this is not necessarily the case for Indonesian metropolitan cities. It is well known that the socio-demographic of the city and the spatial development of the urban area are two aspects that are interrelated with one another. On one hand, population data affects the planning of urban infrastructure services, especially those related to basic and social needs. However, differences in socio-demographic characteristics may have different influences to the urban basic service planning and living quality. This research attempts to enrich this field by taking a multiple-case study design of three metropolitan cities in Java, Indonesia: Bandung, Semarang, and Surabaya. The paper follows a multiple-case study design, with in-depth descriptive and time-series analysis. A quantitative approach (correlation analysis) will be used to identify trends and patterns of urban socio-demographic and development indicators for each city. The data is drawn from three sources: secondary data collection at the central and regional levels, and literature review from previous research. The urban development criteria are including population growth rate, economic growth rate, and the urbanization rate, while the socio-demographic factors are including demographic indicators, health, education, socio-economic securities, and crime response. The last section of this paper presents the research findings, focusing on the key themes: (1) the analysis of socio-demographic indicators in correlation with the urban development indicators for each city; and (2) the comparison demonstrates differences or similarities of socio-demographic factors in correlation with urban development and urban living quality among cities. This study

indicates different correlations between socio-demographic characteristics and development indicators of three metropolitan cities. There would therefore seem to be a definite need for future research to investigate the cause and effect from these results.

Keywords: socio-demographic factors, metropolitan city, urban development, urban living quality, Indonesia.

## 2.3 A Transition of Urban Environmental Issues and the Need for Integration of the Brown Agenda – Green Agenda in Urban Environmental Management Policy

Head of the team : Dr. Ir. Iwan Kustiwan, M.T.  
 Team members : Ridwan Sutriadi, S.T., M.T., Ph.D.; Dr. Niken Prilandita, S.T., M.Sc.;  
 Lanthika Atianta, S.T., M.Sc.  
 Research assistant : Bungaria Ramadhani, M.PWK.; A'lam Hasnan Habib, S.T.

### ABSTRACT

Indonesia has a concentration of urban population that can be said to be uneven, especially when viewed from its spatial pattern. Inequality that is caused by expansive urban growth and sprawl in Java's metropolitan cities, has caused physical impact on the wider urban built area and the conversion of agricultural land. The problems caused by urban growth indicate that the dynamics of urban growth that have occurred can affect the decline in the carrying capacity of the environment so that they can become threats to sustainable urban development. This research is conducted with the aim of identifying the transitional stages of urban growth problems that occur in metropolitan cities in the Java Island and their implications for the formulation of the urban environmental management policy agenda. In achieving these objectives, several research objectives were formulated, namely (1) Identify the development dynamics and performance of metropolitan cities in the Java island physically and environmentally; (2) Identify urban environmental problems that occur in metropolitan cities, related to environmental carrying capacity and environmental supporting capacity (3) Analyse the transitional linkages between the development performance of metropolitan cities and the urban environmental problems experienced based on their characteristics (main impact, timing, scale, and affected parties); and (4) Formulate the need for the integration of the brown agenda and the green agenda in urban environmental management policies for metropolitan cities in Java. This research is descriptive-explanatory with quantitative methods. To examine it, the transitional stages of urban development (Bai and Imura, 2000) will be used as the hypothesis which divides from the perspective of poverty, pollution, and high consumption. Furthermore, to sharpen our view, a transition model of urban environmental problems is used, and it will be based on cities' problems characteristics which include the main impact, time, spatial scale, and affected community groups (McGranahan, 1994, 2001). The hypothesis of this study is that both the brown issue and the green issue do not occur completely transitionally according to metropolitan cities' development stages/performance. For metropolitan cities in the Java Island, it is suspected that there is a bias between the issues of the brown agenda – related to the basic needs' problems, and the green agenda – such as industrial pollution, motorization, and high levels of energy consumption.

Keywords: spatial-environment factors, urban environmental management, urban development transitional stages, brown and green agenda, metropolitan city

## 2.4 Measuring Community Readiness Capacity in the Land Consolidation Project: The Case of Cibangkong Slum Upgrading Project

Head of the team : Prof.Ir. Haryo Winarso M. Eng., Ph.D.  
Team members : Tubagus Furqon Sofhani, Ph.D., Dr. Suhirman  
Research assistant : Chrisna Trie Hadi Permana, PhD.; Akhmad Gunawan, M.T.;  
Marisa Sugangga, M.T.; Ruhkhis Muhtadin, S.T.;  
Pratiwi Prameswari, ST.; Nurul Huda'a Istiqomah, S.T.

### ABSTRACT

Amidst the context of bottom-up and collaborative planning euphoria around the world, there has been an increasing interest in planning practices that centred on the active role of civil society. Many governments, private sectors, and non-profits are worked together to promote communities through community-led initiatives at the neighbourhood levels. However, the actual concern is on the capacity of the communities themselves to use their opportunities to consolidate power and make influence against other stakeholders. Given their lack of skills, knowledge, resources, and regulatory supports, communities often fail to negotiate their interests within collaborative decision-making processes with other stakeholders (McGowan et al., 2020). As a result, many governments bring back their power, co-opting and driving the community-led initiatives with traditional directive approaches, and leaving the communities only as the 'outsourcing executor' and their social goals to be overshadowed by political and capital motivations (Allmendinger, 2016; Gonzalez & Healey, 2005; McGowan et al., 2020). This paper presents the case study of a housing revitalisation project in Cibangkong, a slum settlement enclave located at the centre of Gatot Subroto, one of the busiest commercial areas in Bandung, Indonesia. A concept of land consolidation that emphasises the role of communities has been prepared as an innovative pilot project to replace traditional slum upgrading approaches. Applying the so-called "Public-Private-People-Partnership (PPPP)", the existing poor community is promoted as the shareholders with institutional and financial power, so they can work formally and equally with the government and developers. In this paper, we focus on identifying the characteristics of the existing community and examining their readiness capacity to work together with the government and private sectors in the collaborative land consolidation arrangement. This paper uses Participatory Action Research (PAR) as the core methodology. In this method, we conduct a series of field observations, interviews, FGDs, and questionnaire, which involves national and local government officials, developers, academicians, community leaders, activists, and representatives of the poor community living in the area. In addition, to collect data and information on the actual socio-economic conditions of the existing people, the PAR is also used as an interactive method to disseminate the revitalisation concept to

the existing community, allowing mutual learning and sharing processes. Whilst the actual research is still being carried out, we emphasise some positive findings at the preliminary stage, which include the mapping of community and its socio-economic segregations as well as the potential alternative roles and contributions of the community within the collaborative-led land consolidation project.

Keywords: slum, community, land consolidation

## 2.5 Role of Government and Society in Urban Innovation System: A Case Study from Indonesia

Head of the team : Ridwan Sutriadi, S.T., M.T., Ph.D.  
Team members : Dr. Fikri Zul Fahmi, S.T, M.Sc.  
Research assistant : Anandhika Arifianto, ST.; F I Muttaqin

### ABSTRACT

Government innovation at the regional level needs to be encouraged to stimulate regional development. Technology can help drive the innovation process and organizational change. The innovation process involves interactive learning to create and disseminate knowledge. Positive impacts are also obtained from the success of this innovation, not only for local governments but also for the society. This paper aims to identify how local government innovation encourages urban innovation in the context of the Global South. We perform a case study to represent the digitalized innovation, namely Surakarta City. The data were collected from the Innovation Government Awards (IGA) organized by the Ministry of Home Affairs and interviews with the local governments. The analysis was conducted using qualitative methods which resulted in a typology of local government innovation in Indonesia at the city level. This paper shows the ideas of good governance, as revealed by local government innovation awards. In addition, there are role of actors in initiating the creation of new knowledge, imitating ideas, and socializing them to make government performance more effective.

Keywords: Urban Innovation System, Local Government Innovation, Digitalized Innovation

# **Regional & Rural Planning**

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

# Regional and Rural Planning Research Group

Prof. Ir. Djoko Santoso Abi Suroso, Ph.D  
Prof. Drs. Arief Rosyidie, MSP., M.Arch., Ph.D  
Ir. Tubagus Furqon Sofhani, M.A., Ph.D  
Ir. Hastu Prabatmodjo, M.Sc., Ph.D  
Ir. Teti Armiati Argo, MES, Ph.D  
Wilmar A. Salim, S.T., M.Reg.Dev., Ph.D  
Delik Hudalah, S.T., M.T., M.Sc, Ph.D  
Saut Aritua Hasiholan Sagala, S.T., M.Sc., Ph.D  
Rintakasari Vitri A., S.T., M.T.  
Ir. Hadi Nurcahyo, M.T.  
Adiwan Fahlan Aritenang, S.T., M.GIT, Ph.D  
Dr. Fikri Zul Fahmi, S.T., M.Sc  
Tessa Talitha, ST, M.A.  
Uly Faoziyah, S.T., M.T.  
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 New Town Development in Jakarta Metropolitan Area (JMA): Reflection of JMA Post-Suburban Phenomena

Head of the team : Adiwan Fahlan Aritenang, S.T., M.GIT., Ph.D.  
Team members : Windya Dwi Nanda, S.T.

#### ABSTRACT

This study aims to identify the characteristics of industries that conduct R&D and innovation activities—especially medium and high-tech industries. Using descriptive statistics, the study identified 1057 medium and high-tech industries carried out R&D and innovation, both independently or supported by a third party. Our analysis shows that industries that carry out innovation and R&D are pharmaceutical, computer, machinery, motor vehicle and the transportation equipment. This study examined four characteristics including type of industry, industrial location, source of finance and share of R&D workers. Our study found that the type of industry is the most important characteristics, followed by industrial location, source of financing, and R&D workers. The study contributes to the literature by highlighting the importance of knowledge-based industries and industrial parks for economic development.

Keywords: high-tech industry, R&D, innovation

## 3.2 The Human Dimension Dilemma in Marine Spatial Planning

Head of the team : Wilmar A. Salim, S.T., M.Reg.Dev., Ph.D.

Research assistant : Andrian Ramadhan, S.Pi., M.T.; Hertria Maharani Putri, S.Sos., M.B.A.

### ABSTRACT

The practice of marine spatial planning has been criticised by scholars because of its shortcomings in engaging the human dimension. However, working with social issues causes various planning dilemmas. This study develops a framework for understanding this problem through intervention, regulatory, and investment dilemmas. We argue that there is a link between these three dilemmas and how marine spatial planners work on the human dimension issue. This research conducted a case study of Karimunjawa National Park, Indonesia to provide empirical evidence for this argument. The article concludes that the planning dilemmas framework can help explain the application of the human dimension in marine spatial planning. The study further demonstrates that demands for more radical approaches that seek to increase the depth of democracy in decision-making, the equitable distribution of benefits, and equality in planning will face a vicious cycle because of institutional mandates to intervene in land use for specific purposes as well as planners' limited power over other stakeholders.

Keywords: Marine Spatial Planning, human dimension, planning dilemma, Karimunjawa

### 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

The limited data and information about urbanization in the Global South causes the research and understanding on urbanization and urban systems in the Global South incomplete in scope, hard to compare, and incomprehensive. Identifying common patterns, trends, and dynamics is not easy to accomplish. Some major cities of Indonesia have become major centers of agglomeration, concentrating economic activity within. The other major, medium, and small cities, which are located further from major urban regions, have their own characteristics in light of urban knowledge in Indonesia. The urban patterns and trends of Indonesia have not been properly identified. This research aims to formulate Indonesia's urban trends and dynamics which will encompass not only the major cities, but also the medium and small cities in Indonesia's urban system. The focus of this study will be the identification of the 'transversality' of the pragmatic concept of the City in Indonesia and its implications on the use of data and information for the development of urban areas and policy interventions. The questions to be addressed are: (i) How do the principles of the city's characteristics based on their scale in Indonesia have formed, changed, and identified based on the existing literature; (ii) Does geographic location still matter; and (iii) How do interactions between cities, whether by location or by the concept of transversality, can form physical, economical, or culturally merged urban regions? Are these relationships between cities complementary? This research uses secondary data. The results of this study will add to the literature that becomes a reference both for the academic community and for the reporting of urban affairs.

Keywords: cities, urban system, growth centers, metropolitan, transversality, deciphering

### 3.4 Development of Tourism Village Innovation

Head of the team : Prof. Drs. Arief Rosyidie, M.S.P., M.Arch., Ph.D.

Team members : Abadi Raksapati, S.S., M.Sc.

Research assistant : Tiara Maghfirah; Khaniayu Dwi Putri

#### ABSTRACT

Tourism village innovation through the development of agro-tourism villages is an effort to encourage village development based on agricultural and plantation potentials owned by Mekarwangi Village, Sindangkerta District, West Bandung Regency. The implementation of activities is carried out with a participatory approach through three main stages, firstly increasing the capacity of the community to understand tourism, secondly increasing the institutional capacity of Kelompok Sadar Wisata (Pokdarwis), and thirdly testing various tourism products that have been produced. This activity resulted in several things, namely the identification of potential tourist attractions, the formation of Kelompok Sadar Wisata (Pokdarwis), the establishment of a pioneering Kampung Ganyol, the arrangement of the mekarwangi agrotourism village tour package, and the creation of an increase in the quality of agrohonestays.

Keywords: Tourism Village, Agro-tourism, Agrohonestay, Mekarwangi

### 3.5 Impact of the COVID-19 Pandemic on the Tourism Sharing Economy (Case Study: Airbnb Property Selection in Bandung City)

Head of the team : Adiwan Fahlan Aritenang, S.T., M.GIT., Ph.D.

Team members : Alhिलal Furqan, B.Sc., M.Sc., Ph.D.; Zahara Sitta Iskandar, S.T., M.P.W.K.

#### ABSTRACT

As the result of technological innovation emergence, sharing economy-based lodging platforms such as Airbnb enables people to rent and capitalize on their private, usually idle, properties by renting to others. Ever since its first operation in Indonesia 014, Airbnb units have grown rapidly followed by increasing of revenue, which accounts for more than 1005 listings, represents the rapidly growing public interest in the platform. Although the number of listings is less than in Bali and Jakarta, Bandung is a frontrunner of a global creative city network. The City of Bandung has long been known for its tourism sector, as 2016 there are 5 million tourists both foreign and domestic visited Bandung every year. Especially tourists from the Jakarta metropolitan area (DKI Jakarta, Bogor, Depok, Tangerang, and Bekasi) due to spatial proximity dominates the accommodation demands in weekend holidays. As a result, accommodation demand from this weekly visitor is crucial. On the other hand, from the beginning of the pandemic until early 2021, the Bandung City Tourism and Cultural Agency noted that the City of Bandung had lost 50% of its domestic tourists. Meanwhile, the economic growth in Bandung City is minus 2%. This also has an impact on Airbnb as an accommodation platform whose occupancy is influenced by the number of tourists visiting. This paper aims to examine factors that determine the choice of accommodation during the pandemic through the identification of the socio-economic and travelling motivation determine choice of property rental, which property characteristics are considered the most important, and which properties in Bandung that are most desired by tourists from Jakarta metropolitans during pandemic. The study shows that the factors that influence the choice of accommodation by tourists during the pandemic include: location and rental prices, reviews and display units, experiences offered, trends and word of mouth. The socio-economic profile of potential visitors from Airbnb were dominated by young people with middle-up economic background. The characteristics of the properties (Airbnb units) that are considered the most important are: Facilities Inside Airbnb, Rental Prices, Facilities Around Airbnb, Property Type and Listing Type. These characteristics after being analyzed resulted in a cluster in the northern part of the cluster formed in the sub-districts: Coblong, Cidadap, Sukajadi, Sukasari. Meanwhile, in the southern part, low demand clusters are formed in the sub-districts: Bojongloa Kaler, Bojongloa Kidul and Babakan Ciparay. Further analysis explains that character which distinguishes between high demand and low demand areas was that

the characteristics possessed by regions with high demand were related to the motivation of visitors in choosing units, including: enjoyment, authenticity, new experience and developing trends.

Keywords: tourism, sharing economy, airbnb, covid-19 pandemic

### 3.6 Motivation for Migration and Attitude towards Naturbanization in Mount Ciremai National Park

Head of the team : Arini Murwindarti, S.Si., M.Sc.  
 Team members : Saut Aritua Hasiholan Sagala, ST., M.Sc., Ph.D.;  
 Lanthika Atianta, S.T., M.Sc.  
 Research Assitant : Ahmad Sobari; Findi Diansa Putri

#### ABSTRACT

**N**aturbanization is perhaps a lesser-known concept. The term Naturbanization is often used interchangeably with tourism-driven urbanization, although Naturbanization particularly explains the process of urbanization in the influence of natural/national parks, which is observed both demographically and spatially. One of the evidence of naturbanization is the number of people migrating to rural areas in search of better environmental quality and employment opportunities, especially in tourism activities. There has been concern that economic-driven migrants are more likely to have positive attitude towards changes in rural areas which might lead to environmental degradation in the long run. Therefore, this study aims to explore whether residents' attitude towards changes in rural-natural areas, or naturbanization, is associated with residents' status and their motivation for migration. The attitude is represented by eight variables derived from previous research on naturbanization, which consists of four themes: the increase of population, the activation of economic activities, investment in infrastructure, and land-use change. This study undertook a survey with 198 respondents, both migrants and local residents, of rural areas in two sub-districts located around the Mount Ciremai National Park at Kuningan Regency, where many tourism objects have emerged in the past decade. The result shows that in-migration has occurred in the area for years and is mostly motivated by economic reasons (83.70%) than environmental. The chi-square test suggests that residents' attitude towards migration is not defined by their status (migrants or locals) nor their motivation for migration (economic or environmental). Furthermore, residents mainly have a positive attitude towards the development of the tourism sector but oppose to the effect of tourism development such as land-use change and in-migration.

Keywords: Migration, National Park, Naturbanization, Rural-natural Area, Tourism-driven Urbanization



# **Development Management & Policy Planning**

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**Those who contribute to the theoretical and practical knowledge of policy planning and development management of urban areas.**

# Development Management and Policy Planning Research Group

Prof. Dr. Ir. B. Kombaitan, M.Sc  
Ir. Andi Oetomo, M.PI.  
Ir. Sonny Yuliar, Ph.D  
Dr. Drs. Suhirman, S.H., M.T.  
Ir. Harkunti Pertiwi Rahayu, Ph.D  
Adenantera Dwicaksono, S.T., M.Dev., Ph.D.  
Dr. Eng. Puspita Dirgahayani, S.T., M.Eng.  
Ir. Hanry Kurnia L., M.T.  
Nurrohman Wijaya, S.T., M.T., M.Sc., Ph.D  
Alhilal Furqan, B.Bc., M.Sc., Ph.D  
Tengku Munawar Chalil, ST, MPP, Ph.D.

**D**evelopment 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 Vulnerability Aspect of Bali Tourism during Covid-19 Pandemic

Head of the team : Alhilal Furqan, B.Sc., M.Sc., Ph.D.  
Team members : Adenantera Dwicaksono, S.T., M.Dev.St., Ph.D.;  
Nurrohman Wijaya, S.T., M.T., M.Sc., Ph.D.; Hanry Kurnia Lasifa, S.T., M.T.;  
Tri Rahayu Wulansari, S.T., M.T.; Aditya Purnomo Aji, S.T., M.P.W.K.  
Research assistant : Wahyu Gede Sadewo, S.T.

### ABSTRACT

The tourism sector is very strategic in the economy of the Province of Bali, making it a big blow to the life of its people. Until the Large-Scale Social Restrictions in Indonesia were implemented in April-July, foreign tourist visits in Bali reached their lowest point of 32 people. It was an unprecedented situation on tourism of Bali. This change shows that the tourism sector that is vulnerable to the COVID-19 pandemic. The connection between tourism potential and its vulnerability will be approached through the Sustainable Livelihoods Framework. This research aims to explore the vulnerability of the Bali tourism sector through the Pandemic era. The research used Questionnaires as the primary data collection method and research documents and statistical data as the secondary data source. The study finds that many changes have been made to adapt to the current pandemic condition such as CHSE certification and the use of technology in the services. Although many workers have had their contracts terminated or changed jobs, most of them still work in the tourism sector. It shows how dependent Bali's livelihood is on the tourism sector. Bali needs to diversify their economic force not only to focus on tourism but other sectors as well.

Keywords: vulnerability, livelihood, tourism workers, pandemic, policy

## 4.2 Digital Transformation Sustainability Study with Actor-Network Theory Approach: The Case of Ride Hailing in Bandung City

Head of the team : Ir. Sonny Yuliar, Ph.D.

Team members : Dr. Drs. Suhirman, S.H., M.T.; Indah Widiastuti, S.T., M.T., Ph.D.;  
Tri Rahayu Wulansari, S.T., M.T.; Ajrul Arin Pratiwi, M.S.P.

Research assistant : Difa Kusumadewi, S.T., M.T.; Muhammad Abdul Mubdi Bindar, S.T., M.T.

### ABSTRACT

Today's society has been digitalized, or digitally mediated and is increasingly so with the emergent of algorithmization and datafication of all areas of human activity. Generally speaking, digital technology offers a new way of life in which space-time obstacles are eliminated or reduced, and thereby expands human freedom either as individuals or as collectives. However, what is less understood from the scholarly point of view are how that elimination of space-time obstacles occurs in actuality, how digital connectivity affects real connectivity, and how a new digital-real connectivity has emerged and shaped human/social life. In recent years, many scholarly works have been initiated and contributed to address those questions. The present research is a part of a longer-term project that is aimed at the development of theoretical framework to address those questions by adopting Latourian actor-network theory (ANT). We believe that such inquiry would have close relevance with thy studies of digital urbanity and hyperconnected livelihood. The present study focuses on Multi-service Transport Providers (MSTP's), namely Go-jek and Grab, that have played as key actors in digital transformation in Indonesia and also in a number of other countries. The study employs intensive empirical work that explores and traces all relevant actors from the government level, the gig workers and consumers in Bandung, the software applications and other socio-spatial-technical settings. From the empirical findings we identify various (human-nonhuman) associations by employing concepts from ANT such as translation, displacement, chains of references, immutable mobiles, and composition. We further analyse how such associations define socio-digital enactment/performativity. We then seek to interpret the resulting socio-digital performativity in terms of the notion of social space proposed by Martina Low—socio-digital space. From the empirically-grounded theoretical results, we then address issues that pertain to sustainability, namely, discounted actors and disentangled spaces that are, in actuality, constitutive elements that sustain MTSP's to take place. We also identify issues for further researches in digital-space governance.

Keywords: digital technology, Actor-Network Theory, Multi-service Transport Providers, socio-digital performativity, digital-space governance

### 4.3 Potential Financing Schemes Identification for the of Biomass-Power Plant Development in South Kalimantan

Head of the team : Ir. Harkunti Pertiwi Rahayu, Ph.D.  
Team members : Prof. Dr. Ir. Benedictus Kombaitan, M.Sc.; Ir. Andi Oetomo, M.Pl.;  
Dr. Tengku Munawar Chalil, S.T., M.I.P.P.; Dewi Nurhasanah, S.T., M.P.W.K.;  
Khonsa Indana Zulfa, S.T.; Tri Rahayu Wulansari, S.T., M.T.;  
Aditya Purnomo Aji, S.T., M.P.W.K.  
Research assistant : Nisa Zafirah, S.T.

#### ABSTRACT

The development of Bioenergy power plants in Indonesia is projected to be around 5500 MW in 2025. South Kalimantan Province has the potential for biomass utilization of 1266 MW, but the projected utilization is only 89 MW in 2021. In supporting the development of EBT, the government is preparing tax incentives as fiscal support to attract investors. However, this financing still has problems and is not sustainable, as evidenced by the many biomass power plant collapse. This study aims to identify challenges and potential financing schemes that can attract investment to support the development of a biomass power plant with a case study of South Kalimantan Province. From the study results, several obstacles were found, including the policy of the low selling price of biomass power plant electricity, while the purchase price of raw materials was fluctuating and competitive with other needs. Fluctuating raw material prices make long-term contracts for raw materials impossible. Therefore, several schemes were proposed for South Kalimantan, such as blended finance and climate finance which involved various alternative financing sources in each growth phase of the biomass power plant.

Keywords: biomass, financial scheme, financial opportunities, challenges

## 4.4 Biomass energy potential for supporting energy reliability and sustainable regional development in the Indonesian Central Corridor (Bali - Kalimantan)

Head of the team : Ir. Harkunti Pertiwi Rahayu, Ph.D.  
Team members : Ibnu Syabri, B.Sc., M.Sc., Ph.D.; Prof. Dr. Ir. Benedictus Kombaitan, M.Sc.;  
Muhammad Rizki Rayani Ramadani, S.T.; Devina Khoirunnisa, M.Eng.;  
Dewi Nurhasanah, S.T., M.P.W.K.;  
Ganesha Gunadarma Mangkoesobroto, M.P.W.K.;  
Khonsa Indana Zulfa, S.T.  
Research assistant : Fadhil Hanif; Nisa Zafirah, S.T.

### ABSTRACT

The regional development concept in Indonesia currently is still focused on the particular island with limited economic linkages between regions. In the energy sector, one of them is the development of thermal power plants in Indonesia, with the primary source of coal being from Kalimantan. However, the Indonesian government is committed to reducing greenhouse gases by setting Net Zero Emissions (NZE) in 2060. One strategy in achieving NZE is setting NRE at 23% by 2025 by significantly reducing non-renewable energy sources. As a substitute for coal, biomass is one of the potential energy sources in Indonesia. The model of using biomass as an electricity source will be increasing significantly with the co-firing program for most of the power plants in Indonesia and biomass power plant to boost the NRE mix to 31% by 2050. This study aims to identify the extent of the possibility of developing biomass energy in the Province of Indonesia. Bali to support regional economic development in Indonesia with Bali and South Kalimantan as case studies that describe the economic corridors of Central Indonesia. The results showed potential for biomass power plant materials from primary, secondary, and tertiary sources in the two case study locations. This research produces a supply chain by considering potential sources of raw material and supporting infrastructure. This research identified degraded land in South Kalimantan as potential locations for a primary source for biomass power plants. For secondary sources, the proposed location potential is sourced from agricultural by-products in South Kalimantan. The tertiary source identified are from the waste processing sites in Bali. The most optimum scenario will be selected as a proposed supply chain.

Keywords: biomass power plant supply chain, economic corridor, abandoned land

## 4.5 Bandung City Property Price Modeling

Head of the team : Tizar Muhammad Kautsar Bijaksana, S.T., M.T., M.Phil.  
Team members : Lisna Rahayu, S.T., M.Sc.; Afrizal Ramadhan, S.T., M.P.W.K.;  
Aditya Purnomo Aji, S.T., M.P.W.K.; Thio Perdana, S.Si.  
Research assistant : Muhammad Abdul Mubdi Bindar, S.T.M.T; Muhammad Irfan, S.T.;  
Wahyu Gede Sadewo, S.T.

### ABSTRACT

Among major cities in Indonesia, Bandung is second to Jakarta in terms of the increase of property prices. Looking at the trend, this research attempts to identify the possible determinants of house prices in Bandung City, Indonesia using hedonic price modelling with geographically weighted regression. The prices of almost 5000 units of houses are collected from property-selling websites. In addition to the physical characteristics of houses, the model also investigates the effects of location, distance to services, accessibility, density, demography, and liveability. The result of this study is expected to not only identify the factors that contribute to house price but also the characteristics of the demand and supply for housing and the potential for land value capture.

Keywords: house prices, hedonic price model, Bandung

## 4.6 Pesantren-based Educational Facilities and Infrastructure as a Catalyst for Sustainable Tourism Development

Head of the team : Alhilal Furqan, B.Sc., M.Sc., Ph.D.  
Team members : Dr. Agus Suharjono Ekomadyo, S.T., M.T.;  
Nurrohman Wijaya, S.T., M.T., M.Sc., Ph.D.;  
Dr.GES. Mohammad Zaini Dahlan, S.P., M.Si.;  
Aditya Purnomo Aji, S.T., M.P.W.K.; Annas Talimuddin Maulana, S.T.;  
Dwie Prastivi.  
Research assistant : Dini Agumsari, S.Ars.; Gusti Yan Iwako, S.T.;  
Kevin Mochamad Oktafarel-15217055; Munirul Anam

### ABSTRACT

Pesantren as a traditional Islamic educational institution is an effort to form good and right Muslim human beings so that they can contribute positively to the nation and state. In its development, pesantren has grown and developed with the community which makes pesantren not only as an educational institution but also as an institution for community empowerment. To implement this, it is not enough for pesantren to only provide knowledge and knowledge to the santri in the pesantren, but also requires efforts to form right atmosphere around the pesantren through the cultural capital. To help the community, especially the pesantren entity, the PPMU ITB team will conduct a training and guidance on sustainable tourism-based pesantren tourism which is supported by the physical design of the area in order to support the sustainability of the pesantren as an area generator. This PPMU activity will be held at the Sirojul Huda Islamic Boarding School (Pondok Pesantren Sirojul Huda, PPSH), Soreang District, Bandung Regency. At this time PPSH has contributed a lot to changes for the Parungserab community, especially changes in the socio-religious field. In forming PPSH as an edutourism destination that encourages sustainable development, this PPMU proposes the concept of Agrotourism to be the main attraction for destination development concept. PPSH will be developed to promote agricultural learning tours that are integrated with other activities such as animal farm, forestry, and fisheries.

Keywords: pesantren tourism, rural development, local innovation, social engineering

# **Architectural Design**

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**Those who focuses on development of architectural sciences and research, also topics in design related to tropical and developing countries as context**

# Architectural Design Research Group

Prof., Dr. -Ing. Ir. Widjaja Martokusumo  
Ir. Basauli Umar Lubis, MSA, Ph.D  
Dr. Ir. Woerjantari Kartidjo, M.T.  
Dr. -Ing. Ir. Heru Wibowo Poerbo, M.Arch., MURP  
Ir. Baskoro Tedjo, MSEB, Ph.D  
Ir. Achmad Deni Tardiyana, MUDD  
Ir. Budi Faisal, MAUD, MLA, Ph.D  
Dr. Eng. Hanson Endra Kusuma, S.T., M.Eng  
Widiyani, S.T., M.T.  
Dr. Agus Suharjo Ekomadyo, S.T., M.T.  
Aswin Indraprastha, S.T., M.T., M.Eng. Ph.D  
Dr. Ir. Mochamad Prasetyo E.Y., M.Arch., MAUD  
Dr. Firmansyah, S.T., M.T.  
Erika Yuni Astuti, S.T., M.T.  
Ir. Endang Triningsih, MSP, MLA  
Ir. Titik Savitrie, M.T.  
Tubagus Muhammad Aziz Soelaiman, S.T., M.A  
Rr. Diah Asih Purwaningrum, S.T., M.T.  
Medria Shekar Rani, S.T., M.T.

**A**rchitectural 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 The impact of the Covid-19 pandemic on changes in hospital requirements and designs in Indonesia. Case Study: Rumah Sakit Ginjal Habibie, Bandung

Head of the team : Dr. Ir. Woerjantari Kartidjo, M.T.  
Team members : Dr. Ir. Lily Tambunan, M.T.  
Research assistant : Marisa Sugangga, S.T., M.T.; Feysa Amalia Maharamis Poetry, S.Ds., M.A.

### ABSTRACT

The Covid-19 pandemic has impacted changes in services and work systems in hospitals worldwide, including Indonesia. The Indonesian Ministry of Health's policy calls for hospitals to accept Covid-19 patients, requiring hospitals' management to make adjustments in the design of their facilities. This study aims to examine the changes made before receiving and while treating Covid-19 patients, considering the contagious character of the disease. It focuses on the hospital's inpatient installation that chambers infected patients for a certain duration of time. The research will be carried out by comparing before-after hospital plan documents and conducting interviews with hospital management of Rumah Sakit Khusus Ginjal (RSKG) Ny. Habibie in Bandung. Changes reviewed include those related criterias sourced from guides and regulations mentioning standards of Covid-19 inpatient facilities. These criterias, divided into two aspects-- zoning-circulation paths and ventilation-air circulation - are the basis of quantitative evaluation, using Likert scale. Results of this study will find if alterations done are enough to meet the newly-set standards for Covid-19 inpatient installation and be able to reduce the chance of transmission.

Keywords: Covid-19, Hospital Design, Hospital Facilities

## 5.2 Space Syntax Analysis for Assessment of TOD Area

Head of the team : Dr.Ing. Ir. Heru Wibowo Poerbo, MURP  
Team members : Dr. Ir. Moch. Prasetyo E.Y., M.Arch., MAUD;  
Tubagus Muhammad Aziz Soelaiman, S.T., M.A.  
Research assistant : Hadi Ilhami Imanullah, S.T.; Yogie Dwimaz, S.T., M.T.; Marisa Sugangga, S.T., M.T.;  
Garnida; Musyaffa Rifqi Harimardika, S.Ars.

### ABSTRACT

Currently, there are standards for planning of Transit Oriented Development (TOD) areas. These standards are published by various research institutions and governments in various developed countries. In Indonesia, the standard for planning for transit-oriented areas usually refers to the Regulation of the Minister of Agrarian Affairs and Spatial Planning (ATR) number 16 of 2017 concerning Guidelines for the Development of Transit Oriented Areas. The research aims to find an instrument to assess the proposed development of a city area into a TOD area. There are currently many proposals for the development of the TOD area in Greater Jakarta and other big cities in Indonesia, because several areas around the planned mass public transport station are suitable to be developed as a TOD area. The construction of the MRT and LRT lines is the trigger for this development. The local government will be assisted in the process of evaluating the proposed TOD area plan, whether it will comply with the rules of a transit-oriented area. The research begins by selecting a series of TOD area design criteria that are suitable to economic, social and climatic conditions in Indonesia. The selected criteria were tested by using the space syntax method to assess the existing areas that were planned to be developed. The results of the assessment of the existing area are then compared with the assessment of the area according to the condition of the plan as a TOD area.

Keywords: public transit area, space syntax analysis, spatial configuration

### 5.3 A Sustainable Approach for Endangered Heritage – Batujaya Temple Area Conservation, Indonesia

Head of the team : Dr.-Ing. Erika Yuni Astuti, S.T., M.T  
 Team members : Ir. Baskoro Tedjo, MSEB, Ph.D., Feysa Amalia Maharamis Poetry, S.Ds., M.A.  
 Research assistant : Pratomo Aji Krisnugrahanto, S.S, MPWK, Leyna Ayushitarum, S.T., M.R.K.

#### ABSTRACT

In developing countries in South East Asia, their economy mostly relies on intensive labor industries. A competitive labor market compared with other countries has become the basis of policy to increase income. It is not a rare case that fertile land that has been cultivated is then converted into an industrial area, only due to its accessibility for transportation, water, and labor. As economics dominates every aspect of planning decision, this has also affected heritage areas. Historically, Karawang was agricultural land – one of the surplus areas for rice fields. Its location at the periphery of Jakarta resulted in the expansion of the megacity, with a greater demand for support, namely housing for people who work in Jakarta, and consumer goods, including heavy industry. This phenomenon is not new in Indonesia; agricultural land was seen as having less value compared with that for industrial purposes. Sadly, in this same area, beneath this fertile land lies an endangered thousand years of heritage. The temple was built with red soil – which gives an indication of agricultural history. Thus, this research shows that conflicts of interest have always been the main problem of conserving heritage.

Keywords: Batujaya Temple; Heritage Area; Heritage Future, Indonesia

## 5.4 Riverine Landscape Planning Model in Tropical Lowland

Head of the team : Medria Shekar Rani, S.T., M.T., Ph.D.  
Team members : Dr. Firmansyah, S.T., M.T.; Asep Darmana, S.T.; M.Ars. Ira Prayuni, M.Ars.L.;  
Jayanti Kusuma Wardhani, M.Ars.L.  
Research assistant : Annisaa Shabrina; T. Hasyiral Haikal

### ABSTRACT

River corridor has important ecological functions, including flood regulation. However, rapid development adjacent to the river channel, indicated by the land cover and land-use changes in the area, has a high probability to influence the river discharge which causes floods. In the context of the peri-urban area, landscape changes occur due to the development and growth of the near city. This research assesses the riverine landscape planning model in tropical lowlands, using a case study area at the segments of Winong River, Cirebon Regency, Indonesia. The research was conducted in several stages, which encompass literature study, formulating a framework for riverine landscape spatial analysis, identifying riverine landscape structure, assessing flood regulation in the study area, developing land cover maps, analysing factors influencing the flood regulation, and assessing potentials and problems from the model. The research outcomes were utilized to recommend the riverine landscape planning model for the case study area, providing a planning and development plan proposal for the site and other areas with similar contexts.

Keywords: river corridor; flood; landscape planning; model

## 5.5 A New Urban Greening Scheme Approach: Increasing Quantity and Quality of Urban Green Space

Head of the team : Dr.GES. Mohammad Zaini Dahlan, S.P., M.Si.  
 Team members : Ir. Budi Faisal, MAUD, M.L.A., Ph.D.; Sofia Chaeriyah, S.T., M.T.;  
 Ina Winiastuti Hutriani, SP, M.Ars.L.; Mira Amelia, S.T., M.Ars.

### ABSTRACT

Urban green spaces are perceived as vital urban infrastructure for healing from the spread of the COVID-19 disease. Regarding the limited availability and the high price of land in urban areas, local governments are encouraged to find alternative solutions that are good, appropriate, and fast to achieve the target of 30% green open space in their area. Based on the Green City Program report by the Ministry of Public Works in 2015, several cities were creatively assessing and determining the components of green open space based on the city's natural character and stipulated in local regulations. This causes the diversity of existing green open space data in each city which cannot be compared validly. Furthermore, along with technology development in providing more environmentally friendly elements, the term "green open space" is considered to limit improvement efforts in the quantity and quality of urban green spaces. Therefore, this descriptive-qualitative study was conducted to find a new paradigm in defining green open spaces through benchmarking methods based on selected cities' strategic and practical policies. The study results found the term "green space" in general as a response to the spatial problem that does not limit the function and utilization of the space, such as the condition of being open or closed by a tree canopy, owned by public or private, or furnished with vegetation and/or hardscape elements. However, we consider that implementing this breakthrough idea needs to be supported by related scientific studies and best practices relevant to the environmental context, both ecological, social, and cultural aspects. Consequently, a deeper study in realizing the green space concept needs to be carried out, primarily related to proving that this concept can increase both the quantity and quality of the urban green space.

Keywords: Urban greening scheme, Urban landscape, Green space, Green infrastructure

## 5.6 Green Infrastructure Policy Study: A Case Study in Bandung City

Head of the team : Ir. Budi Faisal, MAUD, M.L.A., Ph.D.  
Team members : Dr. Niken Prilandita, S.T., M.Sc.; Dr.GES. Mohammad Zaini Dahlan, S.P., M.Si.;  
A'lam hasnan Habib, S.T.; Ina Winiastuti Hutriani, SP., M.Ars.L.;  
Mira Amelia, S.T., M.Ars.; Sofia Chaeriyah, S.T., M.T.  
Research assistant : Hariman Napitupulu; Muhammad Irsyad Nazhif

### ABSTRACT

As an environmental-friendly green and blue open space planning approach, the development of Green Space and Infrastructure in Indonesia is still facing some challenges. This shows the importance of drafting policy regulations supporting Green Space and Infrastructure implementation in Indonesia, especially in urban areas experiencing massive infrastructure development and limited green spaces. This study aims to examine regulations and policies in Indonesia related to the planning and implementation of Green Space and Infrastructure in the urban context. Further, this research discusses the challenges in implementing the Green Space and Infrastructure Planning Guidelines. This qualitative-descriptive research was conducted using a normative and empirical legal perspective approach through data collection (literature review and interviews), data identification, validation, and presentation. The study indicates that the Bandung Basin area has not fully realized the Green Space and Infrastructure approach in regional planning. Most of the Green Space and Infrastructure's nomenclature is not yet confirmed in the Spatial Planning document. Considering the urgency of Green Space and Infrastructure in the urban context, this study proposes the integration of Green Space and Infrastructure planning in regional regulations related to a multi-scale and contextual approach. This study concludes that a more detailed relevant policy study is needed to determine the components of regional policies related to Green Space and Infrastructure planning in developing their urban areas. The urban area is a dynamic living space that develops with population growth and changes in population activities. Urban areas as the centre of regional growth face various problems that threaten future sustainability. Climate change and environmental degradation as a consequence of ongoing development have resulted in a decrease in the carrying capacity and feasibility of urban life to support the lives of its residents. The Green Space and Infrastructure paradigm promotes an integrating ecological function in built areas and strengthens ecological values in natural areas to realize sustainable development. As an environmentally friendly green and blue open space planning approach, Green Space and Infrastructure in Indonesia still face challenges. This shows the importance of drafting policy regulations supporting Green Space and Infrastructure implementation in Indonesia, especially in urban areas experiencing massive infrastructure development and limited green spaces. To deal with this challenge,

the Ministry of Public Works and Settlement initiated the Green Space and Infrastructure Planning Guidelines in 2018. Therefore, this study aims to examine regulations and policies in Indonesia related to the planning and implementation of Green Space and Infrastructure in the urban context and discuss the challenges in implementing the Green Space and Infrastructure Planning Guidelines by a case study in Bandung City. Qualitative-descriptive research was conducted using a normative and empirical legal perspective approach through data collection (literature review and interviews), data identification, validation, and presentation. The study indicates that Bandung City has not fully realized the Green Space and Infrastructure approach in the Regional Spatial Plan and the Detail Spatial Plan document. Most of the Green Space and Infrastructure's nomenclature is not yet confirmed in both regulation documents. Considering the potential and necessity of Green Space and Infrastructure in the urban context, this study proposes the integration of Green Space and Infrastructure planning in spatial regulations related to a multi-scale and contextual approach. Also, this study concludes that a more detailed relevant policy study is needed to determine the components of regional policies related to Green Space and Infrastructure planning in developing their urban areas.

Keywords: Green infrastructure; Development policies; Bandung Basin; Ecoregion

## 5.7 Doodling Textile Doodling LiFe - Cultivating compassion of living in Lasem Batik heritage area, toward a better wellbeing for all

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.;  
Feysa Amalia Maharamis Poetry, S.Ds., M.A.;  
Angela Upitya Paramitasari, S.T., M.R.K.; Leyna Ayushitarum, S.T., M.R.K.  
Research assistant : Hakam Kurniawan

### ABSTRACT

If one might have experience observing women in producing craft, for example weaving, drawing, creating pottery, one would see the serenity and peace during this art production. It is not merely a task, it was a presence of being, one might linger to other thinking then its work, the art itself would have been damaged. Those vibrant lives are also found in Batik crafting, it is an art of drawing patterns in a textile with a delicate procedure. The artist would remain calm, projecting their thought on the textile that they hold, for sure it is not an express like work in this era. As the world becomes faster, more efficient, people might feel dreadful with daunting tasks, as if they never end. Therefore, such an effort of preserving heritage by promoting how it works and having a traditional way of calming mind through doodling. In the Indonesian context this work requires a peaceful mind, no anger, remorse, and resentment during the production is interesting to research. This research observed the potential of these questions: Does their living environment contribute to the process? Or this work might be carried without any particular requirement due to the socio-culture of the people? This research aimed to seek a better living environment for the inhabitants, hence it would examine the layout of the area and also the narrative of the people.

Keywords: heritage and wellbeing, inhabitants' narrative, batik, Indonesia

## 5.8 Accessibility to Greenery in Urban Neighborhoods: A Case Study in Tamansari District, Bandung City, Indonesia

Head of the team : Medria Shekar Rani, S.T., M.T., Ph.D.  
 Team members : Dr. Ir. Woerjantari Kartidjo, M.T.; Dr.Eng. Mochamad Donny Koerniawan, S.T., M.T.;  
 Dr. Firmansyah, S.T., M.T.; Ira Prayuni, M.Ars.L.  
 Research assistant : Kharisma Muliati Putri, S.T.; Rianti Tiarasari, S.T.

### ABSTRACT

The importance of access to the greenery in an urban environment, which includes supporting health and well-being, increasing biodiversity, recreation, and providing climate regulation, has been widely studied. However, most assessments have been conducted on parks and open spaces, and the exposure to street greenery is less considered in the planning practices. This research aims to examine the accessibility to greenery and the potential implementation of green infrastructure in urban neighborhoods. Tamansari district and its surrounding areas in Bandung city are selected as a study site, displaying different characteristics of urban morphology between the neighborhoods. Urban Network Analysis (UNA) had been used to model betweenness centrality, indicating possible passersby in the area. The density of centrality indices was then computed before the outcome was overlaid with a normalized difference vegetation index (NDVI) from 6-m resolution SPOT satellite imagery. The result illustrates areas with a medium range of betweenness results (1,967 - 5,297) and high NDVI values (0.28 - 0.65) are scattered in the study area. On the other hand, the dense neighborhoods near the Cikapundung river valley have high accessibility, as denoted by betweenness values (5,297 - 12,865), but low greenery, suggesting more priority should be given to these areas for further improvement. This study also demonstrates opportunities to employ pervasive geospatial and remote sensing data into the analyses and contributes to green infrastructure planning for improving urban livability.

Keywords: neighborhoods; urban network analysis; urban green; NDVI; green infrastructure

## 5.8 Improvement of Green Building Policy and Low Carbon Cities towards Banda Aceh as an Islamic Smart City

Head of the team : Dr.Ing. Ir. Heru Wibowo Poerbo, MURP  
Team members : Tubagus Muhammad Aziz Soelaiman, S.T., M.A.; Dr. Ir. Woerjantari Kartidjo, M.T.;  
Dr.Eng. Mochamad Donny Koerniawan, S.T., M.T.;  
Angela Upitya Paramitasari, S.T., M.R.K.; Nadya Victoryka, S.T., M.T.  
Research assistant : Fatma Rasyidatunnisa

### ABSTRACT

Population growth and rapid urbanization have had many impacts, one of which is an increase in carbon production. The concept of a Low Carbon City has been emerged as an alternative in maintaining the sustainability of an increasingly dense city without increasing carbon emissions, with one form of embodiment of the concept being the development of the green building concept. Several programs with the concept of Low Carbon Cities or Green Buildings have been carried out in various cities around the world, and one of them is in Indonesia. Banda Aceh as one of the cities in Indonesia that has become a pilot project for the study and development of low-carbon concepts in the Low Carbon Model Town (LCMT) Dissemination Phase 1 program by the Asia Pacific Economic Cooperation (APEC) in 2017-2019, also uses elements of green buildings as low carbon city indicator. As a continuation of the program, as well as a contribution to the community, especially the Banda Aceh City Government as partner in this program, there are two main activities carried out. Firstly, the implementation of virtual seminars as a dissemination of activities, and secondly the analysis of community readiness through questionnaires that distributed during the seminar activities. There were four main speakers who were involved in the seminar entitled "Policy and Implementation of Green Building and Low Carbon City Concept in Banda Aceh", such as Dr. Ir. Retno Gumilang Dewi, M.Env.Eng.Sc. from the Center for Energy Policy (PKE) ITB, Ir. John Budi H. Listijono, M.Eng.Sc., IPU from the Indonesian Green Building Experts Association (IABHI), Ir. Jatmika Adi Suryabrata, M.Sc., Ph.D. from Gadjah Mada University (UGM), and Jalaluddin, ST., MT., from the Department of Public Works and Spatial Planning (PUPR) of Banda Aceh City. The materials presented can be used as inputs for academic studies and regulations related to green buildings. Besides gaining more knowledge, this activity is also expected to increase the capacity and awareness of stakeholders in developing a better and more efficient city.

Keywords: Banda Aceh, green building, low carbon city, LCMT

# **Housing and Settlement**

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

# Housing and Settlement Research Group

Dr.Ir. Agustinus Adib Abadi, M.Sc  
Ir. Wiwik Dwi Pratiwi, MES, Ph.D  
Ir. Tri Yuwono, M.T.  
Mohammad Jehansyah Siregar, S.T., M.T., Ph.D  
Dr. Allis Nurdini, S.T., M.T.  
Samsirina, S.T., M.T.  
Sri Suryani, S.T., M.Sc.

**H**ousing 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 Mapping Adequate Housing Affordability Issues of Low-income Households in Indonesia

Head of the team : Dr. Ir. Agustinus Adib Abadi, MSc  
 Team members : Dr. Allis Nurdini, ST., MT., Ir. Tri Yuwono, MT., Adhitya Rizky Isnandya, ST., M.Sc.  
 Research assistant : Ishthifa Robbi, Ratu Sonya Mentari Haerdy

### ABSTRACT

Every household, including the low-income, needs adequate, affordable housing; hence, it is customary to define housing affordability diversely. Housing is the primary necessity that its fulfilment will correlate thoroughly with family or individual conditions. However, not every household could afford such housing as a social, economic, and cultural place for family development, as most of it is unaffordable. Therefore, the Indonesian government has established several schemes, including KPR FLPP, to provide so-called affordable housing from an economic perspective. However, housing affordability is beyond the economic dimension, as it is a subjective and contextual reality, depending on the household characteristics. Thus, this research aims to extensively identify the perceived housing affordability in the different contexts of low-income households. The research was conducted with a qualitative approach, investigating an in-depth interview of low-income households in the urban area of Bandung. The results showed several patterns that identify factors beyond housing prices, including the proximity to the workplace, family, housing and neighbourhood condition, and the households' housing goal. Those factors also become the trade-off of the households to afford their housing. Hence, several households are willing to pay more to ensure those factors are acquired as well.

Keywords: housing, affordability, low-income, subjective, contextual, Bandung

## 6.2 Changes of Millennial's Housing Choice Before and During Pandemic Corona Virus Diseases – 19 in Jakarta and Bandung Metropolitan Area, Indonesia: Implication for Housing Provision

Head of the team : Dr. Allis Nurdini, ST., MT.

Team members : Amelia Tri Widya, Mutia Ayu Cahyaningtyas, S.T.

### ABSTRACT

The need for homes with decent infrastructure in urban areas is still very high, especially for the younger generation with the largest population in Indonesia. In line with that, the development of high-density housing in urban areas that can also anticipate the dynamics of the needs of this pandemic period is an effort that needs to be continuously improved. Therefore, knowledge about the basics of urban housing plans and plans that are contextual to the Indonesian situation needs to continue. This study aims to identify the occupancy options of millennials in urban Indonesia, especially through study cases in Jakarta and surrounding areas (Jakarta-Bogor-Depok-Tangerang-Bekasi or abbreviated as Jabodetabek) and Bandung Raya. Data collection was carried out repeatedly, namely before the pandemic in 2019 and during the pandemic in 2020 with millennial respondents. The number of respondents collected before and during the pandemic was 150 and 143, respectively. The collected data is then analyzed in a multivariate distribution and regression basis. The results showed several changes in pre-occupancy typology options and during the Covid-19 pandemic. Overall, the study concluded that millennials in the case of the study are mostly low-income people (MBR), the price of occupancy in demand has special criteria, preparing to live in high-density dwellings starting from the mid-rise phase of housing, as well as the tendency to prepare to live in transit-oriented locations or connect with public transportation services that mark Changes in mobility behavior. This research is expected to contribute to providing input for planning and designing future housing as a segment that has been declared backlog in urban areas.

Keywords: residential choice, millennial generation, Jabodetabek, Bandung Raya

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# **Building Technology**

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

# Building Technology Research Group

Prof. Dr. Ir. Sugeng Triyadi, M.T.  
Dr. Ir. Surjamanto W, M.T.  
Dr. Ir. Lily Tambunan, M.T.  
Dr. -Ing. Andry Widyowijatnoko, S.T., M.T.  
Permana, S.T., M.T.  
Dewi Larasati, S.T., M.T., Ph.D  
Dr. Eng. Mochamad Donny Koerniawan, S.T., M.T.  
Ir. Robby Dwiko Juliardi, M.T.  
Dibya Kusyala, S.T., M.T.  
Rakhmat Fitranto Aditra, S.T., M.T.  
Suhendri, S.T., M.Sc  
Hafshah Salamah, S.T., M.T.

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 BIM Utilization in Achieving Energy Efficiency on Vertical Housing Design

Head of the team : Dewi LarasatiDewi Larasati, S.T., M.T., Ph.D.  
Team members : Prof. Dr. Ir. Sugeng Triyadi S., M.T.; Fauzan Alfi Agirachman, S.T., M.T.;  
Ir. Robby Dwiko Juliardi, M.T.; Anjar Primasetra;  
Deny Wahyu Saputro Wibowo, S.Ars.; Fathina Izmi Nugrahanti, S.T., M.T.;  
Yulita Hanifah, S.T., M.T.

### ABSTRACT

The Indonesian construction industry has entered phase 4.0, marked by the acceleration use of information technology. The most often discussed in the construction industry 4.0 is Building Information Modeling (BIM). Information about building energy is in the 6th dimension (6D) of the BIM level, building energy consumption can be projected by BIM in an integrated manner since the building design phase. This paper aims to provide an overview and explanation of the benefits of BIM in building energy efficiency during the building design phase. The object of study of this research is vertical housing such as flats and apartments that the constructions growth continues to increase from year to year. The methodology of the research is a systematic literature review method that starts from mapping research novelty from 3000 papers. The data from the literature review were processed using Publish or Perish software and also Vos-Viewer. Furthermore, an in-depth discussion with stakeholder was conducted to formulate best practices. It shows that several BIM features are helpful for quickly assessing building energy. The result indicates that BIM utilization can be used to select the most efficient design alternatives, by applying as energy simulation features, material take-off information, and the development of BIM plug-ins for assessing green building criteria. Other findings indicate that the level of detail in developing the BIM (Level of Development) model is also an important factor in the energy efficiency optimization process. In addition, the collaboration aspect and the BIM framework are also an important part of the building's energy efficiency process.

Keywords: Energy Efficiency, Industry 4.0, BIM, Vertical Housing

## 7.2 The efforts to get the same opportunity in sunlight and wind in city dense area

Head of the team : Dr.Eng. Mochamad Donny Koerniawan, S.T., M.T.  
Team members : Dr. Ir. Lily Tambunan, M.T.; Irma Handayani Lubis, M.Sc.  
Research assistant : Anjar Primasetra, S.T., M.T.; Vebryan Rhamadana

### ABSTRACT

Projected urbanized population in Indonesia by 2050 impacted a denser settlement in the city. This phenomenon will create more slum area, while the existing slums still need enhancement in various aspect. Urban kampung often become slum area, has dense building configuration, resulted a lack of sun exposure and fresh air. Moreover, these advantages could increase an unhealthy life of the occupants. To face the challenge, slum upgrading needs to be considered. Focusing in the built environment planning and design, this project seeks the public health problems and solutions in slum area by finding the correlation between occupant's health condition and their living settlement, especially by looking at the air movement and natural light exposure passing through the settlement. Case study located in Bandung as slum area with slope area contour and average temperature 28 C. Simulation and modelling of the area using these both indicators (sun light and wind) will be done to understand the existing contextual information, also the projected masterplan of the area. Based on the collected information, area and building typologies will be discovered. Furthermore, the area development planning and building design will be made, by making prototype with selected building settlements as sample. Prototype of this project consist of re-arrangement of building mass configuration through land consolidation or by re-configure the building openings and material, particularly in environmental-friendly manners and inexpensive (applicable by the low-class society).

Keywords: slum area, public health, air flow, daylight

## 7.3 Application of Folding Lattice Structure in the Design of Nurul Hasanah Aceh Mosque, Palu

Head of the team : Dr.-Ing. Andry Widjowijatnoko, S.T., M.T.  
 Team members : Hafshah Salamah, S.T., M.T.  
 Research assistant : Muhammad Isa Tsaqif

### ABSTRACT

Earthquake, tsunami and liquefaction in Palu, Central Sulawesi in September 2018 destroyed many buildings including Nurul Hasanah Mosque. This mosque is located in Pengawu Village, Tatanga District. The provincial government and the community Of Aceh were able to collect donations to rebuild this building and later on is named as Nurul Hasanah Aceh Mosque. Palu has a great potential for timber. Thus, to use the potential resources of timber, the mosque was designed with wooden material. The design of the mosque is inspired by the traditional architecture of Palu and Aceh region. It was combined in a geometric pattern of Islamic architecture as a symbol of friendship between the two provinces. The 20 x 20 meters wide-span roof structure of this mosque was redesigned with wide-span folded lattice structure. The dense rafters formed rectangular, or parallelogram planes combined with a folding structure. It created a wide-span structure. Part of this sloping roof is supported by a steel pipe structure in the middle of the four sides that form part of the entrance and mihrab. Most of the roof trusses are channeled to reinforced concrete columns which also serve as wall trusses. These columns are made not too high and have folds in the plan for resistance to lateral roof loads. Roof frame is the part of the building structure that consumed the longest time of construction time from procurement until erection process. Before determining the timber that will be used, its availability around the site was done. After several species of timber was found, compression test was done in Tadulako University laboratory. Kumea Batu (*Manilkara merrilliana* H.J.L) timber was finally chosen for frame structure component because it has the highest strength than others timber in the market. In the design, the largest timber block was 18 meters with thickness of 9 cm and a height of 60 cm. From the availability of the material, the component was contained from 3 layers which in outermost layer was a combination of 2 pieces of 3 x 30 boards and the middle was a combination of 2 boards of 3 x 15 cm plus 1 boards of 3 x 30 cm. After those components was ready, they were marked to prevent errors and epoxy type glued to each other components. This gluing process was done manually by wooden vise. The timber that has been glued together was strengthen with the addition of screws and bolts. It was divided into several sections for mobilization process from the factory to the construction site. After components arrived in the site, it was reconnected and reinforced with 3 mm iron plate on the bottom side. The installation of other iron connections that had been fabricated at the factory. The erection process was carried out manually by using tack pulley. The construction was finished in total 21 months and the roof construction need to be constructed in 11 months.

Keywords: folded lattice structure, construction, local labor, timber structure

## 7.4 Production Ecosystem Development for Modular Wood Innovation Building

Head of the team : Permana, ST, MT.  
Research assistant : Thomas Handoko

### ABSTRACT

The knockdown house made of modular wooden blocks is the result of research from the SAPPK ITB Building Technology Expertise Group. As an innovative product, new component profiles are capable of compiling wall and roof areas to produce various customized building forms. This building component consists of two systems, namely Modular Wood Blocks with Registered patent No. P00201700592 which forms a Modular Wood Wall and Board system with Registered patent No. P00201609045 which forms the roof system. The production of houses made of modular wood will be effective and efficient if it is supported by an integrated production ecosystem from upstream to downstream. With a comprehensive approach, the production process can be faster, easier and cheaper. The production process can be started from exploring the involvement of processes in the upstream sector, namely the wood craftsman community in the form of workshops and in the downstream sector, namely a marketing system that can bring the production of this modular wooden house closer to consumers. For this reason, this research and community service forms an initial supporting instrument in the form of a road map and SOP (Standard, Operational, Procedure) which shows the scope and stages of work of each party, as well as how the relationship between parties in the integrated work chain in the Production Ecosystem scheme to assist the realization of the building at each stage. The method applied in this research is field exploration and collaborative-experimental together with the parties. Researchers conducted surveys, interviews and discussions as well as conducted FGDs to evaluate the work of each part in producing a modular wooden building production ecosystem. The building produced through this ecosystem exercise process is a Multipurpose Building, measuring 5X8 square meters. Where from the source of raw materials, processing into raw materials and the manufacture of modular board block components are made in a series of ecosystems by community workshops, then delivered in stages to the location, and assembled by conventional workers, so that the production chain can be seen from upstream to downstream. The output of this research is an inventory of the potential of all parties in a series of ecosystems. So that the potential of wood production raw materials is mapped, raw material treatment, wood plank block profile processing and continued involvement of stakeholders to form a modular wood building component production ecosystem, namely wood farmers, raw material processing parties, workshop owners, workshop workers, delivery services, modular building assemblers, and installed building owners. The target achieved is the assembly of stakeholders in a series of production ecosystems that can be seen from the

flow of production lines from upstream to downstream to form a production supply chain, where the ecosystem that has begun to manifest in this research has succeeded in simulating physical products of modular wooden buildings.

Keywords: Ecosystem, Production, Building, Modular Wood. Stakeholders, supply chain



# **Architectural History, Theory & Criticism**

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**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  
Dr. Eng. Bambang Setia Budi, S.T., M.T.  
Indah Widiastuti, S.T., M.T., Ph.D  
Dr. Eng. Arif Sarwo Wibowo, S.T., M.T.  
Dr. Ir. Christina Gantini, M.T.  
Feni Kurniati, S.Ars., M.T.

**A**rchitectural 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 Formulating locality for theorization of Local Architecture in Indonesia.

Head of the team : Dr. Ir. Christina Gantini, M.T.  
 Team members : Prof. Ir. Iwan Sudradjat, MSA, Ph.D.; Prof. Dr.-Ing. Ir. Himasari Hanan, MAE.;  
 Indah Widiastuti, S.T., M.T., Ph.D.; Feni Kurniati, S.Ars., M.T.;  
 Ahmad Zuhdi Allam, S.T., M.Hum.  
 Research assistant : Rizki Dwika Aprilia, S.Ars., M.Ars.; Nita Dwi Estika, S.T., M.T.

### ABSTRACT

The term local architecture is often used in various discussions about indigenous architecture in Indonesia, but there is not yet a firm base to define the subject. This paper is based on a research which was aimed at building a theoretical framework on “local architecture”, through literature reviews. Exploration is begun by elaborating the concept of “locality”, which is referred to Indonesian dictionary (KBBI) as region, place, condition, or situation in the text that describes the actors playing their roles. Geography and ecology lend base to frame locality, in horizontal and vertical context. Horizontally, Indonesian locality refers to the cartographic and geotectonic scope whereon the present Republic of Indonesia sits. The area is distinguished by its relative position to the Wallace line. Vertically, Indonesia’s locality refers to the relative altitude - above sea level - namely: the coastal area (below 200 masl), lowland (200-700 masl), and highland (above 700 masl). To frame its architectural authenticity, the case to be explored to be examined, namely: 1) belief systems, 2) social systems, 3) ecology and livelihoods, and 4) craftsmanship. The second stage is testing the use of “local architecture” in the context of “localities in Indonesia, by projecting the cases, on the theoretical formulation obtained. It yields a tentative mapping of architectural localities - using the available studies, with a special focus on highland and lowland “Local Architecture” is an attempt of theorization which refers to geographical-ecological framework. The substantive examination considers four aspects of cultural examination. The contextual scope of Indonesia is the territory of the Republic of Indonesia. From the test results on the highland and lowland architecture are: 1) horizontally, the architecture to the west of the Wallacean line is dominated by a typology of big houses, with curved ridge-roofs. While in the east is dominated by the typology of small houses with converging roofs; 2) vertically, authentic architecture generally accumulates in the highland category. 3) the living culture of the lowlands is dominated by major rice farming and the foundation of community-kinship organizations, and the highland, forest source and horticulture.

Keywords: local architecture, locality, Indonesia, highland, lowland, Indonesia



# **Economics System & Modelling**

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**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.  
Dr. Munadjat, S.Pd., M.M.  
Dr. Ir. Siti Herni Rochana, M.Si  
Dr. Ir. Kartib Bayu, M.Si  
Ade Triyasa, S.E., M.Si  
Pringgo Dwiyanoro, S.E., M.M., M.Si  
Jamaludin, S.E., M.M  
Deni Nugraha, S.E., M.Si  
Ir. Edi Kusniadi, M.P.

**E**conomic 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 Formulating locality for theorization of Local Architecture in Indonesia.

Head of the team : Dr. Ir. Kartib Bayu, M.Si.  
 Team members : Prof. Dr. Yogi; Pringgo Dwiyanoro, S.E., M.M., M.Si.; Ir. Edi Kusniadi, M.P.;  
 Deni Nugraha, M.Si.; Ari Nurfadilah, M.T.; Ari Munawar, S.Ds.;  
 Gilang Fauzi Maludin, S.T.P.  
 Research assistant : Seny Soniaty

### ABSTRACT

The outbreak of the Covid-19 Pandemic has taken a toll on various commodities, including fresh oyster mushrooms. This was caused by late shipments and mainly the inherent feature of easily-spoiled oyster mushrooms. The impact was the low selling price of fresh oyster mushrooms and many unsellable ones. The main identifiable problem is the mushroom farmers in Sumedang Regency are not managing their production and marketing lines directly. It creates a gap in the farmer's information about how much is needed in the market and how much the farmers can supply. On one hand, the farmers are having surplus productions because previously shipping lines and buyers are not available as the main source of information, on the other hand, many buyers lost their suppliers because of the shipping lines cut off due to pandemic lockdown. The purpose of this innovation is to explore the features of mushroom businessmen and their condition after the pandemic outbreak, the impact of the outbreak on their activities, and build an information system that eases their production and marketing management based on digital technology. The methods we use to explore are in-depth interviews and field observations. As for developing the platform, we design and develop the platform utilizing the WordPress framework, train the farmers to use the platform, and test the functionality, implement and advise the farmers on the usage of the platform. Every stage of this activity is supported by research and analysis. The main unit of analysis comprised of 21 mushroom farmers in Sumedang Regency, while the analysis method was qualitative and quantitatively utilized. The result shows that features of a businessman related to age, education, and experience in doing mushroom-related business are adequately available to manage local business professionals. The revenue after the outbreak is 10,839,524 IDR on average per month and uses 3 persons per business. During the outbreak, the mushroom business is still operating, albeit being low in production capacity. The development of production and marketing management of oyster mushroom information system has accommodated a variety of objects that are being accounted as commodities and patterns of economic activities of mushroom businessmen. The implementation of this system has been able to meet the needs of users, mostly understand how to operate and utilize the platform and the information provided has been deemed useful and met with the needs of mushroom businessmen.

Keywords: Production Management, Marketing Management, Oyster Mushroom, Digital Platform