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Home Location Preferences in Prone Areas (Coastal Case Study of Bandar Lampung City: Bumi Waras District)

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ABSTRACT

Cities are facing increasing challenges as a result of the effects of climate change. Climate change is causing changes in rainfall patterns, rising sea levels, and rising temperatures in Indonesia, resulting in tidal flooding in inundated coastal areas as well as urban infrastructure. Coastal communities in Bumi Waras district Bandar Lampung City choose to live in inappropriate informal arrangements in disaster-prone areas such as those affected by abrasion, tidal waves, and tsunamis. The population of this disaster-prone area is estimated to be 3000 people, and this number is growing every year. This research aims to discover the factors and history behind why this population continues to live in disaster-prone coastal areas. The structure equation model (SEM) was used to analyze the data in this study, with five factors and 21 variables tested. There were a total of 300 samples collected. Humans (M), with variables of biological needs (M1), perceptions and feelings (M2), emotional connections (M3), and social factors (S), with sub-variables of economy (Economics; S4), and community (S2), are the most influential factors in choosing a place to live on the coast of Bandarlampung City. In 1940, the Bumi Waras district began to develop its housing system. People live in slums due to a lack of housing, economic constraints, and the fact that immigrants do not have enough money to buy or inherit land.

Keywords: Home Location preferences, Prone Areas, Structure Equation Model (SEM)

ABSTRAK

Kota-kota menghadapi tantangan yang meningkat dari dampak perubahan iklim. Di Indonesia perubahan iklim meningkatkan perubahan pola curah hujan, meningkatnya permukaan air laut, kenaikan suhu yang mengakibatkan banjir rob di wilayah pesisir yang menggenangi permukiman serta infrastruktur perkotaan. Masyakarat pesisir di Kecamatan Bumi Waras Kota Bandar Lampung memilih untuk tinggal di permukiman informal yang tidak layak dan di kawasan rawan bencana seperti abrasi, rob dan tsunami serta berada di zona sepandan pantai. Penduduk yang tinggal di kawasan rawan bencana ini diperkirakan mencapai 3000 jiwa, dan ini terus bertambah setiap tahunnya. Penelitian ini berusaha untuk mengetahui faktor mengapa populasi ini tetap memilih tinggal di kawasan pesisir yang rawan bencana. Metode analisis data yang digunakan dalam penelitian ini yaitu Structure Equation Model (SEM) dengan 5 faktor dan 21 variabel yang diuji. Sampel yang diambil yaitu sebanyak 300 sampel. Faktor yang paling berpengaruh dalam pemilihan tempat tinggal di pesisir Kota Bandarlampung yaitu manusia (M) dengan variabel kebutuhan biologis (M1), persepsi dan perasaan (M2), Koneksi Emosional (M3) dan faktor sosial (S) dengan sub variabel Ekonomi (Ekonomi (S4), Komunitas (S2). Perkembangan sistem perumahan di Kecamatan Bumi Waras dimulai sejak tahun 1940. Kebutuhan akan tempat tinggal serta keterbatasan ekonomi dan sebagai orang pendatang yang tidak memiliki uang lebih untuk membeli tanah maupun tidak memiliki warisan inilah yang menjadi alasan masyarakat bermukim di lokasi tersebut.

***Kata kunci**: Prefensi pemilihan tempat tinggal, Kawasan Rawan Bencana, Structure Equation Model (SEM)*

1. INTRODUCTION

Urban population growth has been rapid but is now slowing down, according to recent research. The proportion of people living in cities doubled from 1950 to 2020, reaching about 50%, but it's expected to only reach 58% over the next 50 years (UN Habitat, 2022). The rapid urban population growth in Asia during the second century has led to urban explosions (Haque & Patel, 2018; Jayanthakumaran et al., 2019). Coastal zones face various hazards like sea-level rise, impacting densely populated areas more than inland regions due to urbanization and population growth. Investigating global and regional impacts on coastal populations by 2030 and 2060 is crucial considering their vulnerability and attractiveness for human activities (Neumann et al., 2015. Moreover, coastal regions exhibit unique population structures and developmental trends, partly influenced by global patterns of growth and urbanization. Coastal areas typically experience notably higher population density compared to inland areas (Balk et al., 2009; Small & Nicholls Robert J, 2003).

The coastal area of Bandar Lampung City is densely populated, to meet the need for housing, residents build houses on reclaimed land or simply rely on supporting wood, and these settlers do not have legal land ownership proof (Asian Cities Climate Change Resilience Network (ACCCRN), 2011). Urban coastal areas face escalating flood risks due to population growth, urban expansion, environmental degradation, and the effects of climate change. State authorities often struggle to meet the demand for flood risk reduction measures, including for small and medium-sized manufacturing enterprises (SMEs), which are crucial to urban economies in Indonesia (Djalante et al., 2021).

Indonesia is indeed vulnerable to climate change, particularly in relation to sea-level rise. The country is ranked fifth highest in the world in terms of the size of its population living in lower elevation coastal zones, and without adaptation, the total population likely to be exposed to permanent flooding by the period 2070-2100 could reach over 4.2 million people(The World Bank Group and Asian Development Bank, 2021). This ultimately contributes to increasing the risk of tidal flooding in these areas. The large number of people living near or engaging in activities related to the sea makes Indonesia vulnerable to climate change (Asian Cities Climate Change Resilience Network (ACCCRN), 2011). Climate change poses significant threats to marine ecosystems and coastal communities. Rising sea levels lead to erosion, inundation, and stronger waves, endangering coastal areas and marine life. Additionally, changing oceanic climates can disrupt fisheries, leading to decreased production

and risking small boats with shipwrecks (Ministry of National Development Planning/Bappenas, 2021).

Bandar Lampung City is located in a coastal area and faces various disaster risks associated with its geographical conditions. As you mentioned, high waves, erosion, and accretion are common problems in these coastal areas. The high disaster risk index in Bandar Lampung City, such as flood, earthquake, extreme waves, abrasion, and high extreme weather disasters, indicates that this city has a significant vulnerability to these disasters (BNPB, 2023). Bandar Lampung, as a coastal city, is highly vulnerable to the impacts of climate change and rising sea levels (Asian Cities Climate Change Resilience Network (ACCCRN), 2011). There are several sub-districts located in the coastal area of Bandar Lampung City, including South Panjang, Karang Maritim, Kangkung, Bumi Waras, and Sukaraja. These four sub-districts have similar characteristics, causing them to be heavily populated by informal settlements that do not meet proper standards. The majority of the population in these sub-districts work as fishermen, laborers, traders, and in other occupations (Ilmi et al., 2021).

According to the Climate Change Resilience Network/ACCCRN report (2010), it is known that the Kangkung and Bumi Waras sub-districts are categorized as sub-districts with medium to high levels of climate risk exposure (M-H). These results indicate that changes in social, economic, and biophysical conditions will affect the resilience of these two sub-districts, thereby increasing the potential for disaster risks in these areas (Asian Cities Climate Change Resilience Network (ACCCRN), 2011). The expansion of land use has resulted in excessive utilization, leading to a range of issues including social discord, disasters, and conflicts. Consequently, this scenario impacts the holistic development of the city (Cheng et al., 2022). The increase in Bandar Lampung City has resulted in excessive land use. As a result, people tend to choose to live on the outskirts of the city, which in turn can increase the risk of social disharmony, disasters, and conflicts. Moreover, this situation also affects the overall development of Bandar Lampung City.

Spatial planning plays a critical role in protecting individuals living in disaster-prone areas, with a particular emphasis on the implementation of settlement-related policies. A thorough understanding of the social, economic, environmental, and infrastructure preferences of communities is essential for designing safe and resilient settlements. For example, communities often prefer locations that offer better economic opportunities; however, they may not be aware of the associated disaster risks (Surjono et al., 2020). Such housing location preferences can serve as an indicator of the level of risk awareness within these communities.

By utilizing this information, urban planners can educate residents about the potential hazards associated with their chosen locations and advocate for relocation to safer areas, thereby enhancing overall community resilience (Surjono et al., 2020).

In Bandar Lampung City, coastal communities frequently opt for informal settlements that do not meet standards and are located in areas vulnerable to various disasters such as erosion, tidal flooding, and tsunamis. This research aims to assess the preferences of communities residing in disaster-prone areas. The study is expected to gather additional information on the factors influencing the decisions of people to remain in coastal areas susceptible to disasters. The focus of this research is to identify the elements affecting community preferences regarding their living environment and to model the decision-making process that leads them to continue living in disaster-prone coastal locations.

2. RESEARCH METHOD

The methodology used to formulate the first objective is using qualitative descriptive to examine the history of settled communities development on the coast of Bumi Waras District. The first and second objectives are Structural Equation Modeling (SEM). The first analysis methods as we call Structural Equation Model (SEM) is a statistical method developed from factor analysis and psychometric analysis. This method is used to test relationships between variables in a theoretical model. SEM allows users to test direct and indirect relationships between variables, as well as measure and estimate effects between latent and observed variables (Siswoyo Haryono & Parwoto Wardoyo, 2012). SEM employs five indicators from its Ekistics theory formulated by Doxiadis in 1970 (Anggraeni et al., 2014).

Doxiadis' theory is applied to the science of human habitation, providing a framework to depict the 'container' of habitable elements in terms of variable characteristics, frameworks, and networks, and in terms of human habitability and variable variables. Explaining the "content" of an element. Most discussions related to settlement elements, especially those conducted by the Indonesian government, only discuss the 'physical' aspects of settlements, such as building construction, access, facilities, and electrical networks. Therefore, here we will discuss the "content": people and communities. This research needs to examine whether all settlement elements play a role in influencing settlement formation in flood-prone areas. We also examine whether and how the 'content' variables, especially social structures, influence decision-making processes related to housing placement in flood-prone areas.

Figure 1. Research Location
Source: Compiler Analysis, 2023

This research conducts data collection, namely on weekdays or called weekdays and research time on holidays or called weekends. This research is carried out through three stages, namely preparation, data collection, facts and analysis process with a target implementation of 100 days. In the process, data collection was successfully carried out within 100 days with customized daily targets.

The study was conducted in two villages consisting of 300 households, comprising 13 RT in Kangkung Village and 14 RT in Bumi Waras Village. Bumi Waras stands out among the villages in the coastal region of Bandar Lampung City due to its elevated level of social vulnerability (Asbi et al., 2024). In this study, the respondents are residents who live or are above sea level. The approach used is random sampling. The criteria for respondents are heads of households, both husbands and wives who describe the decision to live or settle. The sampling method of this study uses the Isaac and Michael formula (Issac and Michael, 1981) to calculate the sample size from 300 total population family cards living in Bandarlampung City in 2022. In this study, using a 5% error rate with 1 degree of freedom so that the $\lambda 2$ value is 3.481. Based on the formula above, the sample needed for this study is 168.7 and rounded to 169 respondents. By using a margin of error of 5%, it can be ensured that the bias in the research is low and the number of samples used can represent households in Kangkung Village and Bumi Waras Village.

3. RESULT

3.1 Characteristics of Residences

The Bumi Waras district only has 2 types of land ownership, namely, Certificate of Ownership (SHM) and Certificate of Right to Build (SHGB). However, there are houses that do not have legal land ownership. The mean for land ownership is 2.11 with a standard error of the mean of 0.076. The median value for this is 3, which means the median value for land ownership is no legal land ownership with a mode value of 3. Mode can be interpreted as the data that appears most frequently compared to other data.

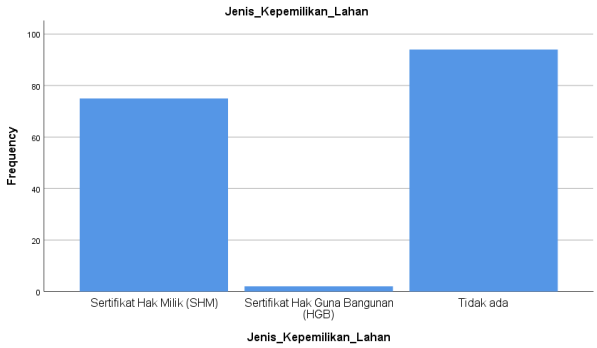


Figure 2. Types of Land Ownership

Source: Compiler Analysis, 2023

Housing suitability with a valid letter N amounted to 171. In this case, housing suitability is divided into two categories: (0) Not Suitable and (1) Suitable. With a mean value of 0.37, it means the average of unsuitable houses in the Bumi Waras district. The median value or middle value is 0, indicating that the middle value lies in the unsuitable category. The mode value, or the most frequently occurring value, is 0 (unsuitable). Land ownership is regulated by the Basic Agrarian Law (UUPA) Number 5 of 1960, which governs the fundamental principles of agrarian law. According to this law, land ownership can be classified into six types, including Certificate of Ownership (SHM), Certificate of Right to Build (SHGB), Certificate of Ownership of Housing Units (SHMRS), Right to Use, Girik or Petok, and Derivative/Secondary Land Rights. The most common type of land ownership in the Bumi Waras district is having a Certificate of Ownership (SHM) at 43.9%, followed by no certificate at 55%, and Certificate of Right to Build (HGB) at 1.2%.

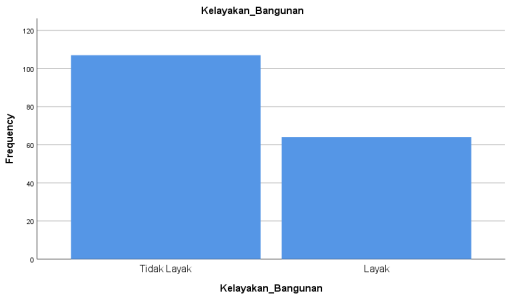


Figure 3. Building Feasibility
Source: Compiler Analysis, 2023

According to the provisions in Regulation of the Minister of Public Works and People's Housing of the Republic of Indonesia Number 22/PERMEN/M/2008 regarding the Minimum Service Standards (SPM) for the People's Housing Sector at the Provincial and District/City Levels, a house is considered habitable (RLH) if it meets requirements regarding structural safety, suitable location, and the health of its occupants. Additionally, the house must also meet the minimum area standards, which range from 7.2 m² to 12 m² per person. Data shows that 37.4% of buildings are deemed suitable, while 62.6% are deemed unsuitable.

3.2 The preference of residential areas for settled communities

Structural Equation Modeling (SEM) is a method of analysis that integrates various aspects of path analysis and factor analysis to predict multiple equations simultaneously. In path analysis, we analyze the system in a structural equation model using a path diagram that explains the mechanism of relationships between variables and decomposes covariances or correlations into direct and indirect effects (Kenneth A. Bollen, 1989). By using a structural equation model, we can predict and understand the complex relationships between variables in a system. This analysis allows us to decompose covariances or correlations between variables into direct and indirect effects, thus obtaining a deeper understanding of the mechanism of relationships between variables in a structural equation model (Kenneth A. Bollen, 1989).

Structural Equation Model (SEM) analysis is used for factors influencing the residential preferences of settled communities in the Bumi Waras District. The analysis used in this study employs Doxiadis' theory regarding five human settlement variables consisting of nature, human, social, framework, and network. The first variable is nature, which refers to ecosystems such as soil stability, topography, land, water supply, and climate conditions. The second variable consists of biological needs, perceptions, emotions, and moral values. The third variable is social, referring to density, social groups, customs and traditions, economic

development, education, health, administration, and law. The fourth variable is residential, referring to housing, educational facilities, markets, recreational facilities, cottage industries, and evacuation routes. The fifth variable is network, referring to infrastructure and public services such as clean water supply, electricity supply, transportation, communication, drainage, and waste.

The dependent variable (Y) is determined by the questionnaire results from respondents regarding their overall perception of the human settlement elements presented (Constantinos A. Doxiadis, 1970) (nature, human, social, framework, and network). The independent variables (M.A,S,T,J) are listed below (Anggraeni et al., 2014).

Table 1. SEM Independent Variables

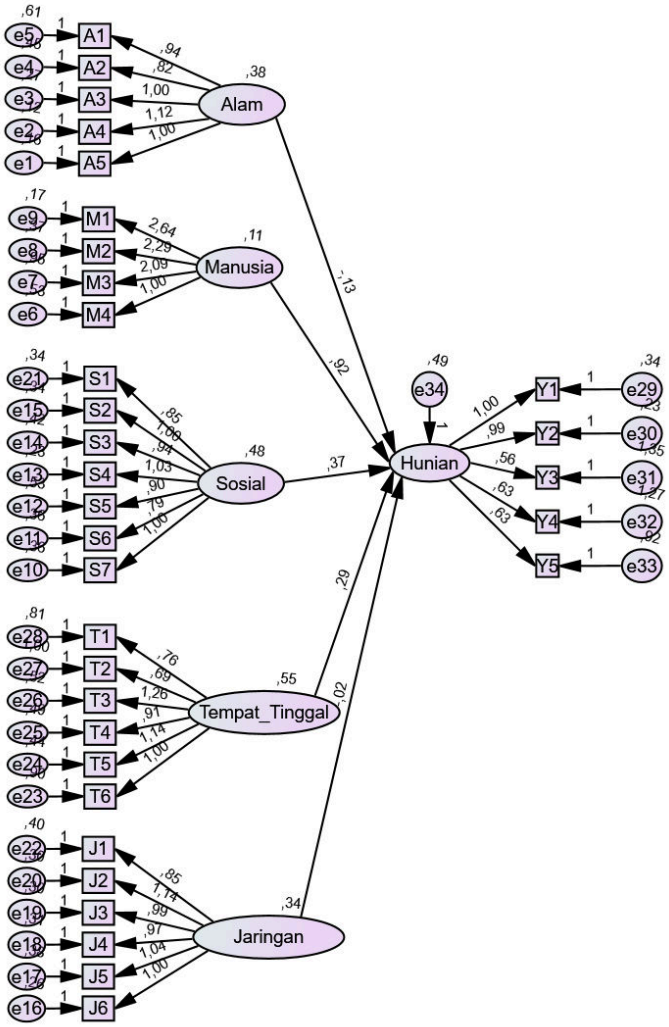
Category	Indicator	Code
Man	Biological needs	M1
	Perception and feelings	M2
	Emotional connection	M3
	Moral values	M4
Nature	Geology	A1
	Topography	A2
	Land	A3
	Water resources	A4
	Climate change	A5
Society	Population composition	S1
	Social groups	S2
	Customs and culture	S3
	Economic development	S4
	Education	S5
	Health services	S6
	Law and administration	S7
Shell	Housing	T1
	Community services	T2
	Markets and commercial services	T3
	Recreational facilities	T4
	Small-scale household industry	T5
	Disaster evacuation services	T6
Network	Water supply	J1
	Power supply	J2
	Transportation systems	J3
	Communication systems	J4
	Sewerage and drainage	J5
	Waste management	J6

During the meticulous analysis process, three distinct outcomes are poised to emerge, each illuminating crucial insights into the intricate dynamics at play:

1. Firstly, a comprehensive examination will be conducted to ascertain the contribution and significance levels of the sub-variables to the independent variable, employing

either Principal Component Analysis (PCA) or Common Factor Analysis (CFA) techniques, thereby unraveling the nuanced relationships inherent within.

2. Secondly, a meticulous evaluation of the connectivity between the independent and dependent variables will be undertaken through the application of a rigorous regression model, shedding light on the intricate interplay between these pivotal components.
3. Finally, a discerning exploration into the pattern model that manifests will be pursued via path analysis, offering profound insights into the underlying structural framework governing the phenomena under scrutiny.



Chi-Square = 1269.188, df = 490, P-Value = 0.000, RMSEA = 0.089

Source: Compiler Analysis, 2023

Figure 4. SEM Independent Variables

The results of the Structural Equation Model (SEM) conducted in AMOS 26 indicate that the elements influencing people to settle in the Bumi Waras District (in order of importance) are human, social, and framework factors. To elaborate further:

1. For the human variable, the sequentially influential variables are Biological Needs (M1), Perception and Feelings (M2), Emotional Connection (M3), and Moral Values (M4).

Biological needs for space, referring to the inherent requirement of sufficient living area and surroundings conducive to physical and mental well-being, are profoundly essential for the inhabitants of both the Bumi Waras and Panjang Districts. The behaviors and habits embraced by the community, which are viewed favorably, play a pivotal role in fostering a comfortable living milieu within these regions. This encompasses aspects such as maintaining good neighborly relations, characterized by effective communication and the rarity of criminal incidents. Additionally, the presence of economic parity further solidifies the appeal of these areas as desirable places of residence for individuals seeking a harmonious and fulfilling lifestyle.

2. For the social variable, the sequentially influential variables are Economic development (S4), social groups (S2), Customs and Culture (S3), healthcare services (S6), population composition (S1), and law and administration (S7).

The intricate parallels drawn between factors such as origin, destiny, current state, socio-economic attributes, and underlying causes wield a profound influence on the decision-making process concerning the selection of a location. Within this intricate tapestry, the established community dynamics and deeply ingrained traditions aimed at preserving ancestral territories emerge as vital contributors to the perpetuation of intergenerational continuity. Furthermore, the presence of robust social values exerts a significant sway over individuals' choices to persist in disaster-prone areas, despite the inherent risks involved. These multifaceted considerations underscore the complexity of location selection, where historical legacies, cultural ties, and communal resilience intertwine to shape individuals' decisions in navigating their living environments.

3. For the framework variable, the sequentially influential variables are markets and commercial services (T3), SMEs (T5), and recreational facilities (T4).

The essential requirement for housing to meet the daily needs of individuals and families cannot be overstated, as it forms the very foundation of a stable and fulfilling life. Moreover, the desirability of a particular location is significantly enhanced by its close proximity to shopping centers, markets, and various commercial services, which not only offer convenience

but also cater to diverse lifestyle preferences. This attractiveness is further accentuated when such locales offer easier accessibility to workplaces and other essential amenities, facilitating smoother daily routines and enhancing overall quality of life. Additionally, the economic vitality of a region is bolstered by the presence of numerous small scale household industry (SMEs), which play a pivotal role in driving local economic growth and fostering community resilience. For instance, the production of traditional snacks like keripik kemplang and otak-otak, or the processing of green mussels, not only preserves cultural heritage but also generates employment opportunities and stimulates entrepreneurship, thereby enriching the socio-economic fabric of the area.

3.3. DISCUSSIONS

There are three factors that influence people to settle there: human factors, social factors, and residential factors. The need for biological space is very important for people living in Bumi Waras district. Respondents felt that they needed a space to live in. Because they do not have enough money to buy a proper house, they choose to live in such inappropriate locations. Ancestral land or inheritance from their parents made them choose to live there. The second factor is social factors, including the behavior and habits of the people who are considered good by the people there, making them feel comfortable to live in that location. Similarities in origin, fate, conditions, socio-economic characteristics, and similarities in causes greatly influence location selection. The third variable is the place of residence as a location that can fulfill daily needs is an important factor. Locations close to shopping centers or close to markets and commercial services are more attractive for people to choose these locations with the assumption that they are close to work and easy access to markets and other commercial places.

The factor of slum environments close to activity centers, as referred to in this study, is a commercial environment that aligns with Von Thunen's location theory, which states that land allocation is based on income groups with high transportation costs, indicating that low-income communities are located near activity centers. This is also consistent with previous research showing similar findings. Additionally, there are several policies that demonstrate government support for the phenomenon in these areas, such as the development of communal sanitation facilities, provision of 3R waste management services, road rehabilitation and improvements, waste disposal facilities, waste collection vehicles, street lighting, and clean water. Furthermore, the construction of a 421-meter U-shaped drainage ditch through the NUSP 2

program is another example. This means that the community is not considered to be violating regulations, as the government provides policy interventions to support local needs

4. CONCLUCION

The evolution of the housing system within the Bumi Waras District traces back to the 1940s, spurred by a myriad of factors encompassing economic, social, cultural, and various other influences. Despite the inherent challenges posed by its geographic predisposition to disasters such as annual floods and tidal surges, a resilient social fabric has emerged organically among the enduring residents, underscoring a deeply ingrained sense of community cohesion. Remarkably, despite the evident risks, inhabitants consciously choose to dwell in dwellings that are deemed inadequate and situated in disaster-prone zones, indicative of a profound attachment to the locale and a remarkable capacity to adapt to adversity.

There are three factors influencing people to settle there, such as human factors (Biological needs (M1), Perception and feelings (M2), Emotional connection (M3), and Moral values (M4)), socio-economic factors (Economic status (S4), Community (S2), Culture (S3), health services (S6), population and density (S1), and law and administration (S7)), and shell factors (Market and commercial service (T3), small scale household industry (SMEs), and recreational facilities (T4)). This comprehensive framework encapsulates the multifaceted interplay of factors driving settlement patterns within the Bumi Waras District, highlighting the nuanced complexities involved in location selection and community resilience in the face of environmental challenges.

This comprehensive framework offers a nuanced understanding of the multifaceted interplay of forces guiding settlement patterns within the Bumi Waras District. It underscores the complex nexus between individual motivations, societal dynamics, and environmental constraints, shedding light on the intricate complexities inherent in location selection and the resilience exhibited by communities in the face of environmental challenges. These findings offer valuable guidance for urban planning and policy, particularly in developing strategies that are more responsive to the needs of the community. Governments can leverage these insights to enhance interventions that support socio-economic well-being and strengthen community resilience to environmental risks. Policies that prioritize the provision of improved public services, increased access to healthcare facilities, and the protection of cultural and moral values can contribute to building more resilient and sustainable communities.

5. REFERENCES

Anggraeni, M., Ari, I. R. D., Santosa, E. B., & Widayanti, R. (2014). Climate Change & Home Location Preferences in Flood Prone Areas of Bojonegoro Regency. Procedia Environmental Sciences, 20, 703–711. https://doi.org/10.1016/j.proenv.2014.03.084

Asbi, A. M., Mardiatno, D., & Ruslanjari, D. (2024). Assessing Social Vulnerability to Coastal Hazards: A Case Study of Bandar Lampung City Coastal Area. IOP Conference Series: Earth and Environmental Science, 1313(1), 012027. https://doi.org/10.1088/1755-1315/1313/1/012027

Asian Cities Climate Change Resilience Network (ACCCRN). (2011). Strategi Ketahanan Kota Bandar Lampung Terhadap Perubahan Iklim 2011 – 2030.

Balk, D., Montgomery, M. R., Mcgranahan, G., & Mara, V. (2009). Mapping Urban Settlements and the Risks of Climate Change in Africa, Asia and South America. www.iied.org

BNPB, P. D. I. dan K. K. (2023). RBI Risiko Bencana Indonesia BNPB (Pertama).

Cheng, Z., Zhang, Y., Wang, L., Wei, L., & Wu, X. (2022). An Analysis of Land-Use Conflict Potential Based on the Perspective of Production–Living–Ecological Function. Sustainability (Switzerland), 14(10). https://doi.org/10.3390/su14105936

Constantinos A. Doxiadis. (1970). Ekistics, the Science of Human Settlements. Science, 170.

Djalante, R., Jupesta, J., & Aldrian, E. (2021). Climate Change Research, Policy and Actions in Indonesia. https://doi.org/https://doi.org/10.1007/978-3-030-55536-8

Haque, I., & Patel, P. P. (2018). Growth of metro cities in India: trends, patterns and determinants. Urban Research and Practice, 11(4), 338–377. https://doi.org/10.1080/17535069.2017.1344727

Ilmi, W. Z., Asbi, A. M., & Syam, T. (2021). Identifikasi Karakteristik Kawasan Informal Pesisir Kota Bandar Lampung dan Kerentanan terhadap Dampak Perubahan Iklim (Studi Kasus : Kelurahan Kota Karang dan Kangkung). Jurnal Pembangunan Wilayah Dan Kota, 17(2), 149–167. https://doi.org/10.14710/pwk.v17i2.33130

Issac, S., and W. B. Michael. "Handbook in Research and Evaluationfor Educational and the Behavioral Sciences." San Diego, Califomia: EdITS Publishers (1981).

Jayanthakumaran, K., Verma Guanghua, R., & Wilson, W. E. (2019). Internal Migration, Urbanization, and Poverty in Asia: Dynamics and Interrelationships. https://doi.org/https://doi.org/10.1007/978-981-13-1537-4

Kenneth A. Bollen. (1989). Structural Equations with Latent Variables. John Wiley & Sons.

Ministry of National Development Planning/Bappenas. (2021). Climate Resilience Development Policy 2020-2045.

Neumann, B., Vafeidis, A. T., Zimmermann, J., & Nicholls, R. J. (2015). Future coastal population growth and exposure to sea-level rise and coastal flooding - A global assessment. PLoS ONE, 10(3). https://doi.org/10.1371/journal.pone.0118571

Siswoyo Haryono, & Parwoto Wardoyo. (2012). Structural Equation Modeling Untuk Penelitian Manajemen Menggunakan AMOS 18.00. Badan Penerbit PT. Intermedia Personalia Utama. www.ptipu.blogspot.com

Small, C., & Nicholls Robert J. (2003). A Global Analysis of Human Settlement in Coastal Zones. Article in Journal of Coastal Research. https://doi.org/10.2307/4299200

Surjono, S., Yudono, A., Kusuma Wardhani, D., Muluk, M. R., & Wardhani, D. K. (2020). Formulation of Framework for Settlement Preference and Community Resilience of Post Great Disaster in Palu City, Indonesia. International Journal of Advanced Science and Technology, 29(03), 12396–12405. https://www.researchgate.net/publication/351737017

The World Bank Group and Asian Development Bank. (2021). Indonesia Climate Risk Country Profile. www.worldbank.org

UN Habitat. (2022). Envisaging the Future of Cities.

Ward, P. J., Jongman, B., Weiland, F. S., Bouwman, A., Van Beek, R., Bierkens, M. F. P., Ligtvoet, W., & Winsemius, H. C. (2013). Assessing flood risk at the global scale: Model setup, results, and sensitivity. Environmental Research Letters, 8(4). https://doi.org/10.1088/1748-9326/8/4/044019