

COMMUNITY SOCIAL CAPITAL AS A STRATEGY TO REDUCE THE RISK OF FLOOD DISASTERS IN PELALAWAN REGENCY

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ABSTRACT

Pelalawan Regency is one of the areas most severely affected by annual flooding in Riau Province, particularly Kuala Terusan Village located at the confluence the Kampar and Batang Nilo Rivers. Despite living in a physically vulnerable area with flood heights reaching 100-180 cm annually, the community chooses remain resilient. This study aims: first, to identify elements of social capital possessed by the watershed community in Kuala Terusan Village in facing annual floods; second, to analyze the role of social capital in enhancing community capacity to reduce risks and accelerate disaster management. Using a qualitative approach with case study design, data were collected through in-depth interviews, participatory observation, and focus group discussions with residents who have experienced repeated floods. The findings reveal that three dimensions of social capital social networks, collective norms and trust work synergistically as the community's immune system. Social networks function as early warning systems through RT/RW structures, collective norms manifest in preventive mutual cooperation and collective economic strategies that transform floods into "blessings" through abundant fish catches, while high trust enables efficient asset security and aid distribution. This bottom-up strategy proves more adaptive rapid, and contextual in reducing flood risks compared to approaches solely relying on external interventions. This research contributes to expanding social capital theory in the context of recurring slow-onset disasters in rural river basin areas.

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INTRODUCTIONS

Riau Province is in a contradictory geographical position, on the one hand strategic but on the other hand vulnerable to natural disasters. The existence of the four major rivers of Sungai Siak, Kampar, Rokan, and Indragiri makes it a granary of life for millions of people who depend on fisheries, agriculture, and plantations for their

livelihoods. However, the characteristics of the predominantly lowland areas with extensive river networks create a high vulnerability to flood disasters. Environmental degradation due to massive deforestation for oil palm plantations and settlements, coupled with uncontrolled river sedimentation, further exacerbates the region's hydrological conditions (Gunawan et al., 2024; Ministry of Public Works and Housing, 2023).

Data from the National Disaster Management Agency (BNPB) shows worrying data. Flood incidents in Riau Province have fluctuated drastically with a tendency to increase from 16 incidents in 2019 to 79 incidents in 2023, before decreasing to 41 incidents in 2024 (BNPB Riau Province, 2025). This shift in pattern indicates that floods are now a priority threat, as stated in the Riau Province Disaster Risk Assessment Document 2022-2026.

Table 1. Disaster Events in Riau Province for the 2019–2024 Period

Year	Disaster Events				
	Landslide	Flood	Forest and Land Fires	Extreme Weather	Tidal Waves/Abrasion
2019	2	16	38	2	-
2020	5	6	21	1	-
2021	7	65	44	24	6
2022	6	40	34	11	4
2023	3	79	168	8	1
2024	-	41	7	1	2

Source: National Disaster Management Agency, 2025

The results of the 2022-2026 Riau provincial national disaster risk assessment, Pelalawan Regency has a flood-prone area of 720,760 hectares with a high category of 354,073 hectares. The number of people exposed to flood disasters is 120,517 people with moderate categories and potential losses categorized as high in terms of physical, economic and environmental damage. One of the village areas that contributes to the high vulnerability of flooding in Pelalawan Regency is Kuala Terusan village. The village is located at the confluence of the Kampar River and the Batang Nilo River. The flood pattern has undergone a significant transformation: if it previously occurred once in five years, it can now occur every year with water levels reaching 100-180 cm and inundation durations of up to two months (Kuala Terusan Village Office, 2025). This phenomenon is exacerbated by the opening of the Koto Panjang hydropower plant sluice gate (Sari & Susanti, 2025) and uncontrolled land conversion (Pagán et al., 2016). The following data shows the impact of repeated floods in the village.

Table 2. Impact Flood in Kuala Terusan Village Period 2022–2024

Year	Affected Households	Affected Souls	Affected Houses	Public Facilities Affected	Flood water level (cm)
2022	142	296	113	2	100–150
2023	120	263	100	2	100–165
2024	132	272	104	2	100–180
Februari 2025	136	289	109	2	100–180

Source: Kuala Terusan Village Office, 2025

Interestingly, most of the population works as river fishermen (45 out of 553 people). The flood period is actually a period of abundant fish harvest, creating a paradox where floods are not only a threat but also an economic blessing. This condition makes people choose to survive even though they live in very vulnerable areas. Physical adaptation efforts such as the construction of stilt houses (100 out of 125 units) and the use of boats have been carried out, but structural adaptation alone is not enough to significantly reduce the risk (Kuala Terusan Village Office, 2025).

Social capital refers to the resources inherent in a network of social relations that can be mobilized to achieve a specific goal (Bourdieu, 1986; Putnam, 2000; Coleman, 1988). Three dimensions of social capital are the main

focus: social networks, collective norms and values, and beliefs (Aldrich & Meyer, 2015). Putnam (2000) distinguishes social capital into *bonding capital* (bonds in homogeneous groups), *bridging capital* (bridge between groups) and *linking capital* (vertical relationship with authority). In disaster studies, social capital has proven to be a key factor in building community resilience. Aldrich and Meyer show that communities with strong social networks are able to recover two to three times faster due to their ability to mobilize internal resources, share critical information and provide emotional support (Aldrich & Meyer, 2015). Hawkins and Maurer reveal that *bonding capital* helps with emergency evacuations, while *bridging* and *linking capital* accelerates long-term recovery (Hawkins & Maurer 2010).

Previous research has explored the role of social capital in flood mitigation finding that local social capital plays a vital role in building collective resilience through social cohesion that grows from the experience of dealing with repeated disasters (Takwa et al., 2024). Norzistya and Handayani showed that social capital in the form of RT/RW institutions is able to strengthen preparedness through strengthening norms of solidarity and trust between citizens (Norzistya & Handayani, 2020). Muhamad et al. (2017) noted that gotong royong-based social capital accelerates infrastructure recovery and post-flood psychosocial stability.

However, the majority of previous studies have focused on *sudden-onset disasters* such as earthquakes and tsunamis (Aldrich, 2012), while in-depth studies of social capital in dealing with recurrent *slow-onset* disasters such as annual floods are rare, especially in rural areas of watersheds (Takwa et al., 2024). Most research in Indonesia also tends to focus on urban contexts (Norzistya & Handayani, 2020), while the dynamics of social capital in rural communities with high dependence on natural resources have not been extensively explored. In fact, the rural context of watersheds has unique characteristics where floods bring ambiguous economic dimensions as a threat as well as a blessing (Muhamad et al., 2017).

This research offers novelty through an analysis of how the three elements of social capital, social networks, collective norms, and trust work synergistically in strengthening community resilience to repeated floods in Kuala Terusan Village. Based on the emptiness of the study, this study aims to identify the elements of social capital owned by the watershed community in Kuala Terusan Village in the face of annual floods. As well as analyzing the role of social capital in increasing community capacity to reduce risks and accelerate disaster management. This research is expected to make a theoretical contribution in expanding the understanding of social capital in the study of recurrent disasters in rural areas, as well as providing practical recommendations for community-based disaster mitigation policies.

RESEARCH METHODS

This study uses a qualitative approach with a case study design to explore in depth the role of social capital in reducing the risk of flood disasters in Kuala Terusan Village, Pangkalan Kerinci District, Pelalawan Regency. The case study was chosen because it allows an in-depth exploration of the phenomenon of social capital in a specific study of communities affected by annual floods. The research subjects were selected using a purposive sampling technique with the following criteria: (1) residing for at least ten years, (2) experiencing major floods more than three times in the last five years and (3) actively involved in disaster activities such as mutual cooperation, evacuation and distribution of aid (Creswell, J. W. (2014). The research involved 14 main informants consisting of housewives (5 people), fishermen (7 people) and self-employed (2 people), as well as 3 key informants including RT Chairs, RW Chairmen and community leaders. All informants also participated in a Focus Group Discussion (FGD) as part of the data triangulation process.

Primary data were collected through in-depth interviews, participatory observations of community activities during floods, and FGDs with community representatives to validate the findings. Secondary data was obtained from official BNPB documents, reports from the Kuala Terusan Village Office, and Riau Province Disaster Risk Assessment. Data analysis uses the Miles and Huberman model through the stages of data reduction, data presentation, and conclusion drawing (Moleong L. J, 2007). Data validity through source triangulation (Afrizal, 2014) by comparing

information from affected residents, village officials and community leaders to ensure the consistency of research findings.

RESULTS AND DISCUSSION

Kuala Terusan Village is located in Pangkalan Kerinci District, Pelalawan Regency, with an area of 10,000 hectares. Geographically, the village is located at the confluence of the Kampar River and the Batang Nilo River, making it highly vulnerable to annual flooding (Kuala Terusan Village Office, 2025). Of the total 553 residents, 148 families are employed, most of whom earn their livelihoods as river fishermen (45 people) and self-employed (84 people). Demographic characteristics create a high dependence on river resources, so flooding has a double meaning: a threat to residential infrastructure but a blessing to fish catches. Of the 125 housing units in the village, 100 units have been built with a stage model as a form of structural adaptation to face waterlogging that can reach 100-180 cm with a duration of up to two months (Sari & Susanti, 2025). However, this physical adaptation has not been able to fully protect communities from economic losses and disruptions of social-educational activities when floods hit (Hutauruk et al., 2020).



Figure 1: Condition of houses submerged in floodwater in Kuala Terusan Village

Source: Village Archive Documentation, 2024

1. Elements of Social Capital in Facing Recurrent Floods

According to Putnam, social capital consists of 3 main elements: networks, collective *norms* and *trust* which play an important role in encouraging social collaboration to achieve common goals (Putnam, 2000). The elements of social capital owned by the watershed community in Kuala Terusan Village in dealing with the annual flood have revealed that there are three elements of social capital that work synergistically. These three dimensions do not stand alone, but rather reinforce each other in forming effective disaster risk adaptation and reduction strategies (Muhamad et al., 2017; Takwa et al., 2024).

2. Social Networks as Communication and Mobilization Infrastructure

Social networks are formal-informal patterns of relationships that connect individuals and groups in a community, facilitating the flow of information and mobilization of resources (Hawkins & Maurer, 2010). In disaster studies, social networks serve as the backbone of the early warning system and coordination of collective actions (Norzistya & Handayani, 2020). Social networks in Kuala Terusan Village serve as the backbone of the early warning system and resource mobilization in dealing with floods. The village government structure consists of the Village Head, the Hamlet Head and four RT Heads as well as two RW Heads forming effective layered communication channels (Claridge, 2018). Information on the opening of the Koto Panjang hydropower plant door or the prediction of river level rise was first received by the village apparatus group, then disseminated orally by the Heads of RT and

RW to all residents in their neighborhoods. This mechanism has proven to be fast and on target due to the geographical and social proximity of the village apparatus to its citizens (Hawkins & Maurer, 2010). As revealed by the Chairman of RT 04, *"The villagers here, when they heard from the neighborhood head that the gates to the Koto Panjang hydroelectric power plant had been opened, immediately got ready. There were signs of rising river water, so they set up stilts in their homes"*(Julen, Chairman of RT 04, August 2025).



Figure 2. Residents borrow neighbors' boats for mobility

Source: Field Documentation, 2025

Then informal networks based on kinship and professional groups (fishermen) also play an important role (Masud-All-Kamal & Hassan, 2018). Almost every household in RW 02 has a private boat which during the flood changes its function to become a means of collective transportation. The no-fee boat loan system has become an unwritten norm that ensures the mobility of all citizens is maintained, regardless of individual asset ownership (Takwa et al., 2024). The house of Chairman RW Nazaruddin, has become a gathering point and a mutually agreed temporary refuge, showing high trust and a sense of security built collectively (Alfiah & Susanti, 2023). The following is a more systematic overview of the function of social networks in handling floods.

Table 3. Structure and Function of Social Networks in Flood Management

Network Type	Main Actor	Main Function	Mechanism Work	Impact to Subtraction Risk Disaster
Formal – Government	Head Village, Hamlet Head, Chairman of RT and RW, Harmonious Neighbor	System Early Warning	Spread Information from whatsapp group and in general oral	Very effective : Information potential disaster spread not enough from 2 hours
Informal – Kinship	Extended Family, Neighbor	Evacuation and Refuge	House Chairman of RW as a collective shelter	Effective : Capacity capacity for 15 heads family
Group Profession	Fisherman	Mobility Water Transportation	Borrow borrow a boat without cost	Very effective in mobility inhabitant

Source: Field Data Processing, 2025

Table 3 shows that social networks in Kuala Terusan Village have three complementary layers. The government's formal network ensures that information reaches all residents in less than two hours, kinship networks provide shelter with a capacity of up to 15 families, while fishermen's professional networks mobilize water

transportation that ensures 100 percent mobility of residents during floods. These findings are in line with Putnam's *theory of social capital bonding* which emphasizes that strong bonds in homogeneous groups accelerate resource mobilization in the emergency phase (Putnam, 2000). Social networks in Kuala Terusan Village not only function reactively when floods occur, but are also proactive in the mitigation phase through mutual cooperation to clean waterways and secure public goods, demonstrating the function of a comprehensive network throughout the disaster cycle (Norzistya & Handayani, 2020).

3. Collective Norms as the Foundation of Solidarity

Collective norms are unwritten rules that govern behavior and expectations in a community, create social order and facilitate collective action without the need for formal supervision (Putnam, 1993). In disaster studies, collective norms strengthen solidarity and ensure the sustainability of mutual cooperation practices as an adaptation strategy (Sukma et al., 2024). The norm of mutual cooperation is the main pillar that maintains community solidarity in the midst of a rainy crisis. Before the flood season arrives, residents routinely work together to clean ditches and open blockages in small rivers, showing preventive measures based on local wisdom (Muhamad et al., 2017). When floods hit, the practice of taking care of each other's assets and social safety nets became very real. Residents entrust their two-wheelers by leaving them on higher ground across the river without special security, relying on the trust that the community in the safe area will take care of them. Likewise, livestock (cows, goats, chickens) are placed on emergency rafts, both jointly owned and individual, which are guarded collectively to prevent greater economic losses (Sudirah et al., 2020).

Interestingly, the adaptive economic strategy based on the "blessing of the flood" during the flood period caused the fish catch to be abundant and the majority of fishermen took advantage of this opportunity by building cooperation in selling each other's catch (Pelling & High, 2005). When transportation access is limited, one resident who manages to go to the market will sell the catch of another resident, then the proceeds of the sale are shared honestly. This collective strategy becomes a vital economic buffer (Norris et al., 2008), transforming potential losses into collective income opportunities and significantly reducing the economic impact of floods (Aldrich & Meyer, 2015). Vulnerable families such as children will be entrusted to relatives outside the village, demonstrating a mature social evacuation strategy (Norzistya & Handayani, 2020). The practices of collective norms in the various phases of the flood can be seen in the following table.

Table 4. Collective Norm Practices in the Flood Cycle

Phase Flood	Collective Norm Practices	Concrete form	Underlying Values	Impact to Subtraction Risk Disaster
Pre Flood	Preventive mutual cooperation	Cleaning water channels and drainage	Togetherness, responsibility collective	Reduce flood water level 30%
Moment Flood	House safe together	House Chairman of RW as shelter	Concern, solidarity	No there were fatalities
Moment Flood	Asset security	Motorcycle and raft storage animal cattle	Trust, honesty	Loss minimum economy
Moment Flood	Share source Power	Generator, Charging, Mobile Phone, Boat	Reciprocity	Communication still walk
Moment Flood	Cooperation Economy	Each other sell results catch fish	Solidarity economy	Economic buffer effective

Source: Field Data Processing, 2025

Table 4 shows that collective norms operate systematically throughout the flood cycle, from the pre-flood phase to the emergency response phase. Preventive mutual cooperation can reduce inundation by about 30 percent, safe houses together ensure no casualties, securing collective assets minimizes economic losses, sharing resources keeps

communication running, and economic cooperation creates an effective buffer. These practices illustrate what Putnam calls *social capital bonding* that strengthens the community's internal attachment and resilience (Putnam, 1993). The norm of mutual cooperation not only serves as a guide for behavior, but has been internalized into a collective identity that drives spontaneous actions without formal coordination (Sampson et al., 1997). In the theory of *collective efficacy*, the Kuala Terusan community shows a high collective belief that they are capable of facing a common threat, which is manifested in real actions of mutual help.

The adaptive economic strategy of "flood blessings" which is one of the most unique collective norm practices in this study shows how society is not only *coping* but also *thriving* in the midst of crisis conditions (Aldrich, 2012). Pelling and High (2005) emphasized that community-based *adaptive capacity* allows the transformation of threats into opportunities through effective social capital mobilization. In the case of Kuala Terusan Village, the flood that brought abundant fish catches was responded to with a collective strategy in the form of commission-free sales cooperation built on the basis of trust and economic solidarity (Masud-All-Kamal & Hassan, 2018). This strategy reflects a form of local innovation that takes advantage of ecological opportunities while strengthening social cohesion through *reciprocity* mechanisms that are fair and transparent (Norris et al., 2008). The flow of this adaptive economic strategy process can be better understood through the following diagram.

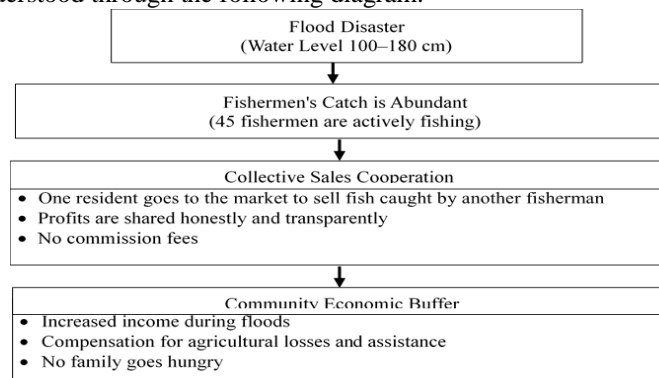


Figure 3. Adaptive Economic Strategy Flow "Flood Blessings"

Figure 3 illustrates how the people of Kuala Terusan collectively transform the threat of flooding into economic opportunity through four interconnected stages. In the first stage, when the flood comes with a height of 100-180 cm, this condition actually creates an optimal habitat for river fish so that the catch is abundant (Pelling & High, 2005). In the second stage, 45 fishermen actively took advantage of this momentum with a higher fishing intensity. In the third stage, due to limited access to transportation due to flooding, the community builds a cooperation mechanism (Norris et al., 2008) where one resident who manages to reach the market will sell the catch of several other residents without collecting a commission with honest and transparent revenue sharing based on trust.

In the fourth stage, this strategy creates an effective economic buffer by increasing the household income (Sudirah et al., 2020) of fishermen precisely during the flood period, compensating for losses in the agricultural sector and ensuring that no family experiences food difficulties. These findings extend the theory of social capital in the disaster literature by showing that communities not only use social capital to mitigate losses (Aldrich & Meyer, 2015), but also to optimize economic opportunities in the midst of a crisis, a dimension that has rarely been explored in previous research (Pazhuhan et al, 2023).

4. Trust as a Collaboration Sticker

Trust is the belief that others will act in a predictable and mutually beneficial manner, reducing the need for formal monitoring and accelerating collective coordination (Coleman, 1988). In the context of a disaster, trust functions as an adhesive that binds social networks and norms into a solid system and reduces transaction costs in

handling crises (Aldrich, 2012). Trust is the foundation that binds social networks and norms into a solid system. Without trust, the collective strategies that have been described will not function optimally (Pazhuhan et al, 2023).

In Kuala Terusan Village, trust is built in various types. First, interpersonal trust is shown through the custody of assets without special safeguards and the belief that others will not take advantage of crisis situations (Coleman, 1988). Second, institutional trust in village officials that makes residents follow evacuation directions or be on standby without hesitation, thus facilitating the emergency response process (Hawkins & Maurer, 2010). Third, trust in a fair aid distribution mechanism, where there have never been serious conflicts related to the distribution of aid from village governments or external partners (Norzistya & Handayani, 2020). Fourth, trust in the gotong royong system which is manifested in high participation (more than 90 percent) in pre-flood community service. Trust is the result of repeated interactions and positive experiences of facing disasters together over the years (Masud-All-Kamal & Hassan, 2018). The types of trusts that play a role in flood risk reduction are presented in the following table.

Table 5. Types of Trusts in Flood Risk Reduction

Type Trust	Object Trust	Indicator	Impact To Subtraction Risk Disaster
Interpersonal	Between inhabitant Village	Home asset custody ladder without safety special	Efficiency evacuation , no need asset protection routine
Institutional	Government Village	Follow directions evacuation without team	Coordination responsive emergency effective
Distribution	Assistance mechanism	No There is conflict distribution help	Cohesion social stay solid
Collective	Mutual Cooperation System	Participation all over inhabitant in mutual cooperation	Mitigation preventive succeed

Source: Field Data Processing, 2025

Table 5 identifies four types of beliefs that each have different but mutually reinforcing objects, indicators and functional implications. Interpersonal trust allows for evacuation efficiency as residents do not have to guard their own assets for 24 hours. Institutional trust in village apparatus makes emergency response coordination run effectively without resistance or skepticism (Claridge, 2018). Trust in a fair distribution mechanism of aid keeps social cohesion solid even in the midst of limited resources. Trust in the gotong royong system results in more than 90 percent participation, which proves that preventive mitigation can be successful when all parties are convinced that the system is mutually beneficial (Putnam, 2000).

These findings are in line with Aldrich's research that trust lowers transaction costs in disaster management because it reduces the need for supervision and implementation (Aldrich 2012). A trusting society does not require formal contracts or strict supervision to ensure cooperation, so that collective energy can be focused on productive action in the face of threats (Bourdieu, 1986). Pazhuhan et al. (2023) also emphasized that high social trust accelerates post-disaster recovery through the effectiveness of resource exchange and the formation of strong emotional support networks.

5. Social Capital Synergy in Reducing Flood Risk

The three dimensions of social capital social networks, collective norms, and beliefs do not work separately but are synergistic and layered (Aldrich & Meyer, 2015). Social networks provide channels of communication and mobilization, norms provide mutually accepted behavioral guidelines and trust becomes the glue that ensures everything runs smoothly (Putnam, 2000). The following integration model illustrates how these three dimensions reinforce each other in building community resilience to repeated floods in Kuala Terusan Village.

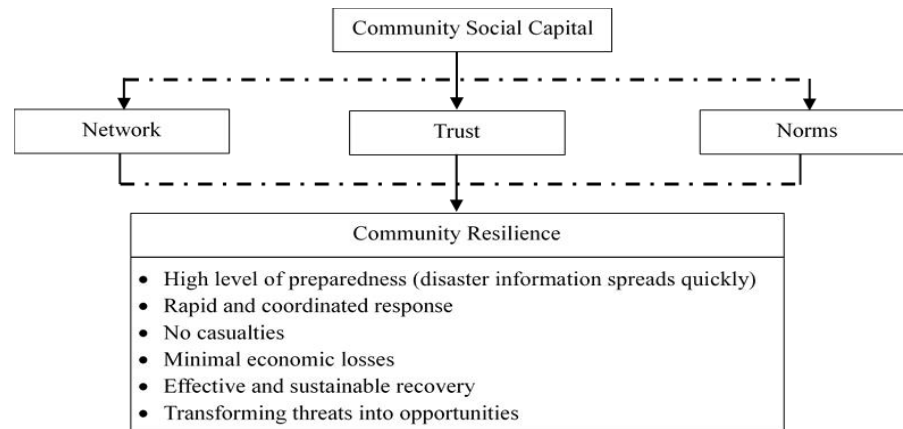


Figure 4. Social Capital Integration Model in Flood Resilience

Source: Field Data Processing, 2025

Figure 4 illustrates the social capital integration model in Kuala Terusan Village, where social networks (Table 3), trust (Table 5), and collective norms (Table 4) work synergistically to generate resilient community resilience (Putnam, 2000; Aldrich & Meyer, 2015). Social networks serve as an infrastructure that facilitates the flow of information and the mobilization of resources at a high speed (Hawkins & Maurer, 2010). Trust and collective norms work horizontally and interdependently, where trust strengthens the implementation of mutual cooperation norms while the success of mutual cooperation deepens trust between citizens (Bourdieu, 1986; Coleman, 1988). These three dimensions result in integrated social capital that becomes a community resource that can be managed effectively. The result is community resilience reflected in six key indicators: high preparedness (info <2 hours), rapid and coordinated response, no fatalities, minimal economic losses, effective and sustainable recovery, and the ability to transform threats into economic opportunities through flood blessing strategies (Norris et al., 2008; Pelling & High, 2005).

This model comprehensively answers the formulation of the second problem by showing that social capital does not play a role in just one aspect, but in the entire spectrum of disaster risk management from preparedness, emergency response, to recovery (Aldrich & Meyer, 2015). These bottom-up community strategies have proven to be more adaptive, fast and contextual in reducing the risk of flood disasters compared to approaches that rely solely on external interventions (Masud-All-Kamal & Hassan, 2018). The advantages of a social capital-based approach lie in its flexibility in responding to rapidly changing situations, in-depth local knowledge of specific flood patterns in their region and sustainability of not being dependent on external resources that are not always available (Takwa et al., 2024).

These findings expand on the theory of Aldrich and Meyer (2015) which states that social capital is more important than physical capital in disaster recovery, by showing that the same is true in the mitigation and preparedness phases in recurrent disasters. Furthermore, this study confirms the argument of Pelling and High (2005) about the importance of *community-based adaptive capacity* in dealing with climate change and increasingly frequent disasters. The Kuala Terusan community not only adapts passively to floods, but actively turns threats into opportunities through collective economic strategies that take advantage of flood blessings in the form of abundant fish catches (Pazhuhan et al, 2023). This shows that resilience is not only the ability to cope (*coping*), but also the ability to grow in conditions of *adversity* (*thriving*) (Norris et al., 2008). The theoretical implication of these findings is the need to expand the concept of social capital in the disaster literature to include an adaptive economic dimension that capitalizes on opportunities in the midst of a crisis and does not focus solely on mitigating losses (Sukma et al., 2024).

CONCLUSION

The three elements of social capital possessed by the watershed community in Kuala Terusan Village in the face of annual floods, include social networks, collective norms and trusts that work synergistically as a community immune system. Social networks function as communication and mobilization infrastructure through the formal structure of village government (RT/RW/Kades) which is able to disseminate early warning information in less than two hours. As well as an informal network based on kinship and fishermen's professional groups that facilitate evacuation and collective transportation using boats at no cost. Collective norms are manifested in the practice of preventive mutual cooperation that is able to reduce inundation by up to 30 percent, the security of collective assets without formal supervision, and the adaptive economic strategy of flood blessings that turn threats into opportunities through cooperation in the sale of fish catches collectively with honest and transparent revenue sharing.

Trust is built in four types: interpersonal, institutional, distributional and collective, which allows for evacuation efficiency, effective emergency response coordination, equitable distribution of aid without conflict, and participation of more than 90 percent in preventive mitigation activities. These three elements of social capital play an important role in increasing community capacity to reduce risks and accelerate flood disaster management through six resilience indicators. It includes high preparedness with a rapid information system, a coordinated response without panic, no casualties during the study, minimal economic losses due to the safeguarding of collective assets, effective and sustainable recovery without reliance on external assistance, and the unique ability to transform flood threats into economic opportunities.

This bottom-up strategy has proven to be more adaptive, fast and contextual in reducing the risk of flood disasters compared to approaches that rely solely on external interventions. Due to its flexibility in responding to rapidly changing situations, in-depth local knowledge of specific flood patterns and sustainability that does not rely on external resources. This study expands on the theory of social capital in the disaster literature by showing that communities not only use social capital to mitigate losses, but also to optimize economic opportunities in the midst of crises through adaptive economic dimensions, a theoretical contribution that is rarely explored in recurrent slow-onset disasters in rural areas of watersheds.

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