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Co-identifying processes of community resources: Participatory planning and use of a toolkit for community resilience in Bangkok Metropolitan Region (BMR)

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Abstract

In preparing to face unexpected urban crises triggered by climate change, economic depression and, more recently, the Covid-19 pandemic, the urban poor will benefit from understanding the concept of community resilience. One of the most important elements of resilient thinking is the management of community resources embedded within and around community areas. This paper discusses co-identifying processes of community resources through participatory planning in building community resilience by employing Participatory Action Research (PAR). Various planning methods and an interactive resilience toolkit were utilized under the Planning for Eco-cities and Climate-resilient Environments program (PEACE-BMR) to help identify community resources at both individual and community levels. The findings show the extent to which such resources can be concurrently recognized and identified by both researchers and participating community members of three case-study communities in Bangkok Metropolitan Region (BMR). The implications are that with participatory planning processes—as well as lessons learned from this paper—researchers, planners, and community residents can apply methods to co-identify community resources to help low-income communities recognize, build and plan the necessary community resources to become more resilient in response to future crises.

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Introduction

Bangkok and its metropolitan region of around 10.89 million people is at risk from the impacts of climate change and other environmental hazards (e.g., air pollution and pollution of waterways; Patankar et al., 2013, p. 17). For urban communities in Bangkok, especially low-income neighborhoods which have minimal resources and limited access to public services, the concept and implementation of community resilience become essential to cultivate the preparedness of such neighborhoods towards urban crises.

This paper seeks ways in which urban low-income communities can work towards more inclusivity and resilience through the framework proposed by the Planning for Eco-cities and Climate-resilient Environments (PEACE-BMR) project. From 2017 to 2019, the PEACE-BMR project was undertaken to understand how low-income communities in Bangkok Metropolitan Regions, which experienced urban crises like flooding, coped with climate-related hazards and environmental risk. The project aimed to develop a participatory planning framework to help urban low-income communities prepare for possible future crises. Archer and colleagues (Archer et al., 2019a; Archer et al., 2019b) illustrated how the PEACE-BMR project was planned and how it evolved, especially through better understanding and management of individual and collective assets. However, this paper observes and pays particular attention to how the local residents of the case-study communities in Bangkok and the researchers concurrently recognize and identify their community resources. Therefore, the objective of this paper is to illustrate how participatory planning and use of a toolkit can help low-income residents to collaboratively identify existing and future community resources needed for planning their resilient communities. We believe that this work will provide a template for replicating community development practices that pursue community resilience elsewhere.

Literature Review

Urban resilience is under the spotlight as urban populations around the world increasingly face crises and disasters. Resilience, more precisely, refers to "the ability of a system to sustain itself through change via adaptation and occasional transformation" (Magis, 2010, p. 401). The concept of resilience has been adopted in the field of urban planning and development in response to disasters and crises (Berkes & Ross, 2013; Callaghan & Colton, 2008; Campanella, 2006; Lachapelle et al., 2021; Magis, 2010; Paton & Johnson, 2001; Sherrieb et al., 2010). Narrowing further, Magis (2010) defined community resilience as "the existence, development, and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability, and surprise." (p. 401). Callaghan and Colton (2008) (see also Flora et al., 2015) paid particular attention to community resources and capital in relation to building community resilience.

Before discussing community resources, we have outlined the meaning of community assets, resources, and capital. Assets are generally perceived as the stock of financial, natural, human, and social resources, owned by people, which can be transferred generationally (Moser, 2009). Resources, by contrast, concern the ecosystem, objects, spaces, local common knowledge and wisdom, and networks that people can freely access and benefit from without actual ownership (Charles et al., 2020; Hancock, 2001; Sherrieb et al., 2010). Flora et al. (2015) suggested that community capital is a community resource that leads to collective actions designed to achieve shared community goals.

Social, natural/environmental, human, and economic capital are all commonly perceived to constitute community capital/resources that improve community livelihoods. First, social capital is the 'glue' that binds community members together (Hancock, 2001, p. 276). Social capital involves a set of relationships where shared values, norms, and trust are developed (Alder & Kwon, 2002; Callaghan & Colton, 2008). These collective values create mutual benefit through coordination, cooperation, and reciprocity (Coleman, 1988; Lachapelle et al., 2021; Putnam, 2000). Second, natural/environmental capital is what human beings obtain freely from nature. It is often exploited to promote economic and social development (Hancock, 2001, p. 276), thus requiring a healthy ecosystem to maintain it. Third, human capital has been recently viewed as the center of community development because good education, good health, and human creativity help to provide skills, capacity, and competency for community members (Lachapelle et al., 2021, p. 4–5). Human capital at the community level therefore helps community members tackle their own problems (Callaghan & Colton, 2008; Hancock, 2001; Lachapelle et al., 2021). Finally, economic capital undoubtedly acts as a prerequisite for attaining human and social goals (Hancock, 2001, p. 276).

In addition to these basic forms of community capital, Callaghan and Colton (2008) argued that (1) cultural capital, (2) public structural/built capital, and (3) commercial capital are also considered integral to community capital. Cultural capital exists in both tangible and intangible forms including heritage architecture, local wisdom, traditions, and beliefs (Lachapelle et al., 2021, p. 4). Cultural capital is shared socially and intergenerationally and thus helps community residents maintain meaningful living. Public structural/built capital refers to infrastructure and services such as roads, water systems, and public parks (Callaghan & Colton, 2008, p. 936). Commercial capital is generated through commercial activities, such as buying products and services, resulting in tax revenue for the government. Furthermore, financial capital is the monetary and fiscal resources required to gain credit, invest in capacity building, and support civic and social movements (Lachapelle et al., 2021, p. 8). Last but not least, political capital refers to the ability to influence standards and rules in addition to enforcing them (ibid, p. 133).

In the Thai context, numerous scholars have outlined how Thais can manage community resources and adapt systematically to become more resilient (e.g. Haitook et al., 2015; Sa-adthien et al., 2020). To date, there is little knowledge in Thailand about creating interactive planning toolkits that can be used in participatory planning processes for managing community resources. To foster attitude change, knowledge change and eventually behavioral change, Soekarjo and Oostedorp (2015) suggested using persuasive games and toolkits to create an informative control condition. Therefore, a hands-on toolkit that encourages participation and discussion among participating members of a community should be useful to identify and manage community resources that can help sustain the community's livelihood, thus helping them to become more resilient.

Case-Study Communities

The present study focused on three sites within the Bangkok Metropolitan Region (BMR): one urban community and two peri-urban communities. The key reason for selecting these communities as a case study was because the residents had already experienced working together as a community in the Baan Mankong (BMK; secure housing) community-driven slum upgrading program. Under BMK projects, participating communities have to engage in pre-planning, planning, and construction processes thoroughly, so they engage in these processes in order to pursue the upgrading of their houses (Natakun, 2015). Apart from obtaining these new houses and improved living environment, the BMK project aims to turn low-income citizens from passive recipients to active agents (Archer et al., 2012). The project helps build up individual and collective capacity to maintain their livelihoods and enhance their abilities to take care of themselves (Luansang et al., 2012). Thus, they are more familiar with dealing with personal differences to achieve their common goals. Figure 1 shows the locations of the case-study communities in the Bangkok Metropolitan Region.

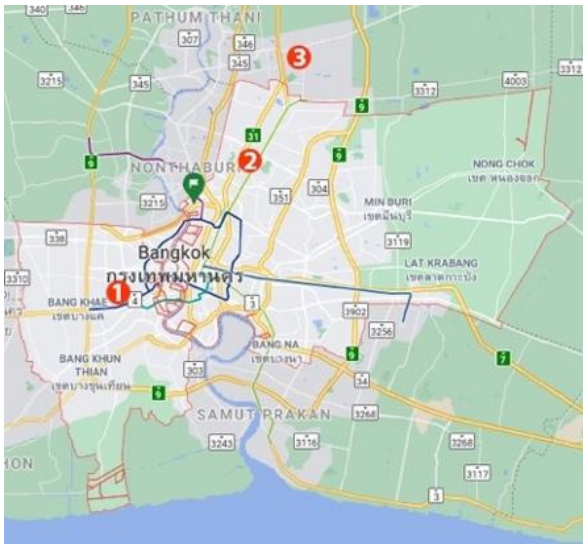

Figure 1 Locations of three case studies in the Bangkok Metro Region (BMR); 1. Sirin and Friends community, 2. Roi Krong community, 3. Sangsan Nakhon Rangsit community
Source: Google map image modified by the authors

Situated in Phasri Charoen district of the western Thonburi side of Bangkok, the Sirin and Friends community (S&F) consists of 290 men and 430 women living in 153 households. The community was founded in 2008 as the BMK program aggregated from several low-income communities that had relocated to this new site. Over time, community unity wore off, resulting in individualistic urban lifestyles among residents. Many of the community leaders feared that these residents would no longer want to participate in communal activities which would expose some of the less-fortunate residents to greater risks of future uncertainties.

The second site is situated in Bang Kaen district. Roi Krong community (RK) has a long narrow strip shape (20 by 620 meters) and has faced a wide array of problems, such as overcrowding, environmental

degradation, and other socio-economic problems. The community comprises 124 households, with 356 men and 345 women. Most residents work in the informal sector, mainly in urban service jobs such as motorcycle-taxi operators, cleaners, and vendors. Remarkably, the most active members in terms of community work are the elderly.

Sangsan Nakhon Rangsit community (SNR) is situated in the Khlong Luang District, Pathum Thani province. The community was officially created in 2012, through the BMK scheme. Most residents are not native to the Rangsit area, having migrated from other nearby provinces. After joining the BMK program, the residents used soft loans to buy land, build houses, and allocate permanent homes for community members. In 2016, there were 199 families living in the community.

Methodology

This research explored a contemporary phenomenon within its real-life context using a case study approach as an empirical investigation method. We acknowledge the limitations of the case-study approach for generalizing truth (e.g. Yin, 2013). Key methods employed in this study include narrative analysis and participant observation. Riessman stated that "Nature and the world do not tell stories, individuals do" (1993, p. 2). Thematic analysis can be used to analyze narratives developed in individual interviews and group meetings (ibid, p. 54). Observation helps to understand the way people move and act in relation to their environment (Flick, 2009, p. 410). Social scientists accept participant observation as a method because it helps in seeing social events, which can provide "an opportunity to explore some unusual occurrence or to test an explanatory idea" (Hammersley & Atkinson, 2007, p. 23). Participatory Action Research (PAR) was also employed as a key research strategy. It aims to provide opportunity for the research team alongside the toolkit's designers to engage in participatory planning processes and the development of an interactive toolkit with local residents.

We were also aware of the limitations of narrative analysis and participant observation through PAR for investigating the co-identifying processes of community resources in the case-study communities. Nevertheless, these methods do help to realize how such processes evolve over time. This understanding therefore helps to generate thematic findings drawn out from multiple site visits, focus group discussions with community leading groups and other active members from various ages, genders and occupations, and informal conversations by snowballing with community residents. Fieldwork allowed the research team to observe uses of community resources available to local residents and what were absent and in need to maintain community livelihoods. The development of the toolkit and focus group discussions were also undertaken in all the three case studies (see Table 1). These help in generating information about community resources and their locations both within and outside community areas. Therefore, a systematic explanation of co-identifying processes of community resources in the three case-study communities is possible.

Results

There are two components in this study that show how co-identifying processes of community resources have evolved. First, the thematic findings of community resources drawn out from site visits, focus group discussion, and informal conversation are discussed. Second, an interactive resilience planning toolkit, invented by the research team and later co-developed with the participating communities is subsequently discussed to show how community resources are collaboratively identified.

Table 1 Field studies showing community involvement and participation in focus group discussion and the interactive resilience toolkit

Places	Co-development of the toolkit			Focus Group Discussions		Numbers of participants
	1	2	3	1	2	
Sirin & Friends community	29 Oct 2017	22 Mar 2018	5 Jul 2018	4 Mar 2018	18 Aug 2018	42
Roi Krong community	1 Nov 2017	3 Apr 2018	8 Aug 2018	23 May 2018	3 Sep 2018	45
Sangsan Nakhon Rangsit community	8 Nov 2017	11 Mar 2018	18 Sep 2018	16 Jun 2018	8 Oct 2018	38
Community Organization Development Institute (CODI staff)	29 May 2018	2 Dec 2018	n/a	n/a		28
AVANI hotel (All three communities together)	27 Jan 2019	n/a	n/a	n/a		80
Grand total						233

Thematic Findings of Community Resources

Public infrastructure and services

All three case-study communities have had ample prior experience of working together to build their new homes and upgrade their living environments in the BMK program. Basic public infrastructure and services are obviously seen onsite, including electricity and water supplies, well-paved streets, sewage and drainage systems. The results of the site visits and focus group discussions revealed that community members from each site utilized public infrastructure and services to help mitigate damages and losses. For instance, in 2011, during the major floods in Thailand, most community members were able to stay in place within their community. Most of them reported that they survived and maintained their family lives by staying on the upper level of their houses with their belongings. In all cases, the electricity supply remained available and fresh water was piped into the communities for weeks.

Natural and built environments

Both the usefulness and risks associated with the natural and built environment have become key concerns for the community residents. For instance, in normal circumstances, canals provide sources of water for the S&F and RK communities. This water source is used for growing trees to provide shade and for watering vegetation. However, during flood events, the canals became contaminated and were therefore harmful for community health. On the other hand, the SNR community does not have access to a nearby canal thus it is relatively safe from contaminated water sources during a crisis.

Although the built environment is man-made, it is influenced by the natural environment. Architecturally, the orientation and location of BMK houses and buildings are designed in relation to the nature around them. The back lanes are often used for household activities while the empty spaces between houses provide small outdoor spaces. Community buildings, playgrounds, pocket gardens, and streets are available for general public use whereas retaining walls built along canals in the S&F and RK communities and the space under an overpass in the RK community have helped create ad hoc public spaces (see Figure 2). In the S&F community, a mushroom growing darkroom was built in between the leftover space to provide food and generate extra income. Furthermore, nearby public facilities that provide physical spaces in cases of emergency are also crucial. For example, the RK community moved their more vulnerable residents to classrooms in a local university during the 2011 flood.

Social cohesion and human skills

Levels of social cohesion usually depend on relationships among community members. For instance, the S&F community were unable to use cars to travel during the 2011 flood crisis because of its distance from the main road. Instead, they had to manage collective boat rides to transport people in order to reduce the costs of transportation. In the SNR community, community leaders turned the community playground into a community kitchen where they cooked and distributed free lunch boxes to vulnerable community members.

Professional skills and other human skills including local wisdom and knowledge are vital. For example, healthcare volunteers trained by the state helped take care of bedridden patients in all three communities during the 2011 flood crisis. One member of the S&F community utilized her textile skills to make plastic baskets using plastic waste such as straws, while one of the leaders of the SNR community used his construction skills to help repair damaged houses. The S&F community cooperative also invented and produced eco-friendly cleaning products (e.g., multipurpose cleaning liquid, dish washing soap, shampoo), which are sold within and outside the community. Figure 3 shows these locally-made products as collective community resources that also generate extra income.

Figure 2 Habitable spaces in the case studies (clockwise); (A) a front terrace in SNR community; (B) a community playground in RK community; (C) a community building with multi-purpose area in S&F community; and (D) a tiny space under an overpass near the entrance of the RK community

Figure 3 Locally-made products provide extra income in (A) RK and (B) S&F communities
Source: The authors and Image courtesy of Chanisara

Financial options

Low-income citizens have few financial options for surviving in big cities like Bangkok. However, cooperatives are set up to manage home installments and provide general welfare for community members. The state government also provides some financial support through a nationwide state welfare scheme. Low-income families in all three communities use state-welfare cards instead of cash to buy food and household products in local grocery shops called Blue-flag people-state shops.

During the 2011 flood crisis, it was difficult for heads of families as daily-wage earners to work outside their communities. As a result, their wives and other family members conducted income-generating activities at home to help them survive. Small sewing workshops for wholesale businesses, small grocery stalls, and home-made food delivery were generally found. Although all three case-study communities recognized the financial options available to them by the state and community-based cooperatives, not all families were keen to do extra work at home for extra income.

An Interactive Resilience Planning Toolkit

An interactive resilience planning toolkit was designed and tested with a participatory approach. An experienced group of community architects, Openspace, was involved from the outset to help structure the toolkit alongside the research team. The toolkit consisted of three modules: (1) a matching word-meaning game; (2) mapping pictographic playing cards and managing community resources; and (3) collaborative planning strategies for building community resilience. These three modules encourage social learning towards participatory planning processes and eventually create plans for community resilience (Marome et al., 2021).

The first module asks the players to match key words and meanings to learn about sustainability- and resilience-related terms (Figure 4A). The players are requested to think about things in their living environments that can match with the community resources reflected in the playing cards (Figure 4B). Informed by multiple site visits and focus group discussions, seven types of community resources were initially identified, including: (1) food; (2) water; (3) housing; (4) humans; (5) finances; (6) collective resources in the community; and (7) newly created resources from recycling. Simultaneously, the research team also learned from the players what were considered as community resources and what was missing. Results from the first module will therefore serve as first inputs for the second module.

Figure 4 (A) Matching words and meanings game and (B) learning about potential community resources through pictographic playing cards
Source: The authors

In the second module, mapping activities are employed to facilitate thinking and learning about community resources, both in terms of their location and the relationships among them. Each player was asked to pin their pictographic playing cards locating previously identified community resources onto their community map and its surrounding areas (see Figure 5A). Blank playing cards were provided for identifying additional resources or important places not yet identified that could also be pinned to the community map. For the S&F community, two more types of resources were found during the testing of the toolkit; namely, social networks and collective community resources from outside the community. Subsequently, players were asked to randomly select one crisis situation then encouraged to discuss how the crisis event would impact negatively on the community. A multi-circle diagram was used to simulate how important community resources could be damaged or used to mitigate negative impacts of the crisis. At the center of the diagram, the selected crisis event with detailed information helped to stimulate thoughts on the negative impacts of the crisis. The inner white circle is used to pin down chosen community resources that would be most damaged while the outer

circle is used for selecting community resources that might help mitigate damages and losses (see Figure 5B).

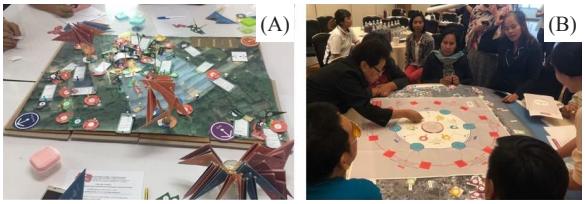

Figure 5 (A)The community resource mapping activity and (B) the multi-circle diagram
Source: The authors

In the final module, players sit around a big empty table to discuss openly about the strategies that could be used to tackle potential future crises by systematically using the previously identified community resources pinned on the community map. The players were asked to pick a few of the most important community resources that were likely to be damaged and the ones that had to be maintained in order to help to mitigate negative impacts. However, if the players could not think of any resources for this purpose, other possible community resources could be identified as they emerged during the discussion.

Discussions and Conclusions

The co-identifying processes of community resources are discussed and illustrated through the thematic findings of community resources and the resilience planning toolkit. Drawn out from the literature review and results from multiple site visits and focus group discussion, we identified both tangibility and intangibility of what are seen and perceived as community assets, capital, and resources. While tangible community resources refer to natural/environmental, and public infrastructure/built resources (Callaghan & Colton, 2008; Hancock, 2001), intangible ones refer to social, human/skills, economic, cultural, commercial, financial, and political resources (Alder & Kwon, 2002; Berkes & Ross, 2013; Callaghan & Colton, 2008; Coleman, 1988; Hancock, 2001; Lachapelle et al., 2021; Putnam, 2000). As also seen from all three case studies, awareness of intangible community resources is considerably higher than tangible community resources. This suggests that community residents should identify intangible resources as a greater initial priority. Through the toolkit, the residents can learn from their peers to recognize the existence and importance of available resources at both individual and collective levels.

While using the toolkit, community resources can be co-identified by community residents themselves with the assistance from the research team. This also enabled us to map tangible and intangible community resources which, in turn, enables community residents to locate and recognize necessary resources both within and outside their communities. It is noted that the recognition of collective resources benefits from collaborative and interactive activities. We therefore encourage mutual learning among different groups of participants using the toolkit.

Moreover, recycled and eco-friendly cleaning liquid products and plastic baskets made from straw waste were found as new collective community resources in both the S&F and RK communities. This highlights the fact that both human skills and economic resources can transform into financial resources. Therefore, income-generating activities and small business operations should be encouraged. Food and water as essential resources can also be acquired from nearby canals, community gardens, and small outdoor space between houses. Additional food can be produced in the community by utilizing pockets of empty land (natural/environmental, public infrastructure/built resources) alongside human skills and creativity (social and human resources) to collectively grow edible pot plants. These examples would suggest that one or a collection of different kinds of community resources can be transformed into other types.

Nevertheless, a variation of outcomes from the use of the toolkit can be found due to the fact that each case-study community has different requirement for their community resources, compared to the others. For instance, the RK and S&F communities have developed locally made products to build economic resources whereas the SNR community does not have any of these. After recognizing what is absent, the SNR residents could start thinking about how to develop economic resources for themselves. This suggests that the design and use of the toolkit should be adaptive and flexible to provide a milieu for mutual learning with regards to local contexts.

It is also noted that the communities have various internal and external resources to draw upon in response to changes. With social networks and connections beyond community areas, we additionally found that nearby universities, public parks and public facilities are recognized as public infrastructure/built resources in relation to social capital as well-tied community resources. Overall, all kinds of individual and collective community resources that were identified and mapped in the toolkit occupy equal importance as a set of usable resources for planning a more resilient community.

Finally, it will be interesting to explore different outcomes of the use of the interactive planning toolkit by BMK and non-BMK community residents because the toolkit requires collective actions and some levels of participation among local residents. BMK communities seem to have a better level of collective action than non-BMK communities. Lastly, what should be further explored is how to help community residents identify, and/or build, cultural and political capital with regards to the community's social, cultural, and political context. Future studies of community resilience should help to show how community residents visually identify cultural and political resources as collective community resources and how they then utilize these resources via the use of resilience.

Conflict of Interest

The authors declare that there is no conflict of interest.

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References

Alder, P. S., & Kwon, S. W. (2002). Social capital: Prospects for a new concept. *The Academy of Management Review*, *27*, 17–40. https://doi.org/10.5465/AMR.2002.5922314

Archer, D., Luansang, C., & Boonmahathanakorn, S. (2012). Facilitating community mapping and planning for citywide upgrading: The role of community architects. *Environment and Urbanization*, *21*(1), 115–129. https://doi.org/10.1177/0956247812437132

Archer, D., Marome, W., Natakun, B., Mabangyang, P., & Phanthuwongpakdee, N. (2019a). The role of collective and individual assets in building urban community resilience. *International Journal of Urban Sustainable Development*, *12*(2), 1–18. https://www.tandfonline.com/doi/pdf/10.1080/19463138.2019.1671425?needAccess=true

Archer D., Marome W., Natakun B., & Phanthuwongpakdee, N. (2019b). *Climate crisis planning: A toolkit for building local urban resilience*. IIED Briefing Paper. https://pubs.iied.org/pdfs/17495IIED.pdf

Berkes, F., & Ross, H. (2013). Community resilience: Toward an integrated approach. *Society & Natural Resources*, *26*(1), 5–20. http://doi.org/10.1080/08941920.2012.736605

Callaghan, E., & Colton, J. (2008). Building sustainable & resilient communities: A balancing of community capital. *Environment, Development and Sustainability*, *10*, 931–942. https://doi.org/10.1007/s10668-007-9093-4

Campanella, T. (2006). Urban resilience and the recovery of New Orleans. *Journal of The American Planning Association*, *72*(2), 141–146. https://doi.org/10.1080/01944360608976734

Charles, A., Louck, L., Berkes, F., & Armitage, D. (2020). Community science: A typology and its implications for governance of social-ecological systems. *Environmental Science and Policy*, *106*, 77–86. https://doi.org/10.1016/j.envsci.2020.01.019

Coleman, J. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, *94*, 95–121.

Flick, U. (2009). *An introduction to qualitative research*. SAGE.

Flora, C., Flora, J., & Gasteyer, S. (2015). *Rural communities: Legacy and change* (5th ed.). Westview press.

Haitook, T., Wongcharoen, A., Charoernrit, K., & Saengkaew, S. (2015). Community based adaptation (CBA) to climate change in the coastal zone: A case study in coastal communities, Nakhon Sri Thammarat province, Thailand. *Khon Kaen Agriculture Journal*, *43*(Supplementary1), 707–712. [in Thai]

Hammersley, M., & Atkinson, P. (2007). *Ethnography: Principles in practice*. Routledge.

Hancock, T. (2001). People, partnerships, human progress: Building community capitals. *Health Promotion International*, 16(3), 275–280. https://doi.org/10.1093/heapro/16.3.275

Lachapelle, P., Gutierrez-Montes, I., & Flora, C. (Eds.). (2021). *Community capacity and resilience in Latin America*. Community development research and practice series. Routledge.

Luansang, C., Boonmahathanakorn, S., & Dominigo-Price, M. L. (2012). The role of community architects in upgrading; Reflecting on the experience in Asia. *Environment and Urbanization*, *24*(2), 497–512. https://doi.org/10.1177/0956247812456125

Marome, W., Natakun, B., & Archer, D. (2021). Examining the use of serious games for enhancing community resilience to climate risks in Thailand. *Sustainability*, *13*(8), 4420. https://doi.org/10.3390/su13084420

Magis, K. (2010). Community resilience: An indicator of social sustainability. *Society and Natural Resources*, *23*(5), 401–416. https://doi.org/10.1080/08941920903305674

Moser, C. (2009). Ordinary families, extraordinary lives: Assets and poverty reduction in Guayaquil, 1978−2004. *Economic Geography*, *86*(4), 457–458. https://doi.org/10.1111/j.1944-8287.2010.01087.x

Natakun, B. (2015). Participatory slum upgrading and community-based development: Practices and challenges. *The International Journal of Architectonic, Spatial, and Environmental Design*, *9*(1), 15–27. https://doi.org/10.18848/2325-1662/CGP/v09i01/38385

Paton, D., & Johnson, D. (2001). Disasters and communities: Vulnerability, resilience and Preparedness. *Disaster Prevention and Management*, *10*(4), 270–277. https://doi.org/10.1108/EUM0000000005930

Patankar, A., Patwardhan, A., Marome, W., & Porio, E. (2013). Impacts of extreme weather events and implications for adaptation planning for coastal cities. *Global Environmental ChangeI*, (3), 16–24. https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/51208/IDL-51208.pdf?sequence=1&isAllowed=y

Putnam, R. (2000). *Blowing alone: The collapse and revival of American community*. Simon& Schuster.

Riessman, C. (1993). *Narrative analysis*. Sage Publications.

Sa-adthien, S., Tanpichai, P., & Jai-aree, A. (2020). Community resilience for the survival in flooded areas Nakhon Sawan province. *Kasetsart Journal of Social Sciences*, *41*, 481–486. https://so04.tci-thaijo.org/index.php/kjss/article/view/247513/168074

Sherrieb, K., Norris, F., & Galea, S. (2010). Measuring capacities for community resilience. *Social Indicators Research*, *99*(2), 227–247. http://www.jstor.com/stable/40927589

Soekarjo, M., & Oostendorp, H. (2015). Measuring effectiveness of persuasive games using an informative control condition. *International Journal of Serious Games*, *2*(2), 37–56. https://doi.org/10.17083/ijsg.v2i2.74

Yin, R. (2013). Validity and generalization in future case study evaluations. *Evaluation*, *19*(3), 321–332. https://doi.org/10.1177/1356389013497081