

Sustainable Housing Design Through Local Community Participation: Case Study of Soi Wat Lung Ban Community, Samut Songkhram Municipality, Thailand

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Abstract

- This article describes a three-year process of local participation in the sustainable housing design in Soi Wat Lung Ban Community, which was selected through a participatory process. Adapting Hamdi's (1996) Participatory Action Planning (PAP) concepts, the research team collaborated with members of 14 communities and government agencies. This article is an evaluation of the process to implement a model of architectural design for vernacular housing and factors, which were obstacles to successful outcomes.

Keywords: community, participation, Eco-housing, local wisdom, sustainable housing design.

Introduction

In 2007, a group of faculty members from the Faculty of Architecture of Chulalongkorn University were of the opinion that the modern Thai architecture was overly influenced by Western, while eschewing the uniqueness and well-adapted traditional Thai styles. This faculty group was determined to develop an alternative design, which retained traditional Thai attributes while integrating globally modern aspects of architecture to create a balanced result. The outcome of this initiative was the "Ban Reuan Withi Thai" Project with the objectives to develop a prototype design for Thai housing which integrates global trends with Traditional Thai aspects. The Project was a collaborative effort, among multiple sectors, to pursue the goal of balanced architecture with traditional Thai wisdom, integrated with modern living styles through a participatory process. The Project was implemented in 14 communities of Samut Songkhram Province over a three-year period. (Technical Resource Center of Chulalongkorn University, 2010) Soi Wat Lung Ban Community, a small neighborhood along the Mae Klong Canal, was chosen as the pilot project site.

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2. Literature Review

2.1 Action Planning

Action planning is a new method of planning that differs from comprehensive planning, and is implemented under a planning framework. Action planning is not complex and allows flexibility for modification based on lessons learned from on-going implementation. Action planning is based on the principle that community residents themselves possess the creativity and capacity to effectively analyze local problems and plan solutions on their own. Outside resource persons, experts, donors, and various officials should only play a supportive role, and give the local community enough opportunity to explore new approaches to development. (Hamdi, 1999)

Action planning is: (1) Problem-based and opportunity-driven; (2) Based on achievable action; (3) Participatory, encouraging rapport and partnerships; (4) Reliant on local knowledge, skills and traditional wisdom; (5) Non-reliant on complete information; (6) Small in scale, community-based; (7) Incremental rather than comprehensive; (8) A starting point rather than end state; (9) Fast but not rushed; and (10) Visible with tangible outputs. (Hamdi, 1996)

2.2 Participation

Participation is a core feature of PAP and includes acceptance by the stakeholders of the conditions for consensus building, with an emphasis on collaborative processes from the initial stages of project development. There is a joint role played by the local community members, with the “outsiders” (professional planners, government officers etc.) remaining tangential to the process. The feasibility of the plan correlates with the level of participation of the local community and can be classified as follows: (1) None and Indirect: Outside experts act as surrogates for community members when participation is low or non-existent; (2) Consultative :Outside experts are advocates when the local community begins to emerge as an interest group in the project, but decision-making is still concentrated among the outside experts (3) Shared Control: The outside experts and the local community members play a joint role as stakeholders in the process; and (4) Full Control: The outside experts serve as resource persons while the local community are the principal drivers of the process. (Hamdi, 1996)

2.3 Eco-housing

An eco-housing integrates economic efficiency, resource conservation, waste minimization, renewable energy, ease of operation and maintenance, and access to community facilities. It thus enables a healthy and cost-effective lifestyle. To achieve these objectives, an integrated design needs to be carried out, involving a variety of disciplines. Rather than studying the individual building component, system, or function in isolation, a multidisciplinary approach studies the interrelated impacts of design, systems, and materials. In Asia, eco-housing is yet to be mainstreamed into current plans and policies. (United Nation Environment Programme, 2005)

3. Methodology

This PAP used the following participatory processes: (1) Review of related literature; (2) Interviews with experts; (3) Community-based meetings; (5) Workshop with Project partners; (5) Community survey and assessment; (6) Interviews and group meetings with key informants; (7)

Master's thesis projects conducted by students in the Housing Development Sciences curriculum in collaboration with the Soi Wat Lung Ban Community Board and residents, representatives from 14 communities in the Samut Songkhram Municipality, representatives from the Community Organizations Development Institute (CODI), representatives from the Network Academic Institute, and specialists from the Provincial Public Works Office.

During December 2010 – November 2011, the meaning of “Keha Chumchon Withi Tai” (“vernacular Thai housing community”) was defined and a Project pilot site was selected. Next, a community survey was conducted to assess the capacity and challenges of housing in the Soi Wat Lung Ban Community (June – October 2011). A series of implementation activities informed the creation of the prototype Ban Reuan Withi Tai model project, leading to its introduction during December 2011 – 2012. A set of activities for children in the community was implemented including picture-drawing contests, beautiful house identification, and establishment of a children's savings fund (which was later expanded to include the entire community). A workshop among all partners was convened on creative Thai housing communities, including brainstorming solutions to housing problems. The participatory process instilled a sense of pride among the community's children and adults, gradually increasing their sense of ownership of the Project's goals and outcomes.

On January 8, 2012, a “House-building Children's Day” was conducted. Then followed the establishment of a network of partners to create a prototype house as a model of Reuan Withi Tai in collaboration with the following allies: (1) Samut Songkhram Municipality; (2) CODI; (3) National Housing Authority; (4) Habitat for Humanity – Thailand; and (5) the Premier Product Company to implement the restoration projects.

4. Results

The Soi Wat Lung Ban Community is situated along the banks of the Khlong Mae Klong Canal in the Samut Songkhram Municipal area. The community contains 190 households which can be classified into four architectural styles: (1) Traditional Thai (15 houses); (2) Local, wood (53); (3) Mixed (94); and (4) Modern (28). About half of the houses are a mixture of local, traditional, and modern (see Figure 1). One-third of the dwellings are over 50 years old and half are in a dilapidated state. Most of the households have four occupants of whom about one-third are between 40 and 60 years of age, two-fifths have primary education, one-fourth are employed in wage labor and about one-third have mean income between 5,001 – 15,000 baht (US\$152-457) per month. One-fourth of households can just barely meet their basic needs, while another one-fourth cannot and are in debt. Just under half of the household owners valued their dwelling and wished to see it preserved. (Kaengtonglang, 2011)

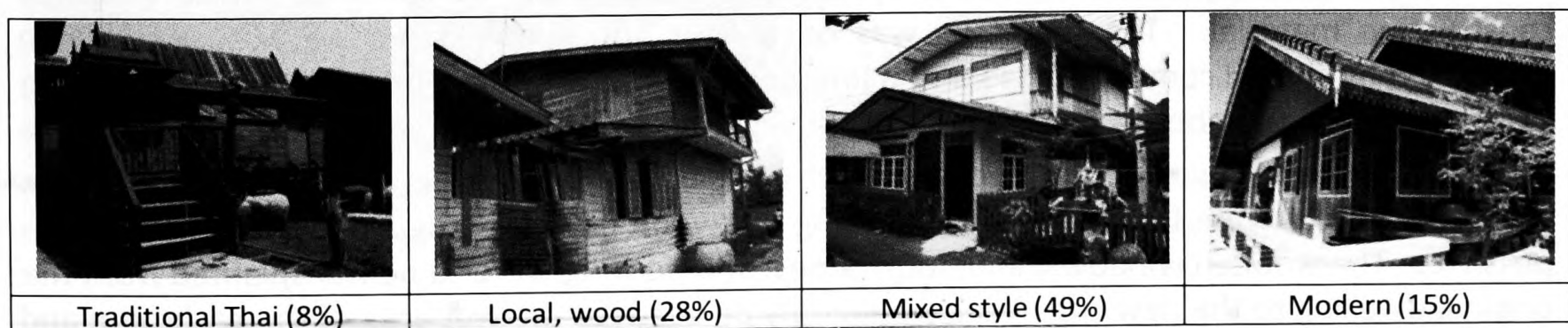


Fig. 1: Types of houses in the Soi Wat Lung Ban Community
 Source: Kaengtonglang, 2011

Over three-fourths (78%) of the households in the Community have problems with their houses which, can be classified as follows: (1) Erosion from the canal water (28%) (Raisaeng, 2011); (2) Unhygienic latrine and waste water disposal (25%) (Khamparat, 2011); (3) Dilapidation of culturally significant houses and which are in need of repair (23%); and (4) Dilapidation requiring professional repair workers (52%). Some households had multiple types of these problems.

The participatory community assessment process produced the consensus that the prototype housing for regeneration should reflect the local and Thai traditional styles. Two houses were selected to be restoration model.

This article is a case study of Ms. N's dwelling, located at the banks of the Mae Klong Canal, and which is a typical local one-story dwelling that is slightly raised on stilts. Three people live in the household and have unstable incomes. The house is threatened by erosion and is becoming dilapidated. Ms. N does not have sufficient funds to pay for restoration. She has built a new latrine but the waste water disposal is sub-standard. Ms. N does not have a deed for the land since the original owner died long ago without transferring ownership.

The main threats to this dwelling include erosion from the canal water and unhygienic latrines and waste water disposal. The Project partners conducted research in how to address these challenges by interviewing experts including the provincial public works specialists, experts on traditional Thai vernacular housing, brainstorming with eco-house resource persons, observing model eco-houses, and consulting with specialists on waste water management and disposal. The Project that resulted from this collaboration is not only the design of the prototype housing but also the creation of a network of allies, joint selection of the household to be restored, development of a prototype model of a regenerated community of restored dwellings, mobilization of the required resources for restoration, and planned implementation of the Ban Reuan Withi Tai Model Project.

Design of the "Ban Reuan Withi Tai"

The design for the Project is based on an eco-house model, integrating modern technology with traditional norms, and affordable for families with limited income. The design includes traditional local features of a hallway and patio, a Thai-style kitchen, one bedroom/bathroom/lavatory, ability to easily construct extensions as needed in the future, being in balance with the local environment and climate, and drawing upon traditional wisdom, i.e., the use of stilts to raise the dwelling, no land fill, elevated roof, long eaves, ample natural ventilation and cooling features to minimize exposure to the sun and maximize air circulation.

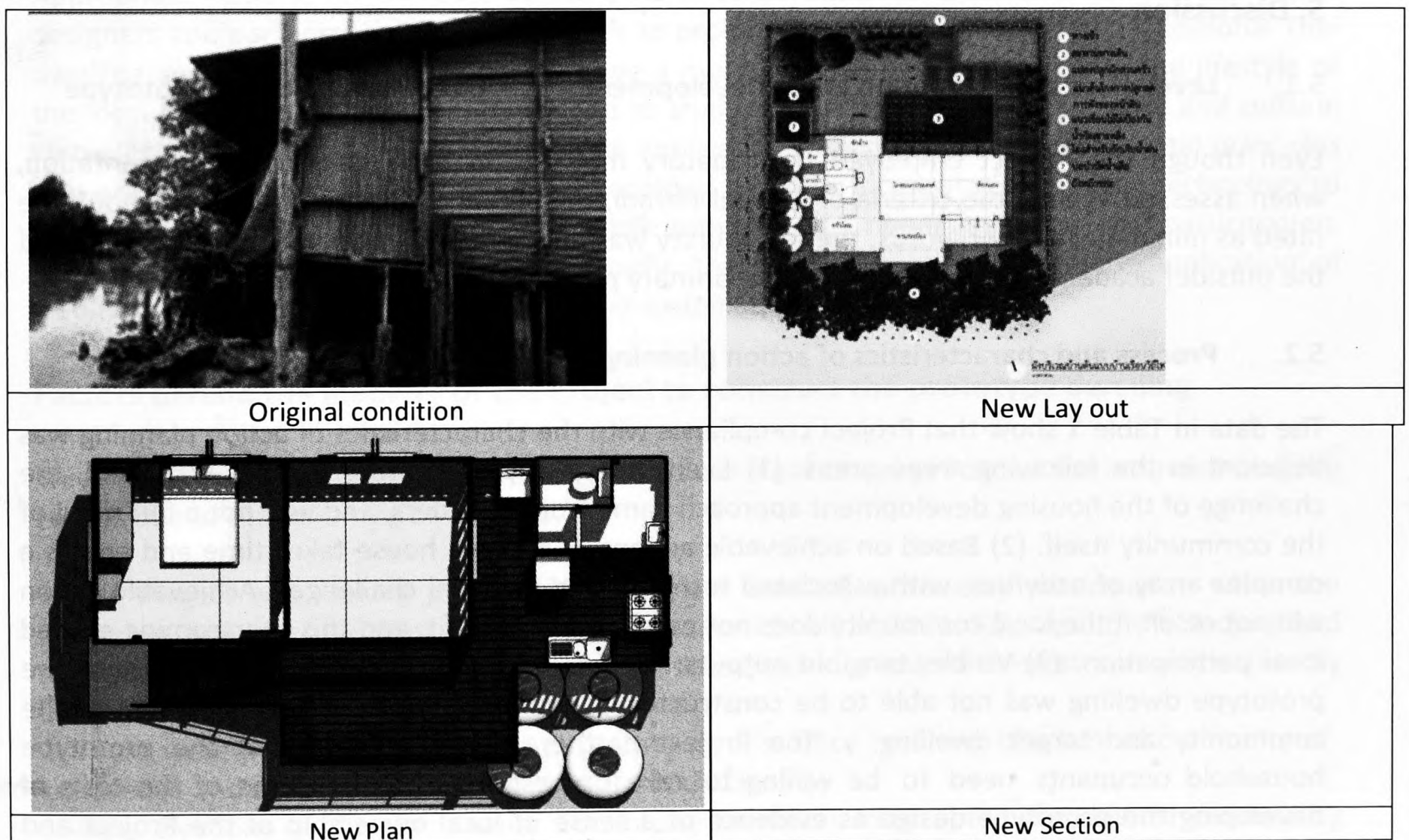
In designing the structure of the prototype, the Project drew upon the knowledge and experience of local builders, and ensured that the engineering specifications would produce a safe and stable structure. A modular system was used in the design to minimize waste of construction material. The emphasis was on a light and simple structure, which could be assembled by shared community labor in a limited period of time. The piles were designed to be "Mai Kon Saw" (bamboo). The green roof (a recycled material) sheets were to be part of a complete network of gutters to feed rainwater collection into containers. Whenever possible, recycle resources were to be used such as using the wood from the original dwelling as much as possible. The wooden windows, and doorframes, and flooring were to be transplanted from the original dwelling to the new site. Tiles would only be used for the wet area of the bathroom and latrine area.

Landscaping architecture consisted of plans to plant mangrove trees to fortify the banks of the canal. Three rows of “Mai Kon Saw” (bamboo) were to be impaled into the ground in a zigzag pattern to combat erosion, along with the mangrove trees to act as a lattice to keep the canal-side ground intact. In addition, the original dwelling site was to be moved away from the banks of the canal. Fruit trees were to be planted as a source of nutrition and shade. A kitchen garden was planned, emphasizing traditional herbs and vegetables.

The latrines were to be reconstructed with a separation of dry and wet areas, ample ventilation, raised latrine, new-style septic tank (Eco-tank) not requiring electricity, and be economical to maintain.

Many new ideas from the Zero Waste Concept (Zero Waste, 2012), the model Zero waste-house observation and interview (Suwannarat, 2012) were applied in the design of the Project prototype. These lessons include the decision not to raise the level of the land through land-fill, management of rainwater and waste through use of a compost tank, use of biofuel from the compost tank for cooking and boiling water, use of treated bio-fluids to clean the house and bathroom, and use of compost tank products to fertilize the kitchen garden to produce organic vegetables for local consumption or sale.

The total cost of construction of this for the prototype dwelling was calculated to be 150,000 baht (exclusive of labor costs (US\$ 4,660) at 2011 prices. Project partners pledged to contribute to the cost of construction and the Community would contribute labor through “Long Khak” (assembled by shared community labor as traditional Thai house construction method).



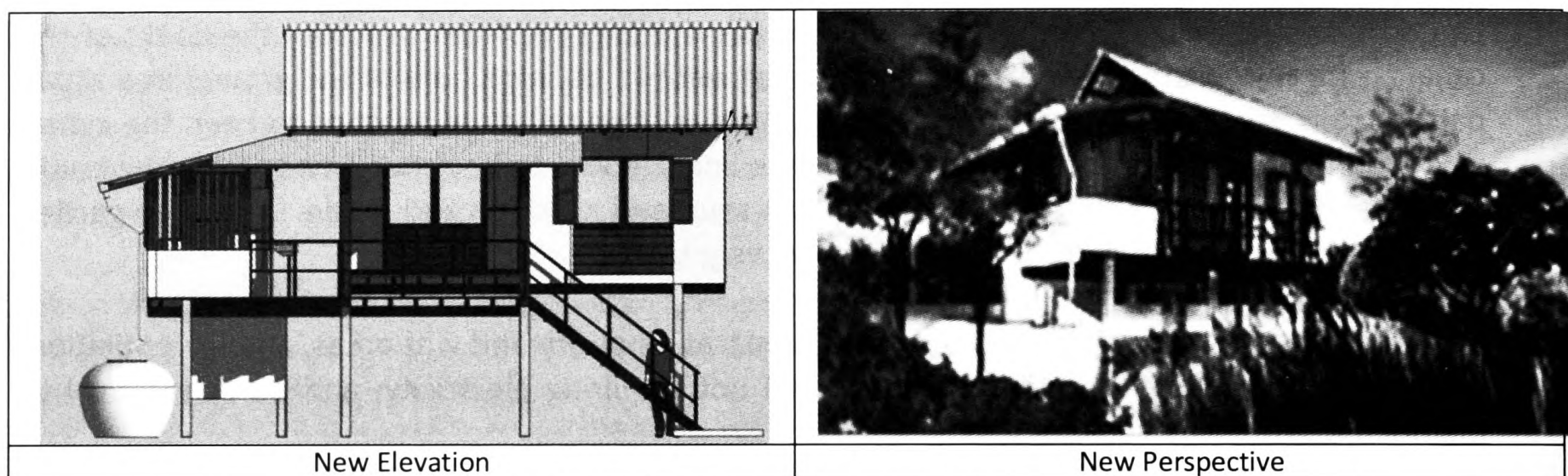


Fig. 2: Prototype housing model

Source: Panitchpakdi, K. & Kaengtonglang, T. (2011) *Withi Thai Housing Communities*.

After completion of the design of the prototype for home restoration, the Project team tried to contact the head of household (Ms. N) but she refused to meet with the team. Based on consultation with local leaders it was determined that Ms. N had become reluctant to participate in the Project since she lacked a deed for the land and may have feared challenges to her right to live there. In addition, Ms. N was concerned about increased cost of maintaining a regenerated home, and impeded access to pathways by relocation. Finally, Ms. N was concerned that she might incur the envy or ill-will of neighbors by being singled out for home regeneration. Given the lack of household willingness to proceed, the construction of the prototype has been put on hold.

5. Discussion

5.1. Level of local participation in the development of the Ban Reuan Withi Tai prototype

Even though the Project employed participatory methods in each stage of implementation, when assessed against the criteria of Nabeel Hamdi, the actual level of participation should be rated as minimal. In other words, the community was only indirectly involved in the process and the outsider academic Project team was the primary planners instead of local residents.

5.2. Process and characteristics of action planning

The data in Table 1 show that Project compliance with the characteristics of action planning was deficient in the following three areas: (1) Even though a participatory process was used, the challenge of the housing development approach came from outsiders, and was not a felt need of the community itself. (2) Based on achievable actions: Building a house takes time and entails a complex array of activities, with associated technical and financial challenges. Achievable action will not result if the local community does not perceive the benefit, and this shortcoming eroded local participation. (3) Visible, tangible outputs: The result for this indicator is failure since the prototype dwelling was not able to be constructed as planned due to lack of readiness of the community and target dwelling. The Project partners had stipulated that the prototype household occupants need to be willing to take on responsibility for some of the costs of developing the prototype design as evidence of a sense of local ownership of the Project and potential for sustainability of the end result. Instead, the household occupants had other financial priorities in dealing with the dilapidation of their dwelling and this resulted in their refusal to participate in the Project.

Table 1: Characteristics of and Compliance with Action Planning

Characteristics of Action Planning	Level of Compliance		
	High	Medium	Low
1. Problem-based and opportunity-driven			√
2. Based on achievable actions			√
3. Participatory, encouraging rapport and partnership		√	
4. Reliant on local knowledge and skills and traditional wisdom		√	
5. Non-reliant on complete information	√		
6. Small in scale	√		
7. Incremental rather than comprehensive plans	√		
8. Starting points rather than end states	√		
9. Fast but not rushed		√	
10. Visible, tangible outputs			√

6. Conclusion

Lessons from the development of the Ban Reuan Withi Tai prototype are as follows. This PAP only produced a design for a prototype model of a small vernacular house, but the knowledge gained was profound and should be of value for future activities. At present, members of the Rong Kung Community (one of the participants in the process) are applying the project concepts toward planning their new community.

Appropriate housing for the 21st Century needs to be based on a holistic view. The Project designers and partners realize that, in order to produce a sustainable model of a traditional Thai dwelling and community, they need to have a more profound understanding of the lifestyle of the local residents. In addition, they need to study the underlying socio-economic and cultural status of the residents. There needs to be application of eco-friendly environmental principles that are tailored to the prevailing cultural ecology, carefully incorporating modern technology to achieve a balance with the traditional, while providing full opportunity for local participation, joint learning and decision-making. Finally, there needs to be appropriate application of traditional wisdom to promote harmony and sustainability going forward.

Factors behind the inability of the Project to construct the prototype dwelling

This Project has been on-going for several years but has not yet produced the intended tangible results due to the following limitations:

1. The Project was making progress with a good level of community participation when the disastrous floods struck central Thailand in the second half of 2011. As a result, the Project had to suspend activities for three months and this resulted in a loss of interest and motivation by the local residents;
2. There were personnel changes in the local mayor's office resulting in a lack of continuity of knowledge and support for the Project by the Municipality;
3. New elections of the Community Committee members interrupted the flow of community participation in the Project;
4. Community resident factors:

- (a) Most of the local residents felt a sense of dependency on aid from the government instead of pursuing self-reliance. This is partially the result of many years of populist policies of the then-governing political party;
 - (b) There is a lack of solidarity in the community and lack of trust of the populist system of channeling funds to the locality through various development funds. This has created competition for financing among local residents and suspicion that the Community Board will allocate funds unfairly. The Community Committee does not operate enough transparently and withholds information from the community on available resources and allocation decisions;
 - (c) Local residents assigned lower priority to housing than the Project expected. The community was more concerned about having enough to eat, income, and finances;
5. The various independent streams of funds for the community through populist policies were not integrated as part of a comprehensive development plan based on principles of self-reliance. The competition and lack of mutual trust among community residents made it difficult to implement the Project with full community participation;
6. The local administrative organizations lacked an appreciation of the importance of housing for the wellbeing of the population. This inhibited decentralization of authority as envisioned through the creation of the local administrative organizations;
7. The Research team was not able to arrange enough time to create an optimal level of local participation and buy-in to the Project. In part, this was due to the many demands on the time of the Project staff, and the fact that they lived outside Samut Songkhram Province. This meant that the Project team members were viewed as “outsiders” and this limited their ability to advocate the Project objectives. Thus, for future PAP projects, it would be important to assign responsibility to local institutes.

7. Recommendations

7.1 For the community: The target community needs to sustain activities to create a model for the benefit of local residents and to encourage the 14 other communities in the Municipality to replicate the activity through locally-driven processes. Outside experts and agencies should not drive the process but, instead, can play a supportive role. The outside groups are ready to assist, but the target community is not yet ready to proceed.

7.2 For the local administrative organizations in the Municipality and the province: These agencies need to place higher priority on new methods of housing development since, under the decentralization policy, these agencies are now responsible for ensuring adequate housing for local residents. This model regeneration Project is only a small part of the overall challenge of housing. Nevertheless, the relevant local and provincial agencies should study the experience of this Project in order to apply the lessons learned.

7.3 For housing development agencies: This Project concept of constructing vernacular Thai housing should receive more support from housing developing agencies since the Project activities are in line with the new direction of these housing agencies in which housing development is more community-driven than in the past. The National Housing Authority can play an advisory role, while the community and local administrative organizations are the key implementers.

7.4 For the technical and academic sectors: Management of the knowledge gained from actual implementation in this project is highly beneficial for the participating students. Thus, academic institutions should modify their approaches to learning to include more practical, field-based activities as described here. Further, targeted neighborhoods should be those in the vicinity of the academic institution to maintain and improve relations with the host community.

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