Enhancing Urban Quality through Natural Architecture and Cooperative Design: The Case of Chiang Mai, Thailand.

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Abstract

The objective of this work is to define and test a method of approach to urban and environmental regeneration in historic cities with strong socio-cultural integration issues. The research group has defined and tested methods and tools in order to approach the project of urban regeneration of degraded areas of historic Asian cities. The research carried out suggests a method of approaching the design for this type of degraded areas, combining innovative design tools, taking as reference system, the sharing of decisions with the people involved and the clear exhibition of the transformation strategies. The paper analyzes also a particular case study, wherein the research group tested the defined method. It covers the area along the Mae Kha canal, near the city of Chiang Mai in Northern Thailand. Cities prone to strong development, as the case study, must deal with the presence of illegally occupied areas, with no real collective identity, which need to be redesigned with a view to sustainable urban reorganization that places the focus on the needs of environmental, social and economic. Particularly, the work focuses on public areas containing cultural heritage, subject to occupation by poor foreigner communities. The strategy is based on a recombination of the site values, that creates new forms, giving a role to the inhabitants and put them in a particular recognizable habitat. In order to achieve the expected results, the tools of sustainable design, self building practise, and shared environmental and urban design, becoming essential.

Keywords: Sustainable architecture, low cost housing, collaborative design
1 Background

The focus of the present work is on a kind of urban decay which is frequent phenomenon in the context of Asian intermediate cities (population of less than five millions). This phenomenon involves illegal occupation of areas that fall within the urban fabric of historic and/or environmental value.

The wider question of the housing policies for poor in Asian cities, is deeply studied by NGO and research institutions from many years. Some indicators shows how this issue is important in the planning outlook of urban agglomerations in Asia. Cities and towns produce up to 80% GPD in Asian countries. Even for this reason, experts say that most Asians will live in cities by 2030 (Asian Migrant Centre, 2002; Abella M, Ducanes G, 2009). UNCHS calculates that to accommodate them is equal to building a town of 140,000 inhabitants every day for next 22 years. Observing these indicators, it’s easy to understand the relevance of slum settlements in Asian cities (UNESCAP, 1996). UNCHS calculates 42% of Asians living in cities live in slums or informal settlements (Table 1), and the slum extension grow incrementally (UNESCAP-UNHABITAT, 2008 b). Figure 1 shows the migratory trend in East-Asian region.

The illegal occupation of the areas is often caused by domestic or international migratory processes. Several studies, carried out by International organizations, testify the intensity of the illegal migration among Asian countries, especially addressed to the richer nations (Thailand, South China). In some countries, as Thailand, the legal and illegal migrant flows are constantly rising, and the issues linked to the quick development of medium-size city are becoming very important for local authorities.

Table 1: Slums population in Asia. Source: UN-Habitat State of the World’s Cities 2006/2007

<table>
<thead>
<tr>
<th>Region</th>
<th>Total populations (in millions)</th>
<th>Total urban populations (in millions)</th>
<th>% of total population</th>
<th>Total slum population (in millions)</th>
<th>% of total urban population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Asia</td>
<td>1,364</td>
<td>533</td>
<td>39,1</td>
<td>193,8</td>
<td>36,4</td>
</tr>
<tr>
<td>South-Central Asia</td>
<td>1,499</td>
<td>429</td>
<td>29,6</td>
<td>253,1</td>
<td>59</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>530</td>
<td>203</td>
<td>38,3</td>
<td>56,8</td>
<td>28</td>
</tr>
<tr>
<td>Western Asia</td>
<td>175</td>
<td>115</td>
<td>65,7</td>
<td>29,7</td>
<td>25,7</td>
</tr>
<tr>
<td>TOTAL Asia</td>
<td>3,519</td>
<td>1,280</td>
<td>36,4</td>
<td>533,4</td>
<td>41,7</td>
</tr>
</tbody>
</table>
In the case of Thailand, the AMP (Asian Migrant Centre) affirms that the documented and undocumented migrants in 2002 were more than one million (30% legal and 70% illegal), coming from Myanmar, Yunnan and Laos, and they mainly moved towards the northern and central districts (Asian Migrant Centre, 2002; Abella M, Dueanes G, 2009).

The migrant communities create therefore slums and informal settlements in public areas, in order to establish relationship with other migrants and part of the local community. Paradoxically, they suffer from social and urban marginalization in spite of their central position in the cities. The present work studies solutions for informal settlements characterized by the presence of ancient monuments. They may have historical or and artistic values and they show different levels of codification and conservation by local bodies. UNESCO and ICOMOS in the annual report of Monuments and Site in danger, present many cases of risk situation related to the lack of proper planning and to the development pressures in cities (ICOMOS, Petzet M, Ziesemer J, 2008). The third characterizing feature of the studied site typology is the environmental pollution, linked to the lack of base infrastructure and to the improper lifestyle of the slum inhabitants. Agglomerations that are at risk of becoming an area of historical and environmental degradation are usually lacking in long-term planning, infrastructure and public services and also in the habit to deal with social problems and emergency situations. Factors which could increase these risks and make this degradation more severe, are both external and internal to the city. External factors: rural poverty; proximity to administrative boundaries of less developed or under conflicts regions and countries; natural disasters. Internal
factors: strong imbalance of income among social classes; being an urban area which has a significant international tourism; proximity to international industrial park; bad urban governance; lack of planning policies for housing, environment and cultural heritage. The many complex issues that urban development of cities in developing countries have to be faced, require appropriate instruments which can provide complete solutions to this type of criticality. The difficulties of maintaining acceptable health standards and of avoiding the isolation and segregation of these areas are often taken care of by means of traditional urban planning tools which have the limitation of not being able to adequately analyze the complex social relations in cities.

The most common critical factors in historical and environmental areas subject to deterioration, are: lack of social and cultural relations in an urban context (segregation); social conflicts between squatters and ordinary citizens; illegality and crime; inadequate hygienic standards; attraction of illegal immigration; lack of primary infrastructure and consequent pollution of soil and water resources; not being able to identify historical, artistic and architectural values; loss of value of cultural heritage meant as a resource for urban qualification, economic and social development; risk of irreversible impairment of the physical integrity of historical and environmental heritage.

One of the context in which the research group works is the city of Chiang Mai, northern Thailand. It was founded in the thirteenth century in the valley of the River Ping and Mae Kha, within a square brick fortification. In the late eighteenth century, after the expulsion of the Burmese, King Kawila enlarged the city and build new fortifications using the technology of compressed clay layers. This project required the diversion of the original course of the Mae Kha. Its waters were diverted into the Ping River, while the original riverbed became part of the Kampaeng Din system of defence, placed along the left bank of the Mae Kha canal. The area between the Mae Kha Canal and Ping River is of recent urbanization, and houses tourist accommodation and facilities and commercial sites. Chiang Mai is now a major tourist destination, but also the arrival point for many migratory flows from the mountains and Myanmar whose border is around ten kilometres. On their arrival, immigrants tend to settle illegally in public territories leading to the emergence of pockets of poverty, especially along the areas of the Mae Kha canal and Kamphaeng Din (Ribeiro G, Srisuwan A, 2005). Figure 2 shows the overall urban design of Chiang Mai city, and the position and size of the Mae Kha canal. Anthropogenic pressures, determined by urban growth, squatter settlements and poor infrastructure lead to social tension and troubles along the canal which consequently cause environmental degradation, pollution and marginalization in the urban area.

2 Design Models

The Chiang Mai Department of Fine Arts and the Chiang Mai Municipality plan to propose a project of restoration of the ancient fortifications which includes Kamphaeng Din, recognized as a potential heritage which can increase cultural
tourism. Therefore, the presence of the highly polluted canal, which flows a few meters from the wall and the poor communities that have settled down in this area, are seen as an obstacle for the implementation of the project.

Figure 2: General view of Chiang Mai

The plan designed by local institution aims also to push the Mae Kha communities out of city (Ribeiro G, Srisuwan A, 2005). The weakness of the traditional approach of local governance is that it plans separate programs to face each problem, while the right solution should take care all the factors, providing integral answers. Environmental rehabilitation of the context cannot disregard a social project that can better integrate the community with the territory. The groups of research proposed therefore a design method to join the different needs, in order to assist public authorities to manage the area development through new indicators. International bodies (UNESCO/ICROM, UNCHS, WHO, UNDP) already established protocols and best practises in order to start good national and local governance of the specific issues. On the basis of these protocols the research team proposes technical and methodological instruments. The challenge is to define and combine different strategies which are able to face more than one theme, and to evaluate how the strategies can be convenient both for communities and for local institutions. The analysis and study design of the instruments taken into consideration demonstrates how urban design and architecture, shared and backed up by real participatory communication, are able to create conditions for providing new and re-naturalized urban landscapes, in order to strengthen the relationship between human and natural environment.
The research group decided therefore to apply the design instruments starting by a common approach: the communities involvement in the planning and architectural design and subsequently to a part of the building process. Virtual Reality and Multimedia tools allow to understand the planning and architectural design process (Gaiani M, 2003; Jupp G, Raghu R B, Skip V K, 1993). These kind of instruments were already applied as tools for urban planning in many western countries and also in some Asian megacities. The added value of the virtual reality and multimedia tools application in the typologies of area studied in the present work are the following:

- It allows to unskilled and illiterate citizens to understand the design strategies;
- It allows to architects, planners and politician to acquire feedback in order to define a successful project;
- It allows to preview the impact of new building and houses on the cultural heritage sites;
- It allows to native citizens to preview the city upgrading;

Virtual reality can have many ways of development and application. In the case of Mak Kha canal the research group tried to combine three needs: low technical complexity, interaction between the virtual environment and users, visualize both overall site and buildings. For a balanced technical solution the research group chose to avoid the use of immersive virtual reality systems. Certainly they allow to enhance the interaction and participation of users, but they also need complex technologies that maybe damp unskilled people. Moreover, there was the need to show contents to a large number of people in a short time. So, the technical instrument should be reproducible and directly accessible to users. The final option was to realize detailed 3d models, with different level of detail, to visualize the design contents. The interaction and participation were ensured by proper multimedia product. The multimedia system, realized by traditional tools (Flash, etc), allows both the visualization and the aided understanding of the design strategies, even adding tutorial audio in different languages (Vassilis B., 1998). The second level of direct citizens involvement strategies is the participation in the building process. It’s well-known that such process can be done in different ways. All the work can be contracted out (private or public building enterprises), or the entire project can be built by the community members themselves (Anzorena, Eduardo J. S.J., 1996).
Depending on the specific case, the final work is done by a combination of the two, with the people doing as much of the work as possible themselves, and contracting out only the more heavy or specialized or technically difficult tasks in the upgrading work. Figure 3 scheme summarizes the design strategies. Starting by the site conditions, the four tools allow to achieve the expected results. The methods and tools used in the design process are based on Sustainable urban and architectural design practises. It's possible define four main tools. Each tool has been selected because it satisfies the overall policies promoted by International bodies, and it is able to answer to different needs, analysed in the previous chapter.

1-Natural Architecture is an emerging art movement that is rooted in the human need to reconnect to the earth, through the built environment. It uses simple and raw materials, made by hand using basic and primitive construction methods and turning them into artefacts artistically. In the case of Mae Kha area, we proposed structural typologies by willow trees. The structure are realized farming cut stakes. Because of their particular shape, they provide natural ventilation and lend themselves well to the creation of structures for open space, for public activities and tourist accommodation (Rocca A, 2006).

2-Environmental engineering allows us to combine the technological requirements of the river embankment design with the environmental and landscape needs of the area in which we operate, aiming to create a balance between anthropical and natural space. These types of projects in natural areas must take into consideration their aesthetic and natural aspects and which cannot at the same time neglect the technical value of the In the Mae Kha case, regimentation of water and action on the riverbanks is required in order to bring back the canal to its original function without having a strong impact on the territory. The works of protection on the banks are primarily intended to prevent erosion, especially as it could jeopardize the stability of slopes. Obviously, in this case a transformation of the bank will be followed by a regularization and shrinkage of the canal bed. In these operations, the limits of application are obvious, particularly in cases of high human activity. When the streams, for example, have large buildings along the bank strips, normally there is no space to accommodate works that lead to the reduction of the speed of running water or
plumbing section. The project plans to control the flow and to restore the banks based on empirical experiences. In this way, the technical solution will be selected on the basis of their applicability in the Mae Kha site, according with similar application in other contexts (De Deppo L, Datei C, Salandin P, 2004).

3-The Shared Self Build is important because any action of natural type is likely to be temporary if not supported by a real sense of identity of the people towards the territory and the city. This practice is able to develop labour training, increasing the usefulness of an individual and helping social groups to mature. In developing countries the rate of population growth, immigration in the metropolitan area and the slow but steady process of degradation of the land of culture provide some evidence that Shared Self Build can facilitate the restructuring of the local economy through appropriate programs of social housing. Choose the “Shared Self Build” project stems from the desire to positively engage as many people as possible in the construction and regenerative process of the area. It is perfectly suited to landscaping interventions that require knowledge of the territory and local natural materials, which are the basis of the Natural Architectural projects and Bioengineering. These two technologies with low economic and environmental impact allow the beneficiaries, i.e. residents, to get involved in participatory processes, in the designing and fulfilment monitoring.

4-Integrated conservation and critical restoration approach. Regarding the need for restoration of the cultural heritage placed in studied typologies of urban area, the theory of critical restoration has been taken into consideration. As well-known, this theory disapproves the instrument of pre-established direct intervention, and wants restoration strategies be identified in each case. For this reason the design model doesn’t establish any direct restoration method or strategy on the monumental objects. Just the recovery of the architectural heritage in relation to its context is the subject of our analysis. The aim is to create optimal environmental conditions to allow the integral restoration of the monument. At the same time, the external causes of degradation must be put to a stop. Restoring and maintaining the wall will not be enough to turn the area into a cultural and tourist attraction. In order to achieve this it needs to be reconnected with the urban context where it takes place, restoring the access to and the route along the Mae Kha canal, making it recognizable as urban sign (Carbonara G, 1997; ICOMOS, 1971; ICOM/UNESCO, 1964).

Combination of these four design methods, carried out by unskilled workers, allows to involve in the planning and execution activities citizens and poor communities, promoting a social architectural movement. Overall, the planning method is intended to respond to environmental, cultural, social and economic needs. Sustainability is the keyword to approach these needs, in order to define long term successful solutions. The goal is to maintain an economic development compatible with social equity, ecosystems and the historic city, working towards a liveable and workable equilibrium.
The main purpose of these methods is to make constructive processes understandable to unskilled workers which would restore the old meaning of personal fulfilment, and at the same time provide an opportunity to form communities and increase solidarity (UNESCAP-UNHABITAT, 2008a,b). The proposal of this project stems from an interactive process which involves a thorough understanding of the issues, needs and potentials of the city through different criteria, which would be translated into a model of transformation. Finding the right model will become basics: The use of pre-existence as intrinsic values and the ethical commitment to design in accordance with the principles of environmental, social and economical sustainability.

Gentrification process lives on the inner imbalances of the city. It runs on an existing social “differential” between citizens. Minimizing of such “differential” means hold up the gentrification process and so to aid its control by local authorities. The proposed design method, based on the Government initiative in the short-term period, creates the conditions to enhance the economic conditions of the Mae Kha inhabitants. When the speculative actions will start to affect the area, the majority of the inhabitants should have good income conditions, and so they will be able to contrast the displacement forces by wealthy citizens (Sampaio J. C. R., 2007). Participation is the first step of a social revitalization process. In the mid-term period it will create the best conditions to start the restoration and recovery of the historical and cultural values of the site.

This process benefits by the small/medium dimension of Chiang Mai city, where the Mae Kha canal area is the main holder of social imbalances.

3 Case Study in Chiang Mai, Thailand

Participatory process defined in the study design incorporates a series of basic steps to achieve a real social project:

1. Knowledge: basic training for those involved in the process:

2. Sharing objectives: through questionnaires and interviews investigating the real desirability and necessity of actions and agree on objectives;

3. Sharing design: analysis of alternatives and determining the best design strategies;

4. Construction: increasing a sense of responsibility for the project, starting workshops and social construction sites where even unskilled labour contributes in the building phase.

The defined design model was applied in the Mae Kha case. Such site shows exactly the features of the area typologies. Existing works analyze the main issues of the Mae Kha area: informal settlements, monumental elements, pollution, tourist exploitation, lack of basic services that are not provided by local authorities. Population of the Chiang Mai province increased from 1,200,000, to 1,600,000 due the migratory flows rural provinces and from Myanmar. Tourism is the main economic activity. Thailand Tourism authorities
calculated around 3,500,000 the number of guest arrivals in 2002 (Chiños C, 2006; Ribeiro G, Srisuwan A, 2005). The model tried to face these issues, designing suitable architectural and environmental solutions. Srisuwan and Ribeiro examined the relationship between Mae Kha area and local institution. The actors of the Mae Kha management are the communities leaving in the 17 informal settlements, NGOs, the Chiang Mai Municipality and other bodies by civil society, like the Lanna architect association and international donors, who carried out environmental project on such site.

In the case of the redevelopment area of the Mae Kha canal, poor communities living along the canal were interviewed in order to understand their social issues and needs. In the same way, information was gathered by citizens and researchers from the University of Chiang Mai, who had worked in the past along this area. The choices for the design were also shared with them. The instruments used for the sharing of design have been tuned to facilitate the understanding of the design solutions that more interested the residents, using virtual simulations and digital models of interventions in the area. A multimedia tool has been realized. It shown the design strategies and clearly explain the architectural and urban solution. A list of feedback has been collected following up the visualization step, and they have been used to optimize the project features. The following figure 4 is a sample of the virtual environment of the project, shown to the interviewed citizens. One of the main issue of the Mae Kha area is the mixture of slums with vernacular building, occupied by migrants during last decade. The main bad elements of the residential system along the Mae Kha canal are the houses overcrowding and the pollution of the surrounding environment.

Figure 4: Virtual model of the upgrading design of Mae Kha area

Houses are aligned along the Kampaheng Din wall and they are directly faced on the patch between the canal and the monuments. This promiscuous status and the environmental decay avoid a tourist exploitation of the site because tourists should cross slums to visit the monument. Through Figure 5 is possible to understand the mixture between vernacular building and slums, and to observe the unsuited life conditions. According with the area analysis and with the citizen feedback, the strategy of housing upgrading starts by demolition of the added part, built with unsuited and unsafe materials. The strategy doesn’t aim to realize new building for housing, while it’s finalized to restore the existing vernacular building, built on the basis of the Lanna traditions of North Thailand. The project of restoration has three steps: the rehabilitation of the wooden
structures; the enhancement of interior quality of spaces in terms of lighting, airing and healthiness; the realization of the sewer system.

Figure 5: Slums along Mae Kha canal.

This choice will allow to residents to carry out maintenance of building themselves. Demolition of slums between vernacular building will produce a decrease of people density in the area (Sangawongse S., 2006). This problem will be faced indentifying in the urban plan new areas for new sustainable residential settlements (Figure 6). The strategy adopted in the housing management is able to solve the issues linked by housing needs, but also to aid the achievement of the other objectives. In fact, the rehabilitation of vernacular building and the demolition of slums, will allow to have more public space and to support the tourist exploitation of the area. Moreover, spreading the house units on a longer patch, will allow to reduce the impact of the human activities on the monument and on the environment. According to the centrality of the area, the project shows a new system of sustainable of pedestrian and car mobility, from which we can then retrain all the other points. In the design strategies (Figure 6) the research group considered the important urban and environmental elements to preserve by new realizations. From the feedback, an analysis was carried out directly on site that showed the potential and critical aspects of the area. The design process is built on three levels. From an urban point of view, the creation of a single continuous pedestrian path is proposed that helps to reduce traffic primarily for citizens who move in the north-south direction, and which is also permeable to pedestrian tourist flow that moves transversely.
Moreover, the patch will partially overhang the water, in the riverfront section where in the buildings are close to the embankments. According with the citizens feedback, the design strategies proposed to insert in the area both public and residential functions. For this reasons the research group designed a harmonized system of small public areas that redefine the centrality of the collective functions of this area. The role of these public spaces is to transform the Mae Kha in a meeting area, where the poor communities can meet and establish relationship with the other citizens which offers to be a transit area, but also and especially as a staging point and meeting. Through vegetation and urban green spaces, the project tries to appease the hot humid climate, severely exacerbated by pollution and urbanization. All operations which are proposed in these areas and along the canal are based on the principles of Natural Architecture and Bioengineering and tend to “renaturalize” man-made space, recovering and enhancing the relationship with the habitat that surrounds it (Sheer B, Sheer D, 2002). The housing space will be partially screened by public area, through a green wall made by natural material (Figure 7). The structures that are inserted in public areas will be implemented through a constructive method called Mudhif. The technique consists in the planting of willow branches and roots in a defined perimeter. Then they are wrapped around a thin steel core that guides the growth of the plant. At the top, they are tied tightly so that they are able to support themselves. Over time, the branches take root in the ground and grow rapidly, continuing to wrap around the core of un-galvanized steel to reach the summit. When this process is finished, the branches are able to support the load by themselves, instead the steel structure (Figure 8). While the roots take on the static load, the steel pipes corrode gradually losing their function.
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carrier. Such kind of building can grant benefits also for other issues. By means of them we avoid to realize traditional building for public services, that can have impact in the environmental and cultural image of the site. Moreover, the Mudhif structures are perfectly fitted to be inserted in park and public spaces, because they need very few maintenance (Kalberer M, 2006/2007). Environmental engineering was applied as tools for the upgrading of the Mae Kha embankments, and to enhance the quality of water. First the research group acquired existing data on the depth and width of the canal bed, the low and high-water marks. Particular studies were carried out to obtain records of the canal discharge, the speed, the solid transport and the landfill measurement (Firoz A S M, 1996; Kold, R et al 2002).

These information allow to recognize the main issues of the Mae Kha canal management: low speed and discharge of the river during the dry season; and the flood risk during rainy season; water pollution. Several studies demonstrate that Mae Kha canal was already pulled since 1978. The Kold et al. study, affirms that the slums along Mae Kha contribute only marginally to the pollution of its water, and the main contribution comes from the city centre sewage system. The project realized by the research group proposed the following preliminary operations: to realize a new sewer system through a new main pipe, parallel and close to the canal and secondary branches that will catch waste water from the residential
blocks; Cleaning of the canal bed. The specific design solutions (Figure 9), deriving by environmental engineering are the following:

Renaturalize the river patch through new water filter upstream.

On the first section of the canal (1.6 km) it will be realized a tillable “bank mattress”. The river slope will be lined by biological mat, made by coconuts and straw. It allows to constrains the erosion action on the canal bed and slopes.

On the central section of the canal (800 m) it will be built a grating system. It is integrated with the pedestrian patch and it sustains the structure for the slopes retaining.

Along the final section (1 km) it will be realized a wicker structure on the bed and banks of the canal. Its role is to reinforce the terrain close to the slopes.

The project strategies will allow therefore to recover the environment around the cultural heritage elements. Along the route you will encounter elements of the historical and cultural city, like the earthen wall “Kampaheng Din”, which will be restored by the Department of Fine Arts. First such institution aimed to restore the fortification system of the city, evicting the informal communities. After an agreement with inhabitants, they accepted to keep the communities inside Mae Kha area, but the slums realised over the wall have to be demolished or moved. For the Kampahang Din conservation, the research team proposed to install a green bamboo grid coverage, built partly over the wall and partly above the public area.

Figure 9: Environmental engineering applications on Mae Kha Canal

The Kamphaeng Din structure is based on rammed earth, with some parts of masonry made by bricks. The bamboo structure allows to repair the wall from the rain and creates shaded spaces which improve the microclimate. The project is based on a particular building technique that creates a comfortable shading system, which modulates the light, and in the same time it defines a mixed public-private space that characterize the area. Even this solution provides
benefits for more than one issue. The cover allows to carry out a passive conservation of the Kampahng wall, and in the same time define new public spaces for inhabitant and tourists. Moreover, the cover doesn’t compromise the physic integrity of the fortifications and it is reversible and easily recognizable.

4 Conclusion Remarks

The proposed model seeks to summarize and convey in one planning event the various needs of the place, and expectations of all those involved in the regeneration of the area. The model tries to dialogue with the three actors of the city (residents, immigrated, visitors) without forget the goals of environmental sustainability, social and economic benefits and the need to return to the community an area of historical and cultural interest. The liveability of the city is encouraged by acting on factors that allow to reconnect the central areas of a city, routes with their own identity and other urban spaces that have been transformed. These areas will be therefore shared by both citizens and tourists. Along the new patch and connections there are also areas that are occupied by poor communities. These, in addition to being retrained, are integrated into the tourist system, to enable vulnerable people to identify their own role in the economic fabric of the city which will encourage them to leave their illegal status. It’s important to understand that the configuration of space affects on its perception, facilitates and encourages certain behaviour. So the ultimate goal to be pursued through design coincides with the goal of a better quality lifestyle. Future development planned for the present study consists of an application of the model to other case studies and a subsequent and systematic collection of reviews by parties involved in order to also evaluate from a statistical point of view the way to sustain the choices for design. This experience has shown interesting results, made clear by some objective indicators such as: quantification of costs of the intervention (they will be lower than a traditional recovery action); administrative feasibility. This means that the project, with an initial involvement of the key actors, from government officials to residents, can be accomplished with existing planning instruments and in accordance with Thai law. Issues linked to gentrification should be deepened separately. We think that the Chiang Mai Municipality involvement and the role of NGOs are added values to realize a social revitalization that will support the cultural and environmental ones. The key of the project is the citizen participation, both in the design process and in the house realization. Such participation might be the first step of the social renewal of the Mae Kha area.

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