# PROCEEDINGS OF THE CIB W110 CONFERENCE
# INFORMAL SETTLEMENTS AND AFFORDABLE HOUSING 2009

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# FOREWORD

The International Council for Research and Innovation in Building and Construction (CIB) was established in Holland in the 1950s. The CIB – Working Commission W 110 – Informal Settlements and Affordable Housing has joint coordinator for Asia, Africa, and Latin America.

The meeting on 27 September 2009 is organized jointly by the CIB W 110 and the CONPAT 2009 organizer in the Pontificia Universidad Catolica de Chile in Santiago, Chile.

The purpose of the conference is to obtain network and international exchange and cooperation in research and innovation, particularly in Informal Settlements and Affordable Housing.

Special thanks are directed to the CONPAT 2009 conference organizer and president who have given chance to CIB –W110 to organize the meeting and seminar during the CONPAT 2009 conference. Thanks are also directed to all the writers in this seminar.

- Liana Arrieta de Bustillos
- Happy Ratna Santosa
- Amira Osman

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**PAPER NO 1**

# Comprehensive KIP and Community's Role in the Kupang Krajan Settlement

Basri, Goenmiandari, Erawati, Jamin, Ismaniandri
Master Student, Department of Architecture
Institute of Technology Sepuluh Nopember (ITS)

**ABSTRACT**

KIP program that started at 1998 by the government of Surabaya City, recommenced again in the year of 2001 and become comprehensive KIP in four locations of settlement, with the criteria that these residential are the slums and consists of the low economic and environment level.

Comprehensive KIP works by commencing two actions that is Community Mapping that are done by the people themselves and Empowering Community Organization (Strengthened of the institution) include increasing the green movement.

The residential rehabilitation activity that was held by government, people or even by private sector are the strategic efforts to increase the quality of residential in the city with the next goal is to improve the community welfare that lives there, the direction of the Comprehensive-Kampung Improvement Program (C-KIP) have a priority in physical environmental condition that not good enough or in the lowest of quality. The activities that are executed are the activity in the physical and non-physical matter, such as: forming of institution, cooperation training by giving Working Capital/ Flow Fund. While the physical activities is to build paved road, green movement programs and improving the house of Kupang Krajan's people.

So the concept of Physical environment is reached and increasing good Human Resources, as stimulus given to the community is toward forming "Physical Environment" as we hope. We hope that as the increasing of KIP execution institution age in completed their task in the future, cooperation and understanding between Bureau in the District Government will be more helpful to the successfulness of the residential improvement.

**Keywords**: KIP, Environment Quality, Role, Community

## 1. BACKGROUND

Development program in housing and settlement sector especially for low income society at kampung that had been done was: KIP (Kampung Improvement Program) in 1976, continued with KIP Urban II and KIP Urban III had given a lesson that environment construction must be done wroughtly with development at economy and social area. The successful KIP execution also provided by a commitment, agreement, and support from every society layer which concern in development execution.

Since 1998 The City Governments of Surabaya carried out KIP. In KIP comprehensive, an addition made not only development at housing physical area, but also carried out development at social area, the society economy by doing activities for society empowerment).

In 2001 executions of KIP Comprehensive carried out with completion of execution of KIP previously. This completion done by adding two activities that are community mapping which done by society itself and empowering community organization (institute reinforcement) including greening program.

The execution of KIP Comprehensive at Surabaya was one of housing and kampong condition enhanced efforts at city of Surabaya, where it is handling done inwroughtly not only environment physical rehabilitation, but also enhancement of society's economy and social condition. This program component covers: environment physical repair, human resource enhancement, small and medium enterprise development, and house repairing. Based on the scope of activities to be handled, the execution of Comprehensive KIP in 2002, as a single program/project, was done with basis of 'Tri Build' (human build, build effort, build environment). But at KIP Comprehensive year 2002, this basis was developed by making kampong development pattern integrated in city system. This basis is then called 'tri build plus'.

1. Pre-contiguous activities consist of:
   - Workshop I done by Assistant team and ITS
   - Explanation of community self-mapping done by Assistant team and ITS
   - Municipalities socialization done by Assistant team and ITS
   - Making of technical instruction done by Assistant team and ITS
2. Assistance activities
   - Community mapping
   - Workshop I and II
   - Organized kampong institution
   - Arrange kampong activities planned agreement (KRKK)

## 2, THEORITICAL BACKGROUND

### 2.1. GOVERNMENT REGULATION TO SUPPRESS SLUM AREA

The government's effort to suppress the slum area are by making several regulations, the regulations are:

1. Regulation No. 4, 1992 in regard to housing and residence.
2. President Instruction No.5, 1990, about the manual of execution of regeneration of slum area across the national land.
3. The letter from Minister of Housing No.4/SE/M/I/93, 1993, stating that slum area is a staying and trading place/environment that doesn't meet the standard of living, technical requirement, social, health, safety and enjoyment. As well, doesn't meet with ecological and legal administrative requirement in which related to fixing patterns/renovation, regeneration or relocation according to the level/condition of problem occurs.

### 2.2. HOLDING CONCEPTS

The activity to arrange the slum area applied the concept of Tridaya consisting aspects of people preparing through social community empowering, use of infrastructure and housing environment medium and empowering local economical activity. In fact, these activities using the community empowerment to motorize it, by placing housing community as a main actor in every level, step and activity process, that mean housing community is the owner of the activity. The actors outside the housing community will function as working partner and supporting actor that participate in the housing community activity. All of the acitivities in the community empowerment in the arrangement program of slum area has basic patterns that in general classified in three general group, which are facilitation activities, those are organizing and increasing community capacity, perform the development and growing community institution, such as:

- Organizing and Increasing Community Capacity
- Development Execution
- Growing Community Institution

**Village Improvement Efforts (*Kampung Improvement Program/KIP)***

In Indonesia, village fixing program or known as KIP (*Kampung Improvement Program)* already exist in the colonial era. First KIP program in Indonesia is the KIP program that was performed on Surabaya, in the

1923. The orientation of KIP program in that time was just to hold village sanitation (Silas, 1996:8).

In Surabaya, the idea of village fixing alongside the community, proved by the several projects for development, fixing and maintenance. First project that been executed is the W.R. Supratman project, between the year of 1969 to 1974. The realization about this project consist of the village improvement based on supplying concrete cast plates and applied it on their own effort.

The W.R. Supratman project continues on the year 1974-1975 till the period of 1982-1983. The executing of first program of KIP in the meaning to help community activities in general and the people that stays on that village in order to improve and maintain their village with the improving physical environment that is supplying/ improving prime infrastructure in good condition, comprises of:

a. the road for human and vehicle including the equipment
b. the drainage duct
c. the drinking water channels with the faucet to drink
d. sanitation facility to take a bath, washing, WC (MCK)
e. community health facility
f. basic education facility

In the year of 1988, Village Fixing Program in Surabaya perfected from time to time with Comprehensive KIP (C-KIP), with the approach that combined between *Bottom Up* and *Top Down.* In general, the goal of the implementation of Comprehensive Village Fixing Program (Laboratory of Housing and Residence ITS & LPM-ITS, 2000) are:

a. increasing infrastructure and the quality of village environment
b. increasing the stats of the house ownership
c. increasing communities role in development
d. increasing condition of community social-economy

In the years of 2001, C-KIP program improved, beside the development in housing environment's Physical matters, it also developed in communities' social economic through the activities that could be empowering them, as an effort to compile all community's synergy that hoped to be active roles in the execution of housing development program. Thus, village fixing is the part of low community empowering, whereas empowering could be meaning as increasing productivity: in the economic field (creating added value) and the role in the community will create socio-cultural added value. (Swasono, 2002).

The main target of C-KIP (Comprehensive *Kampung Improvement Program 2002,* ITS Architecture Discipline,2002) is to increasing community's life quality that oriented to Physical and non-Physical development through:

> Community development program, to increase community quality of life, such as: increasing skill/ little trading and health.

> Home loan program; that is loan for fixing housing, to restoration of the house's facilities like septic tank, kitchen restoration and clean water finishing, and can be use as little store and home industry.
> Physical environment restoration program, that are pure auxiliary to Physical restoration village environment such as: pedestrian, gutter, MCK and garbage management.
> Land Management Increasing Program, to help the community receive the building development license (IMB) and land certificate. By giving the easiest assistance in procedure and treatment to propose IMB and land certificate.

C-KIP program's funding was received from Surabaya City Government, with the fund from the General Allocation Fund (DAU). Implementation C-KIP program Fund can be used with two patterns, that is:

a. Grant Fund (maximal 30%)
b. Flow Loan Fund (minimal 70%)

## 3. KAMPUNG IMPROVEMENT PROGRAM (KIP) DAN COMMUNITY ROLE

### 3.1. PROGRAM

> The Condition of 21st Century
The general characteristic of 21st century is that more than half of the world's population stays at the city or there are urbanization, this means people serviced by urban medium and infrastructure that meets the quality, and can be used well and beneficial.
> Experience as Capital
The power and approval by worldwide scale, by any institutions whether government and private party, is the KIP's success. This successfulness is the capital for restoration for a hundred million people that stay in slum area through the program such as City Alliance sponsored by World Bank/UNCHS and CoBILD UNDP/UNCHS program that in this time rolled by Department of KIMPRASWIL in every major city of any province in Indonesia but basically following the Comprehensive KIP patterns.

#### 3.1.1 The Basic of Kip Comprehensive

As described above, the city's successfulness also depends to the toughness of its society. And KIP Comprehensive must reach the basic accordance to the result, such as: To be organized community, to increase the quality of life, and integrated with the city.

### 3.1.2. The Objectives

In general, the objectives of development must be attained in conjunction with two form of targets, the conceptual characteristic that need to be given attention is the solidity of the development by the community, such as:

1. There is understanding about the community development concepts and widely supported by the community.
2. After the understanding, community's strives and needs toward former institution in their village by the community itself (community self-mapping)
3. In order to be successful on the plan, need to form and manage existing resources that successfully been organized by the community. This shall be done continuously.
4. In order to develop toward community property and wants by the community, there is need to have community's participation at wide spread.

The secondary objective (operational) that must be reached comprised of the solidity in autonomous and organized community. This thing including:

1. Growing the consciousness and desires to form community institution and be successful to build it.
2. Must continue under community's participation in developing their own kampung, including compiling all resources from internal and external kampung.
3. For the manner, community must understand the problem that wants to be solved and the self-potency they had.
4. At the end, community can compile their resources and provide proactive reaction in realization of their aim.

### 3.1.3. The Result

The essence of the result, basically are:

- There is an understanding about kampung condition and its development through problem and the potency survey that act by the community itself.
- There is solidity of effective community institution such as Village Development Agency through democratic process to guarantee the sustainability of the institution and can arrange the development plan of their village.
- In order to provide realization on the planning, community need to compile any resources that exist already in development and empowering.
- The peak result that must be reached is the development of environment quality increasing as a timeline and growing according to timeline in outer village.

### 3.2. PROGRAM COMPONENTS

Program Components in KIP Comprehensive that would be implemented comprises of:

Restoration of physical environment, community developments or Human Resources Management, and Small and Medium Enterprises developments.

### 3.3. BUDGET ALLOCATION AND COMPOSITION OF FUND USED.

The implementation of KIP 2002 funded by The Local Government of Surabaya with the sources of fund from General Allocation Fund (DAU), which every kampung would receive and manage the fund worth Rp. 250.000.000,- (Two Hundred and Fifty Million Rupiah). KIP implementation fund used in two patterns, those are:

a. Grant Fund (maximal 30%)
b. Flow Loan Fund (minimal 70%)

### 3.4. PROGRAM'S TARGET RECEIVER

In general, target group that will be funded are the villagers with the level of social economic between middle to low, where the arrangement of activity planning, selection and arrangement of priority of scale marking by aspiration and discussion by the community of the village themselves.

### 3.5. LOCAL INSTITUTION AS THE ACTOR

To execute the programs of Comprehensive KIP each village will form a local institution that is responsible to execute this Comprehensive KIP program

The local institutions to be formed comprises of:

- Community Self-supporting Group (KSW) - Village Foundation (YK)
- Various Trading Cooperative (KSU) - Community Discussion
- Monitoring Board

### 3.6. THE IMPLEMETATION OF KIP COMPREHENSIVE EXECUTION IN KUPANG KRAJAN

The Kampung Improvement Program carried out by government, community even by private sector is a strategic effort to increase the environment quality of kampong in the city aimed to increase community welfare.

#### 3.6.1. Physical and Non Physical Execution

**A. Non Physical Execution**

The forming of institution, cooperative training, Capital/Flow Fund.

**B. Physical Execution**

> *Building Paved Road*
  Restoration of bad road condition by building paved road at length of 175 $m^2$ in RT 08/ RW 02
> *Green Movement Program*
  In this program, the community would attempt to arrange Kupang Krajan area to hinder being viewed as slum area by making concrete plate to cover the drainage, make a little park in the side of road and put flower in containers that can "green" the area.
> *Restoration of Community House in Kupang Krajan*
  Loan the flow fund to restore the house of the lower economic people that stays in under proper/not properly house.

### 3.6.2. The Barrier and Supporting Factors

#### A. The Barrier Factors

In the execution of in Kupang Krajan, the factors considered inhibiting the aim of KIP comprises of :

- Less understanding of the people in money management in the institution formed
- The less understanding of the people in the esthetic in Kupang Krajan area
- Less optimum of people to giving new idea and suggestion in fund managing that will be used in KIP program.

#### B. Supporting Factor

While the supporting factor of the KIP activities comprises of:

- The society trying to adapt with KIP activities that rolls in their residence.
- The society supporting all KIP activities in their residence
- The society has a strong initiative to learn all non physical programs held in KIP activities in Kupang Krajan

## 4. CONCLUSION AND RECOMMENDATION

Kampung Improvement that are rolling nowadays, are government's effort in order to help increasing "Habitability" or the properness of human environment. To make solid the target and aim of this program, there are needs of good project organizer, personal advantage especially about planning, execution, budgeting and administrative, support from the bureaus that correlate with KIP. Beside of that matter the program need to be supported by evaluating action to give marking whether the program already meet the target and the aim giving and also to know whether the system applied already meet the people's condition. Thus, all

action can be controlled and experience obtained could be as a measure next program execution.

After our discussion and studied every problem on location, then conclude that in general Comprehensive KIP that was rolled in Kupang Krajan area was successful to increase human quality and their environment.

To achieve the main target of KIP, the location picking must be consider several criteria, those are:

1. Physical criteria, refers to infrastructure condition, home building, land use and its society condition.
2. Social-economical criteria and people healthiness
3. And the other supporting criteria, those are: the village age, floods, location of the kampung, people acceptances to the programs.

Thus, the concept about proper Physical environment has been reached, Where KIP can provide stimulus to the forming of good "Physical Environment". In addition, we can hope that in managing of KIP in the future, cooperation and understanding toward each other between Local Government Environment Bureau will be more helpful to the success of the village restoration program as it is planned.

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**PAPER NO 2**

# Housing Construction and Social Capital Latin American Network of Communitarian Housing Schools

Liana Arrieta DE BUSTILLOS
Centro Occidental Lisandro Alvarado University
Communitarian Housing School
Venezuela

**ABSTRACT**

Latin American Universities represent one of the most important resources in economical and social development of this region. Each one of them have somehow played an important role in the development of local communities through teaching, research and community service, in the search for answers to different issues these local communities hold. The University practices have been carried on through training, technological transference and community service, however if one would analyze the nature of current programs, one would find that only a few have the social pertinence in order to improve quality life of residents in poverty conditions. In Centro Occidental Lisandro Alvarado University, out of 200 research projects and 100 community service projects, only 50 of them have the social pertinence oriented to improve poverty conditions. The social impact of these 50 programs can be considered as "localized", and with no further consequences, since they have been carried on in an isolated way, and in some cases, without any connections between them, leading to an inefficient synergy of efforts and resources.

The Centro Occidental Lisandro Alvarado University has an incredible amount of assets represented by human resource (know how, experience, skills, creativity and interest), infrastructure (university campus, labs, etc.), social and financial capital. If these assets were aligned to the organized local community requirements with this new approach, one would not only be giving a more appropriate sense to the investments of different resources but also one would be making a bigger social impact.

The proposal contained in this research is oriented to be applied in local communities through Civil Engineering and Architectural faculties located throughout Latin America, Civil Associations and The Communitarian Housing School of Centro Occidental Lisandro Alvarado University in Barquisimeto, Venezuela. The conception of working towards community and social development would enhance the promotion of engineers and architects with a social conscious and also would set the basis of private sector and government alliances, in order to better approach social community issues resulting from poverty conditions, as well as participating more actively in the social and economical development through the influence in local and national public politics.

The methodology to be used is called Strategies of Sustainable Way of Life which has been promoted in recent years from different international institutions to overcome poverty conditions. This approach would be applied simultaneously with "community construction" which is been recognized as one of the most popular applications of the term "Social Capital" widely explained further in this reading. This approach is based on the overcoming of dependency feelings from residents in poverty conditions in order for them to gain self confidence, that way they would design and execute housing construction projects using their own resources and the university resources.

**Keywords**: Community Construction, Community Service Project

## 1. INTRODUCTION

In this type of initiative, the **main objective** is not only giving the technical training in construction, finance or supporting "barrios" with construction supplies but to **help residents in poverty conditions to overcome dependency feelings and gain self confidence**. The starting point has necessarily to be the **creation of a sense of community** in the neighborhood in poverty condition (barrio), **working together sharing individual resources, community and university resources**. The new human and social capital becomes a base to future improvements (1). Considering this principle, the university teams will have to identify a group or community already organized and with a social capital in form in terms of associability, civics, ethics and that would allow the university teams to actively integrate, in order to be able to supply sustainable construction training in a low level of complexity, introducing the community traditions and incorporating local resources.

In this new vision, where the University acts as a fundamental part of social development, one enhance the integral formation and social sensibility in

professors and students leading to promote solidarity values, social commitment and team work accentuating the social pertinence side to the University.

Additionally, the participation of a big amount of professors and students in these projects will require training program creation and also unifying different criteria and working methodologies, especially in community work.

## 2. PROJECT CHARACTERIZATION

Being aware that every project oriented to overcome poverty, must always incorporate educational training, technological and know how transference, because of the close relationship between poverty and education. Education must grow further than the formal system (2). It is precisely in these aspects where the University through the Civil Engineering, Architectural Faculties and Civil Associations such as the Communitarian Housing School (Escuela Comunitaria de la Vivienda ECV), that educational institutions can participate in a systematic way, since they possess a number of strengths that would allow the University help the community in a more structured way and making a greater impact, without missing the main University mission.

The strategy consists in incorporating students and professors in local resident training programs aligned to local community requirements, such as sustainable housing construction, used as a strategy to improve social capital which would enhance the social interaction of educational institutions in local communities. This would also allow the University expand its mission related to formation, community action and generation knowledge to solving real problems in our countries.

### 2.1. CURRENT CHARACTERISTICS

- Poverty.
- Lack of technical and social organization training, to better face development and real problems.
- Lack of communication and exchange information between social organizations, leading to transferring knowledge, sharing experiences, identifying potentiality in association, similarities and/or weaknesses in social action.
- Important investments in projects with no social pertinence.
- Weakness in the exercise of citizen duty and rights.
- Resistance to change from the Universities.
- Disarticulation in the global vision from the University towards social development.
- Separation of community groups.

## 2.2 PROPOSAL

To use training and knowledge from university students and local community residents in the application of housing construction “appropriate techniques” as a strategy to contributing to Social Capital and Local Development.

## 2.3. OBJECTIVES

- Contributing to improve social participation levels in engineering and architecture students and professors as well as community residents and civil organization participation towards the construction of Social Capital and Local Development oriented to promote cooperation, associability and sustainable construction development in each University area of influence.
- Increasing knowledge about “appropriate construction techniques” as a strategy to overcome poverty conditions.
- Contributing to the process of poverty overcome from different groups.
- Stimulating the generation of projects oriented to local development in different influential areas.
- Identifying University projects with social pertinence that are associated with different NGO (non government organizations), whose actions promote ethics, confidence and associability.
- Contributing to generate public politics and social programs oriented to overcome poverty.

## 3. PROJECT ORGANIZATION

The project is conceived to have 2 phases: engineering student training at a graduate and postgraduate level as technical assistants in housing construction processes, and another phase oriented to train local community residents in the application of “appropriate construction techniques”, both phases intended to contribute in the construction of Social Capital and Local Development. In order to do this, it is important to create an academic-administrative model ad hoc. It might be possible to start, in a first stage, with the combination of the three main University rolls: teaching, research and community service. In this case, these three rolls applied to the Sustainable Housing Construction, using appropriate techniques will allow to apply this approach as a strategy in the construction of Social Capital and Local Development.

The organization that one would assume is essential not only to the execution of the project but also to the achievement of a greater social impact (bigger than the one obtained as a result of combining each side separately), because of the institutional synergy produced through the optimization of efforts, resources and competences.

For instance, the Housing Communitarian School (ECV), has 9 years applying a local development model called "Integral Project Housing Communitarian School", where there is participation from civil engineering and architecture students as well as community residents.

Up until now, this organization has given 15 construction courses in different modalities through the construction of "seed module housing" using the technique of "bearing wall in adobe con suelo cemento y sisal", with residents from over 20 local communities. Additionally, we have been working on a research project called "A community teaching prototype oriented to contribute in the construction of Social Capital and Local Development". Additionally, over 4000 hours have been invested in technical assistance given by civil engineering and architecture students, previously trained in ECV, to be able to help in the housing construction for low income population. This project should promote the participation of professors from other areas, incorporating other variables such as water supply, environment, transportation, etc.

In each course, there will be the participation of a basic team which can be modified (adding new people), depending on the needs in the project. In the organization of the project, it is important to specify the activity programs, necessary resources, time required, work supplies, and responsibilities for each participant.

## 4. PROJECT GENERAL STRUCTURE

The project is structured in components in order to facilitate the interrelation between different team members:

1. Training courses to the team members and community residents.
2. Research, according to the objectives and nature of each faculty and selected communities.
3. Communication, among the work teams and as a way to spread advances, achievements and knowledge discovered.
4. Analysis and formulation of politics, programs and projects.
5. Systematization, evaluation and monitoring.

## 5. GENERAL APPROACH OF THE PROJECT

The project is focused to strengthen the ability of residents of local communities to improve their current situation, working in building associative networks between professors, students and community residents, based on cooperation inside the community. This practice seems to be one of the most effective complementary strategies to reduce poverty used in the last few years by international organizations and agencies in developing countries as well as in developed countries.

This is a new approach different from the assistance criteria applied by most programs. "Different studies have demonstrated that social cohesion is a key factor for societies to prosper economically and for sustainable growth" (3**).** This is what is called Social Capital conceived as a set of values associated to confidence, attitude and network between people and institutions, defining the degree of associability in different social actors facilitating collective actions and cooperation.
This can be observed through 2 dimensions: the structural dimension referred to the interpersonal relations, interaction networks and associability. The second is associated to the external relations and the cognitive psico-social influence that affects confidence and commitment values.
Putnam (1994) understands Social Capital as different aspects of social organizations, such as networks and values that facilitate action and cooperation for mutual benefits.
Durston considers that the public politic of empowerment can be translated as building Social Capital and it should have the intention to equally consider the opportunities. It is about potentiate resources in individuals as well as in communities, to encourage self promotion and eliminate dependency. The theory exposed previously, demonstrates that, in spite of the debates, different conceptions, etc., there is an economical, political and social context in Latin America that fully justifies the Social Capital research and the use of this particular concept as a valid analytical category to explore the possible answers to the problems and different challenges that face the countries in the region (1) (World Bank, 2003).

We are before a concept that is wide in interpretations and that can give a solid foundation to facing poverty problems, indigence, social exclusion and deficit in democratic citizenship. Obviously, the conceptualization and operability of Social Capital can improve, as long as the public politics and scientific research together have better results. On the other hand, scientific research on Social Capital in the last years reinforce a vision of development as an integral process with economical, political, social and cultural dimensions. There is a synergy between Social Capital, Economical and Social Development and Democracy; as greater the level

of confidence, cohesion, integration and social participation, the greater is the Social Capital in a society, and vice versa (3).

There are real experiences that can confirm the validity of this approach, such as the case of Villa El Salvador, Peru. Villa El Salvador is a community that now has 350.000 residents, which managed to improve the quality of life of its inhabitants through civic participation, cooperation and mutual support. It is precisely using this sort of perspective that this research is oriented, in conjunction with an effort to promote Universities committed to help communities through the practice of a strong citizenship.

We are aware that in order to overcome poverty, it is not enough just putting projects like this into practice, however, through these initiatives the University cooperates in becoming part of solving a major problem. Other actions are necessary from other angles, such as from public sector and from communities themselves that can contribute to the improvement in the quality of life of their residents, social progress and the productive insertion of all citizens. As part of a bigger plan, it is necessary to have a social politics that can guarantee that all the population has the conditions required for integration and productivity, it is also necessary to have an economical politics oriented to achieve an economical and sustained growth, to create well paid formal employment, as well as a peace and governability environment that could make each and every effort effective in the reduction of poverty (4).

This research project is presented in the frame of Social Capital theories, and is mainly oriented to actively participate in the reduction of poverty as an alternative solution of a well conceived public, private and community politics to contribute in the local community developing through construction appropriate techniques.

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UCAB. Poverty Project.

**PAPER NO 3**

# The Social Housing. Program “My House, My life”

Heinzmann, Graciela, Fernadez, Maria LUCIA

**ABSTRACT**

The project tries to contrast the goals set by the Program "My house, My life" with the reality of pre and post location of the residents of the Slums involved in a situation of environment vulnerability. It deepens the meaning of social and territorial exclusion, urban and identity construction dimension, and cultural meanings of the re-located social groups. It analyzes the physical, social, environmental and economical impact produced on the city, the near environment and on its inhabitants, and it tries to make conclusions and recommendations for the formulation of policies that remove the construction of an inclusive, balanced and democratic city.

**Keywords**: Informal Settlements, Social Housing

## 1. INTRODUCTION

The city is a living structure in a permanent process of construction that expresses a society in constant transformation. The Latin American contemporary city manifests itself in many ways such as the expression of individualism, competence, internationalization of economy and of social globalization, in which the economic, social and political differences are deepened even more. These phenomena are represented in the city through the physical-spatial division and social–economical segregation of the population, provoking the phenomenon of urban fragmentation and social-physical exclusion of important areas of population. Fernández, Lucía (1996) considers that the city is the result of the proceedings of different social actors with different logistics, such as the one of earnings, politics and needs. Nowadays, the income logistics is imposed even more; therefore, the city is produced, is used, and is consumed through market

acts that consider the city as merchandise, and not as a physical support with social and cultural meanings. The value of change acquires a highlighted prevail over the social and environmental value of the city. In most Latin American cities there coexist and overlap urban and sub-urban territories of greater capital gain with devaluated territories, which generate great extensions of anodized and unarticulated periphery, neither with referential elements nor with social cohesion, unrelated physically and socially to the “city”.

Argentina is part of this reality; the produced changes in the social and economic structure of the last decades have left their trail in the urban configuration of the cities with social and physical asymmetries, changing from being the privileged stage of the extreme polarization between opulence and poverty. Unemployment, merchandising and privatization without state regulation, the technologic gap, the reduction of social spending, among other actions, have affected quantitatively and qualitatively the way public services are managed, the access to education, health, housing, security, culture, entertainment, and to recreation, damaging an important area of the population. The phenomenon of poverty has a multidimensional aspect and has a strong influence on the habitat production process in different territorial scales. The emerging factors of exclusion and inequity associated to poverty carry important social classes to an unequal position, affecting the sectors with less income and deteriorating their ability to have access to the narrowed job market and having direct and indirect consequences in social and personal lives, and in the civil rights of the affected population. The informal population settlements called "Villas de Emergencia" (Emergency Slums) in Argentina have their origin in the rural immigration to the city, which began in the 40s as a consequence of the job expectations created by the industrialization process. In the 70s it is highlighted the concentration of population in metropolitan areas due to the industrial development and to the concentrated offer of jobs. As a result of the economic crisis of the previous years, informal settlements have significantly grown because of an increase of population in poverty conditions. The “new poor”, made up of families who had to abandon the neighbourhood where they lived, were added to the existing structural poor in order to establish themselves in informal settlements due to the partial or total decrease of global family income. In the city of Córdoba, this phenomenon increased to 110.000 de number of poor people at the moment of the research; therefore, the division of the city, with the loss of the value of the central area and the appearing of urban ghettos –either of wealth or of poverty- has increased in the extended periphery in an island shape which occurs without coordinated articulation,
with lack of inclusion to the city and provoking a significant territorial fragmentation. Tackling this issue implies looping for Solutions in order to achieve the reduction of the housing deficit. This is the objective of public policies as regards the production of Social Housing at low costs in order to

facilitate the access of the poor to their own home. Although the construction of social housing satisfies this part of the deficit, it also creates new concerns since it consolidates social housing, in most of the cases, as the urban housing expression of poverty.

## 2. PROGRAM MY HOUSE MY LIFE STATEMENTS

In this frame, the Government of the Province of Córdoba, through the Solidarity Ministry, implements the Program "My house, My life", through which builds “social housing” for the re-localization of family groups of structural poverty living in different Shanty Towns in the city. The program, among other issues, includes the “Emergency Project for the Housing Rehabilitation of Vulnerable Groups Affected by Floods in the city of Córdoba, Province of Córdoba.” This project is developed and carried out during the management of Governor José Manuel De la Sota, as of 2002, with an investment of 300 million pesos, 255 of which were financed by the Banco Interamericano de Desarrollo (BID) (Inter-American Bank of Development), through the 1287OC-AR Program and given back through the payment of the foreign debt. The difference is financed by the Government of the province of Córdoba. The program’s objectives are based on the support to social organization processes, community promotion and to the self-sustaining development of those groups that were affected by floods of the Suquía River, its affluents, and channels and, in particular, those related to poverty situations and social vulnerability. In these new locations the beneficiary families are given a house with Basic services and individual public deed. Each entrepreneurship counts with equipment and social infrastructure, giving the possibility of having access to education, health, and security services. The program promotes the strengthening of the processes of social organizations and of community nets of the beneficiary population, and it promotes the participation of the families in the management of the project. It also proposes a remedial plan in the homeless floodable territories, widening the surface of green and recreation areas of the city, and regulating their re-use. The implementation of the program requires, within other actions, carrying out a census of the affected vulnerable groups, researches, projects and housing infrastructure, basic services, minimum social equipment, and of the relocation of the beneficiary families, together with a social assistance plan before, during and after the relocation. The Program Mi house My life has allowed the construction of approximately 12.000 social houses with their corresponding urban infrastructure and equipment, with an average cost of U$S 15.000. The housing units are individual, with clear boundaries, and without pairing. They present a single typology made up of two bedrooms, a sanitary core (kitchen and bathroom), and a dining-room; with a total surface of 42.00 square meters. The construction system used is traditional and its main characteristics are: Foundations based on concrete pad, concrete blocks masonry and ceramic, concrete precast slab for the

ceilings and ceramic brick roofs. The finishing’s are with plastering in the outdoor face of the walls and with set joints in the indoor face. The entrepreneurships count with a community area made up of: A Primary School, a Kindergarten, a Health Care Service, a Police Station, a commercial nucleus, a social area with two community kitchens (one for children, another for adults), two multipurpose rooms, one recreational area with football field and basketball court, a playground, squares with games for children.

## 3. PROGRAM MY HOUSE MY LIFE REALITIES

The confrontation statements, objectives, and actions implemented by the Government of the Province of Córdoba in the Program “my house, My life” with the reality, experiences, and testimonies of “neighbours” of the “New Cities” manifests the setbacks produced between “thoughts” and “actions” of official policies. The social exclusion processes exist when a Group of mechanisms rooted in the society’s structures provoke that certain people and/or groups do not have a systematic access to education, culture, health, production systems, political expressions, etc., of a society during a particular period of time. The “derelicts” are poverty cores without a job or with a casual job, homeless, illiterate or uneducated, without access to health care, and intensely discriminated. They are groups that represent the concept of social exclusion. To include means to incorporate, to place something inside another thing, to move one thing and make it part of another one. Inclusion and exclusion are significant Concepts of this problem, with poverty physically located in the periphery, the dualityof the city is accentuated and the re-located population is exposed to a double exclusion: The social exclusion of which they are “possessors” and territory exclusion due to their re-location. This mechanism also unveils a class concept of urban space. It understands poverty as a polluting factor, as a social “anomaly” that must be taken out, that becomes something “unwelcome” and a potential threat to society. The re-location reveals the poverty and the poor’s hiding, (“what is not seen does not exist”.) The “derelict” population is moreover conditioned by the negative attributes that are socially employed to segregate the person who has them. This is to say that the construction of the official discourse of the Program tends to leave behind the stigma of "derelict" and replace it with the status of "neighbour". However, the assigned denominations to urbanizations, the boundary that surround them, the location in a different geographic reality do not vanish the stigmatization and reveal the willingness to generate other cities different from the original ones, strengthening the exclusion idea as a disconnection, expulsion of someone or something from the group or place they belong to. The problem of social and economic expulsion is solved territorially through the reproduction of multiple cities within the city of Córdoba, generating a change in their spatial organization.

As examples of this thought arose Ciudad Evita, Ciudad de mis Sueños, 29 de mayo, Ciudad de los Cuartetos, Ciudad de los Niños, Ciudad Obispo Angelelli, Barrio Renacimiento, Ciudad Villa Retiro, Ciudad Parque. Las Rosas, Ciudad Ampliación Ferreyra, Ciudad Cabildo, Ciudad ZEPA, among others. The denomination encloses an important political and emotive connotation, which is shown in the entrance and, together with the boundary, separate that population from the rest of the city. In general, the re-localization processes represent the physical and social uproot for the social group moved and also carries a complex situation at the time the people have to adapt to the new place, generating high levels of stress due to the degree of uncertainty that provoked and due to the loss of the efficiency of the survival systems. In this Program the re-location of the inhabitants of the slums to the margins of nonurban places has generated a change in the social and spatial organization of the city. During this process, there have been liberated the important economic and/or landscape meanings, which start to form part of the spiral increase of the price of the urban land, and as García Vázquez (2004) points out, this facilitates an expulsion process of the original "poor" population and a subsequent substitution for another of “greater incomes.” The social escort thought in the Program’s objectives has been fulfilled in part since the consultation and participation instances of the involved population during the time previous to the re-location have been almost absent. The re location of all the families has been done with the participation of officers, infrastructure and logistics of the Army. The post-location stage has been scarcely fulfilled in some neighbourhoods and it has
not occurred in other cases. This important instance has been abandoned since the beginning and the follow up, evaluation, and construction of new bonds and the productive insertion in the scarce labour market has never been fulfilled. As of the re-location, sometimes compulsive, the inhabitants of the new “cities” have left behind in their previous place the social networks, the bonds that let them get organized, take care, help each other, and they have lost the possibility of executing their survival practices. The position of the actors in the social space changes as a consequence of the physical space in which they are situated. The fact of living in a neighbourhood, in a particular house, gives “social existence.” Since the relocation of the new urban areas, the inhabitants take advantage of masonry houses, with better insulations, connected to the fresh water network, public lightning, and they have access to community equipment, which undoubtedly improves their conditions. However, the users have been unable not only to use their right of selection of the place for their new residence, but also to influence on the kind of housing they wanted, which reduced dimensions cannot satisfy in many cases the habitability conditions of a numerous family. In relation to this, Amalia (1999), expresses that the human space is neither an indifferent and homogeneous container, nor a geometric abstraction. The space available for each individual, group, particular social class measures their power and

richness, and reflexes their prestige and positioning in the social hierarchy. It considers the space as a resource, as a source of power, and the way its use is controlled will be decisive so as to make this resource an instrument of subordination or freedom, of differentiation or equality. The spaces differ according to the economic conditions of the society they represent. The Program “My house, My life” exemplifies the territory re-definition processes that are building a new specialty of the fragmented city from poverty, but also from richness (private neighbourhoods). Both solve within a defined and closed boundary the house and public activities, such as recreation, education, sports, health, security, etc., contributing to “naturalizing” the social distance, weakening the collective characteristic of the city as a whole and strengthening the physical and spatial segregation. Consequently, the city of Córdoba, like many other Latin American cities, is divided into those who have access to urban conditions and those who do not and who lack “city rights.” Entrepreneurships such as the “Cities” of the Program “My house, My life”, collaborate with the deepening of the exclusion conditions to which important social sectors are submitted in opposition to the idea of an inclusive city. This materialized city loses meaning and identity, and it gets even harder to notice it as a public object since this perception requires everybody’s inclusion. What is in the game now is the “idea” of city. The city’s production represents the generation of private and public places as physical support that communicate a determined social and cultural order, constituting the venues for social relationships.

Although we consider the city as a community construction, the technical and political actors have the responsibility of understanding the city as a complex system. They are the ones who have to orient and articulate the sustainable development of the city as an integrated totality, which opens the path for a habitat full of possibilities for all the contemporary human being’s expressions that cannot be developed in an isolated and insecure habitat. It is therefore necessary to give new meaning to what is urban, as the coexisting community place, in opposition to the slumming and stigmatization processes, pretending to have a city that is not configured by fear and that allows a meeting of the society with itself. As regards the urban project, the Program employs a single physical-spatial solution in all the entrepreneurships. The master plan reproduces the urban typology of the halftone, adopting the rectangular block which economized the establishment of Exchange networks. It does not produce a qualified urban space, except on the central area, in which the community equipment is placed. The central area repeats the adopted aesthetic of all the other public buildings of the government in charge. The layout allows scarce neighbourhood and equipment links. The resulting spatial quality is homogeneous and monotonous due to the extensive repetition of a single housing and grouping typology. This evidences a scarce formal and spatial assessment. The design of the housing units does not consider those variables that belong to corners and the proper rectangle shape. It does not

consider the dimensions of the houses according to the needs of the family groups too. It does not explore the best orientation and views and the occupancy possibilities of the area. All these factors affect the spatial quality of the housing. The housing unit offers scarce flexibility and a few growth possibilities. As a consequence, it cannot satisfy the dynamic of change and the needs of numerous family groups.

## 4. RECOMENDATIONS

From the investigation carried out, there can be deduced some hits, mistakes and there can be made some recommendations that allow revision and change not only in the philosophy, objective and policies, but also in the application of the Program. Among the most significant ones we can enumerate:

- Constitutional application of the *right of a city* to a healthy environment*,* and the application to the *right of a home* to the population through the development of Social Housing policies that reduce deficit, improve habitability and qualitative construction of new entrepreneurships and of those recycled, widening the existing land.
- Strengthening of the presence of the State as a responsible actor of social and environmental planning, management and regulation of the territory, which is a necessary condition for any housing policy.
- Strengthening of the coordination mechanisms among the Solidarity Ministry (incharge of diagnosis and social companionship), the Public Works Ministry (in charge of planning and execution of works) and the Environment Agency of Córdoba (in charge of environmental evaluation and security.)
- Systematization of the social diagnosis, assuring that the priorities are identified and included in the design of new housings and in the planning of social support before and after the re-location.
- Systematization and constant update of the census of re-located families, considering that these are controlling and administration instruments of the benefits of the community.
- Promotion and strengthening of the self management of the house, with the participation of inhabitants in the configuration of their habitat, together with policies that support the developments of their organizations through planning, management, and direct administration of the public resources in programs that make up the components of the habitat.
- Implementation of complementary programs that favour the development of existing local and neighbourhood processes, using resources in the promotion of collective self managed capacities.

- Promotion of urban and Social housing development in urban settlements socially integrated and economically feasible, paying close attention to the caring of the habitat and the environment.
- Generation of conditions for the integration and consolidation of the city and for the growth of the periphery. The regularization of policies shall involve not only private but also public property settlements and shall be approached in an integral way, considering the inclusion of informal settlements of low incomes to the sustainable urban development.
- Spatial qualification of the city through urban morphology and quality neighbourhood equipment, with an interesting layout that allows the strengthening of the relationships with the environment.
- Generation of a typological housing and flexible grouping development with formal, spatial, and technological richness and which guarantees habitability, security, building durability established as minimum quality standards for the Social Housing.
- Generation of habitability conditions that certify functioning, durability, lightning, ventilation, sun light, building quality, structural security against fire and seism in all housing units, with a maintenance cost at hand for the beneficiary.
- Adequacy of the housing dimensions according to the family group, respecting the minimum standards established in the Building Codes.
- Suppression of the political and emotive charge in the denomination of neighbourhoods.
- Accomplishment of the consultation and participation phases of the inhabitants before, during, and after the re-location, as an insertion, follow-up, and evaluation mechanism of the Program.
- Development of insertion and/or productive continuation policies of the beneficiaries.
- Strengthening of the processing of title deeds of housings, incorporating their funding to the Program.
- Application to the liberated territories the plans for improvements and vacancy through the systematic monitoring of the Environment Agency of Córdoba.

Images of The Program: My house My life

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**PAPER NO 4**

# Reflections on Housing Risk Conditions in Barrios from Barquisimeto-Venezuela.

Dra. Ing. María Ysabel Dikdan JAUA.

Centroccidental "Lisandro Alvarado" University. Civil Engineering School. Construction Department. Barquisimeto, Venezuela.

Email: mydikdan@ucla.edu.ve

**ABSTRACT**

Housing represents one of the mainly necessities of human kind, in consequence, it becomes a fundamental goal in every family in the world. The man, eager to satisfy this necessity does not hold back to achieve this, facing different types of risks, such as legal, economical, environmental, and social and others. Sometimes he is conscious and sometimes he is completely ignorant of the facts. That is the reason why it is very important that different role players in the communities inform, react and prevent, in order to decrease vulnerability situations and risks conditions that many communities in Venezuela are exposed.

Characterization of urban areas is key to be able to establish pertinent and useful actions, oriented to organize and to achieve an appropriate urban development and also to rehabilitate those areas that have been occupied and possess risk conditions.

Natural phenomena are inevitable for which building homes in saver places is considered prevention of accidents; in consequence, one must take preventions to guarantee life safety and preservation of family patrimony.

**Keywords**: housing risk condition, urban development

## 1. INTRODUCTION

According to documental synthesis (1), the United Nations reports in its yearly bulletin that nowadays natural disasters are responsible for the lost of 100.000 lives every year and they estimate that this number can increase to 300.000 in 2050. In Latin America, human lost go up to 65.000 lives and around $ 20 billion in material lost in the last 3 decades, affecting over 15 million people.

The strong float occurred in Venezuela in 1999 (event with a return period estimated in 1.000 years), produced extraordinary inundations and slicing that caused "between 15.000 and 20.000 deaths. Out of the 273.000 people who were affected, 30% of them became homeless; around 64.000 houses suffered any kind of damage from which 38% were completely destroyed and from a total of 70 hospitals and 250 medical assistance facilities, 13% and 19% of them respectively, suffered damage"[1], leading to a reaching the top average floats; in consequences, in the year 2000, Venezuela became the most vulnerable country for inundations in Latin America, according to the United Nations Environment Program[2].

However, there are extraordinary phenomena that top these numbers as well as the damaged conditions left in the natural and urban environments. That is the case of the Tsunami occurred in South East Asia in December 2004 caused by an earthquake of 9.3 in Richter scale, affecting many countries such as Indonesia, Sri Lanka, India, Thailand, Somalia, Myanmar, Malaysia, Maldives, Seychelles, Tanzania, Bangladesh, South Africa, Kenya, Yemen and Madagascar, sweeping away more than 240.000 human lives according to the UN-Habitat. Besides this number, the Tsunami hurt more than 125.000 people, around 51.498 disappeared and 1.5 million became homeless.

One can not escape these types of risks; however some cities around the world have learned to live with nature, respecting it. It is up to every country and city to learn from nature or in the worst case, its residents will have to wait until some disaster occurs so they can learn in their own skin, just like it's happened before. In some cases, their residents have learned and grow, and in other cases they have perished and die.

## 2. NATURAL AND HUMAN THREATS

A threat is represented by those factors that can produce any perturbation in a community at some point. It is determined by the disposal to damage or lost during the actual occurrence of a threat that can potentially become a disaster. This depends on the environment, infrastructure, type and quality of housing, productive activities in the region as well as its social condition.

The capacity of institutions and local associations to respond in an effective way before the potentiality of occurrence of such events is what determines the level of vulnerability of the area. There are many kinds of vulnerability: Physical Vulnerability associated to objects, Social Vulnerability referred to the conditions and characteristics in the area, and the Institutional Vulnerability associated to the ability to respond before potential threats. In consequence, the probability of occurrence of an event that might produce certain damage depends on the vulnerability conditions that could be combined in a given moment, generating a critical situation.

The risk and probability of occurrence certain damage in a determined scenario, depends on the threats factors and the vulnerability pre conditions of the elements exposed to the event.

The urban and natural environments are exposed to all kinds of natural threats: (1) from a geological origin: earthquakes, tsunamis, volcano eruptions and slicing; (2) from a hydro-meteorological origin: hurricanes, tropical storms, cold and heat waves and floats; (3) from a human origin: water pollution, invasion into the river beds, construction on unstable areas, terrorists attacks, etc.

## 3. RISKS IN CONSTRUCTIONS

Constructions are exposed to 3 different types of risks:

1. **Physical-Environmental Risks:** where it is considered the morphology of the area, presence of water bodies, vegetation, natural drains, seismic conditions of the area and the weather.
2. **Urban Risks:** where it is considered the type of development in infrastructure systems (water supply, sewer systems, electricity, final disposal for garbage, roads, etc.), types of houses, stability of constructions.
3. **Atrophic factors:** related to events, circumstances or situations generated by action, omission and behavior of man in an individual or collective way. These can be caused by the inexistence of regulations oriented to develop communities under risks, vulnerability raising construction works, errors made in the calculation of projects or during the construction of water supply systems, sewer systems, absence of soil stabilization, bad maintenance of liquid container structures, uncontrolled final disposal of garbage, etc.

## 4. RISK FACTORS CHARACTERIZATION OF BARRIOS IN BARQUISIMETO CITY, VENEZUELA

In Venezuela, “Barrios” are defined as “residential settlements in progressive development, built from the invasion of land that do not

belong to their residents and which does not have any urban planning" (3). This definition can also be complemented with another one that establishes that "Barrios" are areas with a lack of equipment, infrastructure services (water supply, sewer systems, draining systems, electricity, etc.) and the housing present equally bad conditions in terms of physical conditions (4).

Barquisimeto city's urban area had an estimated population of 842.537 inhabitants in the year 2004, which were established in a surface of 31.314 Ha. Barrios area has 28,2% of the total surface (8.798,8 Ha) and contains 73% of the total population (616.329 inhabitants). In 2005, the results of a study taken place in town classified the barrios area in 2 groups, considering the level of urban consolidation or integration to Barquisimeto urban planning, the results obtained were that only 2% of the barrios area were considered to be consolidated and contains barely 10% of total population, and 26% of the area is considered to be planned and contains 63% of total population (5).

The following aspects are important to be considered in the urban planning in communities under risk conditions to carry on formal projects (planned projects) or informal projects (from the results of invasion):

## 5. ENVIRONMENTAL AND PHYSICAL CONDITIONS

- **Weather:** Barquisimeto has a semi-arid weather with an average annual precipitation below 700 mm, constituting 2 different periods: a dry season from September to March and a rainy season from April to August. There are 2 peaks in the rain cycle: one in July and another one in November. The average annual temperature is around 24 °C, reaching the highest levels from March to May and from October to November, the lowest temperatures occur from December to January. The winds come mainly from the east and southeast in a variable speed, whose top value is 10,3 Km/h (5).
- **Soil:** it is important to consider not only the characteristics of soil on which the house will be build but also the characteristics of the soil in the area. The consequences of building on unknown soil is crucial, since it can be the cause of a threat such as housing collapse, great soil displacements, lost of human lives, etc. (6). Barquisimeto is located in a huge terrace, however the surroundings are composed by hills and mountains that separates the urban area from other areas; for this reason, it is possible to distinguish geomorphologic units as hills, prairies, terraces, depressions, constituting a heterogeneous landscape for thee urban complex. The 72% of barrios area has a topography mainly constituted by plains, mid

plain, high, mid and low terraces and inter-hill depressions, whose average slopes are between 1% and 3%. On the other hand, the rough topography only represents 28% of surface constituted by high and low hills and terraces with an average slope of 23%. At the west of the city, the barrios area in spite of having a big percentage of plain surface, have also the roughest topography with an average slope of 30%. Only around 1,4% of barrios population is in the potential soil displacement area (2.545 houses) located in 160 Ha at the west and south of the city. Additionally, 3% of barrios population is in the protected urban area (4.936 houses), which are under the highest level of vulnerability before events such as seismic movements, soil displacements, etc. (5).

- **Vegetation:** there is mainly typical vegetation from semi-arid regions such as xerophytes and semi-xerophytes. There are areas whose humidity is higher, leading to formation of primary forests, and near the river beds, there is the tropical forests.

- **Earthquakes:** earthquakes are soil surface movements caused by the displacements or accommodation of big masses

of material whose consequences can be diverse. The damage caused by an earthquake depends on the magnitude and the distance between the place where the displacement occurs (epicenter) and the surface of the earth. The damage also depends on the characteristics of soil and the preventions in the constructions (6). Barquisimeto city is located, according the classification area system in an area of category of 5 (in a 1-7 scale), which is a high risk vulnerability area caused by the presence of the Bocono trail that goes through the city from southwest to northeast.

- **Inundations:** the natural drains are the means the water from the rain uses to reach the rivers, the seas or the artificial systems created by man (5). Venezuela frequently suffers from inundations in the plains and La Guajira. In recent years, the coast has been severely affected by the extraordinary events. Hurricane strokes, strong rains and others have seriously affected the country. Venezuela is most of the time unprepared to respond to this kind of event, lacking of infrastructure to solve river grothws[4], draining issues, causing even more dangerous events such as floats, soil displacements, etc. The inundation that caused the biggest disaster in an urban area was the one occurred in 1999 affecting Venezuelan central coast (1). The Barrios area in Barquisimeto city has approximately 107 rivers, most of them not with a continuing water flow. The 4 more important water courses are: Chirgua River (north), La Ruezga River (west-north-northeast), Turbio River (southwest-south-southeast) and Claro River (south). In spite these rivers do not have a continuing water flow, during the rainy season most of them carry on an important amount of water. Usually La Ruezga River and some spots in Turbio River suffer water growths during the rainy season (5).

- **Urban Conditions:**

  **Housing characteristics:** housing construction usually starts with a “rancho” made out of any kind of material, mainly garbage, whose parts are progressively substituted with the construction of structure elements and systems in a spontaneous way but in absence of any technical criteria, perhaps using more solid materials but still inadequate with no material quality and procedure control (7). The housing deficit in 1996 was estimated to be 43.621 units (27% of all the families in the city); besides, at that time, 23% of housing at the west side and 25% of housing at the north side of town

needed to be substituted because of their bad conditions (5).

This situation has badly evolved for several reasons such as: the immigration from the country to the city, the slow housing production, the population growth, the early damage of low income housing, etc.

**Water Supply and Sewer Systems:** the running water supply comes from 2 fundamental origins: Dos Cerritos Water Press and a few local Water Wells. The deficiency in the water supply in vast areas in the city has caused water control methods where running water is only available a few hors a day. The problem is more serious because of the presence of water stealing, etc. 51% of barrios area in town has a water deficit that affects around 264.929 inhabitants out of a 540.752 total.

The distribution deficiency affects mainly barrios area at the west, and the lack of water supply affects the possibility of water distribution at the north and northeast side of town (5).

The barrios area in Barquisimeto produces 3.288 liters/second of served water which only 60% has a sewer system that can be used; the rest of the served water has no sewer system, especially the area located at the north and west of town. The areas with no sewer systems use the local streets, rivers and others as a final disposal place for served water, causing sanitary and environmental problems. The water distribution net, presents a few problems such as collapse of pipes (because of garbage, dirt, etc), inadequate water

distribution (because of the insufficient diameter of pipes), connection problems between distribution lines, filtrations, etc (5).

**Electricity:** the current electricity demand is covered with the installed capacity in the city, however, sometimes there are power interruptions caused by the national electricity network.

**Urban Streets:** urban streets in barrios area has a lack of order, because of the unplanned growth caused by the use of certain roads that are considered to be very important to the barrio area but not as much to the city, creating a collapse of the entire system. 52% of barrio streets are made in soil and has an average width of 5,5 meters, the rest of them are made in asphalt and have an average width of 7,6 meters. The access to the roads lack of adequate infrastructure such as signaling and the surface is not in the best shape. At the north of the city, there are some physical obstacles such as the rail way and La Ruezga River that interrupts the courses of the roads.

**Draining Systems:** 18% of barrios population is located in a surface of 1.543 Ha of potentially inundate areas, equivalent to 19.300 inhabitants. Barrios area in Barquisimeto presents an average deficit of 59%. The most critical zone is the north side with a 52% population potentially threatens, representing around 5.586 houses settled in 692 Ha and a deficit of draining systems estimated in 85% (5).

**Final Garbage Disposal:** the production of garbage is related to different periods in the year as well as the acquisition power of the population. The garbage

collecting service can be affected by different factors such as: accessibility to the zones, lack of an adequate garbage education, and lack of adequate streets and roads, which can really be worst during the rainy season. In barrios area in Barquisimeto, one estimates a garbage production of 1.975 Tons/week, existing 74% deficit in collecting service. Another fact is that 1.460 Tons/week are burned and thrown away in open spaces and river beds, causing all kinds of sanitary and environmental problems, such as plagues, viruses, bacteria, etc., also causing obstruction of natural and artificial drains with solid garbage that could cause inundations in other areas, and finally accumulation of excessive piles of garbage in barrios at the south of the city.


- **Atrophic conditions:**

**Land Property:** in Barquisimeto, there is a big proportion of public land, which has been occupied irregularly. At the west of town, prevail the common property, leading to a progressive invasions and unorganized growth of the city. The main limitations for urban growth are downtown and at the south of the city where there are approximately 68 barrios, equivalent to 26% of them located in unstable soils, high slopes, infiltration threats and potentially seismic activity (5).

**Absence of effective controlling mechanisms oriented to restrict urban growth:** the surrounding areas of the city have suffered a discriminative growing process, leading to the absence of urban services, construction on unstable soils increasing the risks of communities generating social, economical and environmental issues.

**Vulnerability increase caused by highly risky construction work such as soil slicing and inadequate landfill**: although in barrios area, it is not frequently observed soil slicing, it does exist areas that have been used for years as final garbage disposal, composed by material from all kinds of excavations, from the formal and informal sector and some of them are now places used as land to settle auto-produced housing, lacking of a minimum soil resistance.

**Absence in preventive construction work such as soil sliced stabilization:** the south side of the city composed by one huge soil slope (from soil slicing), does not have any kind of protection structure necessary for an adequate response before vulnerable threats such as a seismic event.

**Infrastructure services:** it is been described previously the conditions in urban services in barrios areas such as bad water supply systems, inefficient sewer systems, incorrect final garbage disposal, etc.

**Institutional vulnerability:** there are 2 Fireman Stations in town; one is located at the north of the city and the other one at the west. There is Civil Defense, a public institution located at the east of the city, and there is also an interesting social organization network throughout the barrios area of the city; however, there is lack of all kind of resources that are necessary to be able to respond effectively before the occurrence of a risky event from a medium magnitude.

## 6. FINAL REFLEXION

Venezuela presents the typical problems from developing countries (poverty, unemployment, lack of urban services and

social security, and a high housing deficit). It also presents hydro meteorological threats (storms, inundations), geological threats (earthquakes, soil displacements), sanitary threats (cholera, dengue), atrophic threats (technological and public disorder), but the biggest threat of them all is the lack of preventive culture (8).

Even when there are international, national and local institutions that offer assistance before the occurrence of a risky event, it is still in progress the structuring of Civil Protection Law approved in 2001 (8).

The vulnerability conditions declared, allow to make an objective analysis of the situation in a city of 8.798,8 Ha, whose 28,2% is occupied by barrios areas that contains 73% of the total population (616.329 inhabitants), leading to the establishment of actions oriented to reduce vulnerability situations.

Physical habilitation is a task that should soon be started by the government and responsible institutions, with the active participation of the entire community and the technical support from professionals in the area. Successful experiences evidence the positive aspects of these allegiances, whose local experience started in 1999 but stopped in 2007, for which it should be retaken for the future well being and improving conditions of citizens.

It is important to systematize, potentiate and institutionalized reduction of vulnerability as part of all sector's responsibility: public, private and NGO, society in general, assigning functions, rolls, responsibilities and resources for the successful fulfillment of this particular mission.

Promote and initiate the incorporation of knowledge and research on vulnerability of regions within the school and university programs in order to create awareness in the community.

Promote the systematizing, increase and spread information oriented to create self conscious on prevention and risk reducing methods.

To put into practice as soon as possible the required actions to reach the main goals established in "Plan Sectorial de Barrios de Barquisimeto", which establishes:

a. Guarantee an urban expansion that does not threat population reception.
b. Avoid the accentuated horizontal growth of the city.
c. Achieve the correct location for urban activities.
d. Plan the Government actions in phases established in this program.

***Life protection as well as city patrimony protection is our responsibility and requires coordinated actions in order for us to achieve the balance of tomorrow.***
***Maria Ysabel Dikdan Jaua.***

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**PAPER NO 5**

# Flat Reconstruction for Low Income Society

Jumran, Septiani, Arifin, Mega
Master Student, Department of Architecture
Institute of Technology Sepuluh Nopember (ITS)

**ABSTRACT**

The discussion in this paper includes the concept of flat for low income society, transitory house, housing as process and procurement of the flat. The reconstruction of the flat at Urip Sumohardjo street was to replaced the old flat building which had been deteriorated. The development process start from planning, building construction, occupation and maintenance. The result of the research shows that routine control of the flat condition is very important. Tariff determination needs to involve flat dwellers participation.

**Keywords**: Flat reconstruction, low income society

## 1.1 INTRODUCTION

Urip Sumoharjo flat is one of the several flat located in the center of Surabaya city, which was established in 1982, and completed in 1985. Initially, the area where it stood was a densely populated area. At August 25, 1982, there was a fire incident near that place, which spread out and burnt 83 houses. Surabaya government together with Barata company helped by developing a flat, through a mutual agreement. During it's development, the flat had experienced quality decreasing for its material and environment, because it is only designed for 20 years. At that time, the condition was already bad and dangerous for dwellers' safety, many building material being used had a bad condition especially its structure. The government then fixed the flat with the concept of reconstruction which means that the old buildings need to be dismantled and be replaced with a new one. Research methods used in this research were in-depth interview and direct observation.

## 2. THEORETICAL BACKGROUND

### 2.1 THE CONCEPT OF FLAT FOR LOW INCOME SOCIETY

In the housing procurement in the city, land is the main obstacle that must be faced by house developers. Land is getting more expensive and rare in the city, therefore there should be efficiency in their utilization. Thus, the concept of vertical house development is hopefully able to replace landed house concept which need wider area.

There are five advantages related to vertical house development:
1) Land utilization efficiently, which land cost can be saved more than 50% since the building minimally has 4 floors,
2) Land thrift, especially for lands being needed for infrastructure development,
3) Saving for infrastructure component,
4) Pressure of agricultural land and green land in periphery decreased,
5) Being a part of cities' urban renewal (*Yuli Setiono, 2003*).
As a part of housing procurement solution in the city, vertical house or called as a flat is one of the several solution to handle slum in the city.

The meaning of flat legally can be obtained at Regulation No. 16 Year 1985 about flat house, which article 1 paragraph 1 stated that "flat house is a part of leveled building built in an environment which divided in parts that structured functionally at the horizontal and vertical direction, and it is a unit which each of it owned and used separately for living that equipped with jointly part, jointly material and jointly land".

Flat is a house, that can be considered as a building where human lives and perform their living. A house is a place of socialization process when an individual is introduced to norm and tradition in a society. The concept of flat house management that developed by Puslitbangkim Departemen. PU-JICA, (2007) are as follow :

1. Is a place for living temporarily and operationally based on rental system, with the management rights completely became the responsibility of local management to perform rules based on the valid stipulation.
2. Flat house management consists of technical activities, rental, marketing, to provide guidance to rental dweller, administration, and financial, that strives for the ability of management to organize human resources directly and indirectly in operating, maintaining and nurturing infrastructure, and utilization.
3. Professionalism of local manager's and rental dweller's participation are the main key leads to success in flat house management, therefore communication between local manager and rental occupant is an important factor that must be guided in implementation.

4. Rental dweller participation will be determined by the quality of services and the manager ability in guidance and communication.

## 2.2 THE CONCEPT OF TRANSITORY HOUSE

In flat housing for low income society procurement, things that should be concerned are the existence of the word “rental”. This word means that the flat is not a permanent house, but it is a transitory or temporary house. This concept means that the flat give a dweller, which generally come from low income society, chance to arrange their financial condition.

By living in a flat, which considerably costs very cheap, the dwellers will have a chance saving some of their income. Afterward, they may use the savings to buy permanent house at other place. Occupation time limitation will give a chance to others to live in the flat.

The existence of transitory house concept influenced the structure of flat. Generally, structure of a flat for low income society consists of 1 bedroom, toilet, kitchen, and at the minimum, in the form of wide place without partition. Within this concept, the flat is aimed for young family which parent’s privacy is still guarded well.

## 2.3 THE CONCEPT OF HOUSING AS A PROCESS

John F. C. Turner (1972) in his book *Housing by People* stated that house is not only as a verb, but house is a process. This concept means that a house experiencing processes alongside dwellers’ experiencing processes. The form of the house would change following the changing of the dweller economical status.

The procurement of flat housing for low income society is not free from this concept. The flat is changing along with the changing of the dwellers. One of several example of housing as a process in flat for low income society is that when there is an additional dweller, therefore, to create privacy, its place is partitioned to add more room.

## 2.4 “RUSUNAWA" PROCUREMENT CONCEPT

John F.C Tuner (1972) states that house procurement process includes three visual element institutions, those are *who*, *do*, and *what*. *Who* institution refers to the involved party during the house procurement, they may be government, private and society. Each party performs their tasks based on their capacity in housing development (do), such as government through policy. *What* institution emphasized to the result that will be reached by each party, for example : university that resulting a planning detail.

## 3. GENERAL PICTURE OF URIP SUMOHARJO FLAT

At 2005, new flat was built to replace the previous one. This flat was made in half circle with the front facing the street. Block I facing Urip Sumoharjo Street, Block 2 facing Keputran Jambon Street and Block 3 facing Kedondong Street. Each block has stairs in the middle part. Flat facility built above the land which has about 3.064 $m^2$ width and equipped with sport field which size about 15 x 25 meter, meeting hall and mushola (place to pray). Parking lot is using an empty land. The flat has 120 units, with room size about 3 x 8 meter each, plus 2 meter for front terrace. Every unit consists of 1 guest room, 1 bedroom, and 1 bathroom/toilet. In this new flat, dwellers could place things being dried at the back.

The flat built using East Java Province Government fund, and managed by Technical Implementation Unit (UPT) under Land and Building Management Agency of Surabaya City Government (DPTB). From total 120 unit, about 119 unit occupied, and 1 unit used for UPT office.

Flat occupancy can be classified into two parts, 1st and 2nd floors which is occupied by native land owner that has real land before the fire. Meanwhile the 3rd and 4th floor occupied for those who rent from the owner. At present, the flat occupied by 700 persons, and spread in 3 blocks.

**Figure 3.1** Court Yard

**Figure 3.2** Musholla and Meeting Hall

## 4. THE DEVELOPMENT AND THE OCCUPATION OF THE FLAT

### 4.1. PLANNING

Although the plan to re-build Urip Sumoharjo flat was previously rejected by the old dwellers, the development plan is still being implemented. After several socialization, old dwellers ready to be relocate with free aid for housing rental about 8 millions per family for 2 years. The fund was given by Surabaya Government.

The reality of the development, as said by citizen who received the fund, was not according to the planning. There were several families complaining about the money that was not enough to pay housing rental for 2 years, since housing rental tariff around flat area has increased from 1 until 2 million from the normal price per year. Some family chose to rent house outside the flat area by finding cheaper ones.

### 4.2. BUILDING CONSTRUCTION

The design of the flats which was made by Prof. Johan Silas, of the Laboratory for Housing and Human Settlements - ITS, is using tropical housing concept. Building design did not follow twin block pattern as usual but the U pattern, with the middle part use as a public area. There was a change on building foundation design, from palm foundation into spider foundation, because spider foundation gave more room.

Ladder design was made wider to anticipate when bringing down a person's dead body from the higher floors. Besides that, there was also a change on building form in block B, because there was a failure in land acquisitioned by Surabaya Government. Initially the building bent toward the Keputran Jambon Street, but since acquisition failed, new design made the building bent to inside direction. There was a mistake in fence design, because there would be a possibility to have an accident when little kids put their head inside the fence. Until now, the fence is still there.

### 4.3 TARIFF

The dwellers pay rent about Rp. 104.000 per month (Local Regulation/Perda 21/2003 about Region Wealth Utility Retribution). There is a plan to increase the rental tariff, because the cost for flat maintained by UPT was higher than rental tariff. The determination of new tariff for low income society flat will follow official regulation of Minister of the Peoples' Housing Number 18/Permen/M/2007 about The Guidance of Tariff

Consideration for Flat of Low Income Society Funded by APBN-APBD. The calculation is not more than one third of regency/city minimum salary (UMK). It means that if today's Surabaya's UMK at Rp. 948.500, then the flat rental tariff must not be more than Rp. 316.150. However, right now, the plan to increase rental tariff still postponed because of economic condition.

In its implementation, there were still many dwellers arrears rental payment. There are several reasons for this. First, the dwellers intentionally refuse to pay as a protest, because DPTB Surabaya as flat management through UPT is considered unfair in giving the tariff. DPTB Surabaya determined the rental price Rp. 104.000/month for 119 units in all floors that divided into three blocks (A, B, and C). Secondly, because of social condition factor, in which, there are dwellers who's occupation merely fixing tire, sewing, and others, whose incomes are below the regional minimum salary.

## 4.4 OCCUPATION UTILIZATION

Urip Sumoharjo flat aimed for Surabaya citizen who did not have a place for living and came from low income society/weak economy society. Actually, there were several flat dwellers that did not utilize the unit for their needs. They rent out the rooms with higher price to others. This practice actually found by UPT, but the sanction given by DPTB was just warning letter without any strict sanction.

With a width about 7x3 meters, the unit could be made into two rooms and rent out to others. If there are three dwellers in a unit, and the average rent for one dweller is Rp. 250.000 per month, then the income for unit owner that rent the place is about Rp. 750.000 per month. Meanwhile, the owners just have to pay Rp. 104.000 to government. Therefore, they get Rp. 646.000 per month as a profit. Total dwellers that rent out their unit reached 2 percent from the whole flat dwellers.

For family with many members, several dwellers make another room in their unit. Moreover, there is no prohibition for dwellers in doing anything to their unit. Empty space in the middle of flat, is utilized by several dwellers for their income resources, by managing a parking place there.

Avoid shading using tints (which do not always reproduce evenly when professionally scanned at the printers) or colour (which does not reproduce well when the paper is to be printed in black and white). If shading is necessary, keep it to 10% density, or not more than 25% density, or use hatching instead to give the effect of tone. When creating line drawings, bear in mind the type area and size each illustration accordingly. Use lower case 8pt Univers (or a similar sans serif face) for labelling line drawings.

Centre illustrations on page width. Leave 5–10mm space above each line drawing, and 5mm space above its caption and 5–10mm space after its

caption. Number illustrations according to paper and position, e.g. Figure 1.3 (figure three in paper one).

## 4.5. MAINTENANCE

For general and social facilities, maintenance cost is included in rental money is Rp. 104.000. However, sometimes, there are several facilities that are self-maintained by the dwellers. Meanwhile, for each block, maintenance activities are given to each owner. To handle garbage problem, dwellers contribute Rp. 3.500 per month to pay garbage filter. Water and electrical payment is performed by each dwellers with electrical cost is around Rp. 70.000, and water cost is around Rp. 15.000 up to Rp. 40.000.

On the other side, UPT employs several personnel to clean the flat, and it is paid from rental money (the workers come from outside the flat). Meanwhile, the dwellers wished for flat cleaning performed by dwellers themselves, to alleviate the rent cost. It is also anticipated that the fire hydrant infrastructure will not function well when the flat is on fire because there is no generator as electrical backup when electricity is shut because of fire.

## 4.6 OCCUPATION STATUS

There is related problem with occupation status of dwellers in 1$^{st}$ and 2$^{nd}$ floors. Generally, the dwellers in 1$^{st}$ and 2$^{nd}$ floors are the native owner of the area. Until today, there is no clear status related to their occupancy. Even today, land and building taxes of the flat are still being paid by them. Meanwhile, they never received their previous land certificate.

## 4.7 URIP SUMOHARJO FLAT IN THEORETICAL VIEW

From many theories that already being discussed, generally the implementation of theoretical concept in Urip Sumoharjo flat development are as follows :

- As transitory house, flat for low income societies gives a change for its dwellers to arrange their financial condition. With rental cost that considered very cheap, dwellers have a chance for partially saving their income to be used to buy permanent house at other place. Occupation time limitation will give other societies to feel and live in the flat. However, this concept is not completely implemented in Urip Sumoharjo Flat. For dwellers in 1$^{st}$ and 2$^{nd}$ floors, transitory house concept is not valid, because they are the native land owners of the

flat. For them, the flat is their permanent house. But, for those who lived in 3rd and 4th, this concept can be implemented.

- Identification of Urip Sumoharjo flat occupations shows that housing as a process concept can be implemented at the flat. Room addition in vertical nature at several units, is the form of adaptation for additional dwellers number and it shows that there is a process in the occupation unit which follow dwellers' living process.
- Urip Sumoharjo flat procurement process follows usual approach model, that there are 3 visual unsure institutions, as been stated by John F. Turner (1972). Those three elements are *who* institution, *do* institution and *what* institution. *Who* institution is stated as City Government of Surabaya, dwellers of the flat and ITS. Each party has a role in performing their tasks (do) through supply of fund, rules, cooperation agreement (City Government), land (dwellers), planning and socialization. (ITS) Result (what) that has been reached from the involvement of each party is the formulation of regional rules, flat occupation and planning design.

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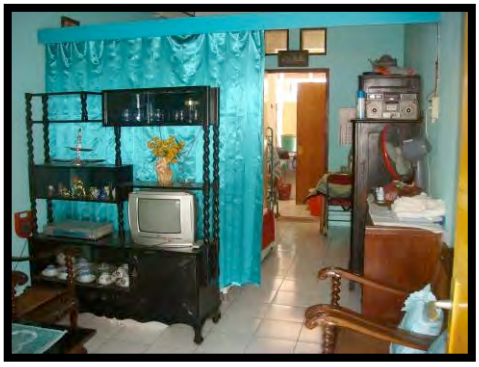

**Figure 4.1** Housing as process concept

## 5. CONCLUSION AND SUGGESTION

Reconstruction of Urip Sumoharjo flat has brought several consequences that must be faced by all stakeholders. Several efforts must be done to bridge different attitude between dwellers and the management of Urip Sumoharjo flat. Several recommendation that can be suggested in the implementation of Urip Sumoharjo flat are as follows :

a. There is a need of routine control by DPTB toward flat occupation misapplication, including encoding appropriate dwellers that reserves the right to live in the flat. Sanction should be implemented strictly.
b. There is a need of authority separation in flat maintenance. For small scale maintenance, it can be given to dwellers, therefore there is no

need to pay outside personnel. Moreover, there is a need to perform routine check by UPT for the big scale maintenance, such as public facility and whole building maintenance.

c. Tariff increment policy is inevitable, however, tariff determination needs to involve flat dwellers participation. Moreover, there is also a need of routine socialization.

d. There is a need to consider tariff differences, especially for dwellers that previously were the native land owner.

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**PAPER NO 6**

# The Buginese's Informal Settlement Structure in the flood Sensitive Environment in the Coastal Area of Tempe Lake of South Sulawesi

Naidah NAING[1], Happy Ratna SANTOSA[2], Ispurwono SOEMARNO[3]

[1]**Naidah Naing** is student of Doctoral Degree, Architecture Department of ITS Surabaya, Indonesia. naidahnaing @yahoo.com
[2]**Happy Ratna Santosa** is lecturer at the Architecture Department of ITS Surabaya, Indonesia. happyratna@yahoo.com
[3]**Ispurwono Soemarno** is lecturer at the Architecture Department of ITS Surabaya, Indonesia. Isp4251@yahoo.com

**ABSTRACT**

Living in the coastal area of Tempe Lake is a living choice of the community of informal sector in their activities as fishermen, farmers or as merchants. The condition of Tempe Lake which is a cistern lake and as an estuary from many big rivers, and also increasing silts up every year, caused the lake water to overflow and flood its surrounding lands. To anticipate the floods that flooded their settlement's area for months, the community built their settlements on stilts structure that can be functioned as a safe dwelling place for its occupants.

The goals of the research were to identify the concept of Buginese's informal settlement structure as a dwelling place in anticipating the flood's conditions and climate's changes in the coastal area of the lake, so that the living activities can be going on. The research method used is qualitative ethno architecture approach.

From the research finding, it is found that the Buginese's traditional informal stilts house with the high bottom pole structure( the space underneath the house) , is the construction system which was made by measuring the water's rise height and the height of the owner of the house to prevent the water floods until the limit of the upper floor. In dry season, the underneath space of the house is functioned as a resting place on the

day time, boats' storage room, fishermen's tool, farming equipments and a place to make business. The house walls structure in the middle space were made flexible with built up system to make the clearance easy and for safety for goods mobilization during the floods. Whereas the upper space structure (plafond and ceiling, *rakkeang* ) were made with structure material as strong as the bottom floor as it were used for temporary dwelling place when the height of the water (in the floods) reached the stilts house body.

**Keywords**: Buginese's Settlement Structure, Flood Sensitive.

## 1. INTRODUCTION

According to Robinson (2005) people's settlements in Netherlands Indies (Indonesia) were divided into two categories; firstly; houses of maritime tribes (Sumatera ,Kalimantan, and Sulawesi) which stand on poles located on the riverside or seaside. Secondly, houses on agriculture (Java, Bali, etc.) According to J.Crawfurd, the maritime tribes commonly lived in on more anarchic situation and tough compared to the agriculture tribes. In South Sulawesi, the people were dominated by the maritime tribes. They dwelling house were built above the poles in the form of stilt house. The stilt house is generally be called traditional houses which widely spread throughout urban areas and countryside.

The architecture of traditional house in the coastal area of Tempe Lake in South Sulawesi showed uniformity in the form of stilt houses, that were houses which were built similar to a stilt, with main structure was dominated by poles (Bugis: *aliri*) which functioned as the column and the peg (*pattolo*) which functioned as the beam. Stilt house is a dwelling house which has natural adaptation in a natural environment in Tempe Lake area. The form and the material used for the structure of stilt house were derived from the surrounding environment were perceptive enough in responding nature symptom and climate condition in the building surrounding.

The characteristic of Tempe Lake which is rainforest lake type, experience rise and fall of the water condition every year and has influenced the shape of the building, structure, and construction requirements, for the design of Buginese informal house in the coastal lake area. In long dry season, the lake water become dry, on the other hand, if there is long rainy season, the water from the lake overflowed and the water backed up and flow to the Buginese informal houses in its ground coastal surrounding. This condition has happened for decades. To anticipate the unpredictable symptom and nature condition, the people of Tempe Lake nearby have created informal Buginese informal settlement which possessed a high responsibility toward the climates. The stilt house shape, structure and construction and flexible room arrangement, are the

adaptation process in anticipating the water rise and fall condition in Tempe Lake.

## 2. THE BUGINESE VILLAGE IN THE COASTAL AREA OF TEMPE LAKE

### 2.1 THE HISTORY OF BUGINESE VILLAGE

The Buginese is a tribe which is classified into Deuteron-Malay tribes, or Young Malay. Migrated to Indonesia after the first stage migration from the inland Asia, Yunan. The word "Bugis" derived from the word Toi Ugi, which meant The Bugis People. The name "ugi" referred to the first king of Chinese Kingdom (not kingdom of China, but kingdoms in South Sulawesi peninsula, located exactly in Pammana District, Wajo Regency nowadays) that is La Sattumpugi. When the people of La Sattumpugi named themselves, it referred to their king. They called themselves as To Ugi or people or followers of La Sattumpugi. La Sattumpugi was the father of We Cudai and the brother of Batara Lattu, the father of Sawerigading. Sawerigading himself was the husband of We Cudai and has delivered several children including La Galigo, who has made a greatest work on world's literature which produced approximately 900 folio pages. Sawerigading Opunna Ware ( the ruling king in Ware) was a story depicted from literature work of I La Galigo in Buginese people tradition. The story of Sawerigading is also known in the tradition of Luwuk Banggai, Kaili, Gorontalo people and many other tradition in Sulawesi like Buton.

A script in *La Galigo* described that the Buginese's settlement were built in low land hill or in the ground near the estuary of the river or near the lake. Lately, in pre-historic times, the political riot has caused a number of settlements were built on the hill or on the top of a mountain. In the 14$^{th}$ century, the Buginese started to settle in the low land. Some Buginese's chronicles illustrated houses of the dwellers, some of them were in the form of small clusters in far distance, or it just spread out around their field (Pelras, 2006).

The main way of life of the Bulginess tribe who lived in the ground area and on the Tempe Lake and as a main way of life for the people of South Sulawesi was *Pallaonruma* (farmer), *Pakkaja* (fishermen) and *Passompe* (merchant, traveler, or wanderers to other countries as it is connected to migration)(Hamid, 2007). However if it is focused the history of Bulginese's comprehensively in fact, it was only a few who were involved to the maritime activities. Whereas the one which has become the heart of the economics are business, plant production commodity, and rice farm production. Related to the Bulginese's way of earn a living in Tempe Lake on the ground and on the water, the Bulginese then equipped themselves with astronomy knowledge concerning the good days and the bad days for farming the plants or catching the fish and also the knowledge of the stars. These knowledge systems has applied on their belief, based on the belief systems and cosmogony view believed. The belief concerning

the good and the bad days were considered to influence the success and the work they have done (Hamid, 2007).

The characteristic of Tempe Lake which experience rise and fall of the tide caused by the climate and other external influence causing the people to create the effective way of settlement in adapting the lake environment condition. If it is focused historically, people from the coast of Tempe Lake has arrived since hundred years ago (Naing, 2008) The settlement has been built around the lake and river's side. The community economics activities, besides as fishermen, also as farmers and silk craftsmen. However, since the narrowed of the farm field because of the settlement buildings around the lake, and the uncertain climate condition causing the people tend to catch the fish from the lake to fulfill their daily needs. The availability of many kinds of fish and shrimps all the season is a gift for the fishermen in doing its economics activities.

## 2.2. SETTLEMENT'S PATTERN

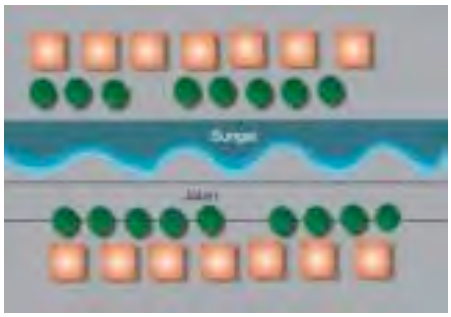
The Buginese village which was spread along the coastal of Tempe Lake occupied the area by using settlement orientation to the road direction, river which flows to the lake or to the lake. This has been done to ease the access to go road or to the working place. As a result, there were settlement pattern linearly following street lines or river line can be found in this area. This condition can be found mainly to the area of flood sensitive which was very close to the river and the Tempe Lake in which its people means of livelihood are fishermen. The linearly settlement pattern along the river and the lake was formed mainly because of people's dependence of the lake's functions as the working place, means of livelihood, water's transportation and also other family activities such as washing, toileting and the need of drinking water. This kind of pattern can be found in the surrounding area of Tempe District, Sabbangparu District, and Belawa District.

In people whose their work as farmers, generally occupied its settlement area near with the farm or field work in the coastal of Tempe Lake. The people in this area tend to form disorder clustery settlement patterns. As the farm work usually involves not only one family relationship, but also involve other family to do the farming process. So that the people tend to live near their family and working place (the farm). This kind of pattern can be seen mostly in part of Tanasitolo District, Balawa District and Sabbangparu District.

Moreover, people who lived near the lake area, with their alternative means of livelihood as a farmer or as merchant besides as fishermen, usually live in arranged cluster and formed asetalinger settlement pattern. This clustered pattern was naturally formed with the people's behavior who prefer to live close to their family and working place. As a result, the formed settlement groups were based on the family relationship and working place orientation. This asertalinger settlement

pattern was commonly found in Tempe District, Sabbangparu and Tanasitolo in the coastal area of Tempe Lake.

In the floods time, boat and rafts were used as means of transportation in the area of the settlement. Whereas to relate between unit houses, a lower construction street floor made of bamboo were built which functioned as the replacement of the pavement. The location of this bamboo pavement is in the front part or the side part of the stilt house.



Picture 1: Linear settlement pattern which oriented to the river or lake.

Picture 2 : The Buginese informal house

### 2.3. FLOODS IN TEMPE LAKE

Tempe lake is a narrow lake which was formed in the flood land. During the dry season, the lake is divided into two, that is Tempe Lake, Sindereng Lake, and Buaya lake. Sindereng lake and Buaya lake are connected with Tempe Lake through water channel. In the rainy season, the three lakes form a big lake. The elevation of the bottom of the lake is 3.00 meter on the lowest dot. During the rainy season from May to August, the water level of the lake has reached 28.000 acre – 43.000 acre. Whereas on the dry season, the wide of the water level only reached 10.000 meter with the depth of the water reached 1.5 meter. In the most drought year, the wide of water level reached only 1.000 acre with the dept of 0.5 meter. The rise of the lake water on the rainy season was caused by the limitation of the capacity of the water flow in Cenrana river. On the other hand, the narrowness of the water level on the dry season is directly caused by huge capacity of the water flow of Cenrana river compared to the flow that goes to Tempe Lake. The sedimentation has also given the contribution on the narrowness of lake water capacity (Nippon Koei,1997)

**Table 1. The Condition of Tempe Lake on the Rainy and Dry Season**

| No | Season | Month | Height ofWater Level | Wide of water level (acre) |
|---|---|---|---|---|
| 1 | Rainy season<br>Dry season<br>Severe drought year | May-August<br>June-Dec | Elevation 7.0-9.0 m<br>Elevation 4.5 m<br>Elevation 3.5 m | 28.000-43.000<br>10.000<br>1.000 |

Note: The elevation of Tempe Lake is El. 3.00 meter on the lowest point.
Source : Nippon Koei, 2003

**Table 2. The wide of Tempe Lake area on the rainy and dry season**

| No. | Season | Rain fall (mm/month) | Month | Lake's Wide (acre) | Depth (meter) |
|---|---|---|---|---|---|
| 1 | Rainy season | > 100 | Feb-May | | 5.0-6.0 |
| 2 | Dry season | < 100 | Jun-Dec | 10.000 (Tempe lake,300)(Buaya Lake), 3000 (Sidereng Lake) | 0.5-2.0 |

Source : Tangim, 1995

The housing and settlement community, farmyard, and infrastructure around Tempe Lake experiences damage on the rainy season. In the period of 1978-2001 there were 13 floods, when in 1988 was the biggest floods with water level height (TMA) 8.95 meter with repeated period 21 years with the wide of the flooded area of 26.000 acre. In five-year-period of 1984-1988 there were 3 (three) times floods whereas in the same period of 1996-2000 there were five times floods with the lower period of time, For the year of 2001-2004 almost floods happened every year had five times flood and in the period of 2006-2009 two times flood happened. The cause of the floods was the high rain fall the drop of water reservoir of the lake water caused by the sedimentation (Bappedalda South Sulawesi Province,2008).

The floods and flooded areas were classified into two : (1) Floods caused by the overflow of Tempe Lake, and (2) floods caused by the rise of the water debit from WalanaE river, Bila river and other rivers that go to Tempe Lake. The water level height has caused flooded to the farm areas and people settlement areas around the lake and caused the fishermen not able to harvest the fish from the provided net which can be harvested when

the water narrowed. Sometimes, the fishermen has suffer loses by making the provided fish net until billions of money, but because of the longer flooded , the fish were not able to be harvested. This flooded water last longer than the floods from the overflow of the river.

In the period of 1978-2001 a severe drought has happened, that were in the year of 1993,1994,and 1997 where the wide of the lake reached its minimal wide of 200 acre. This was caused by the severe drought season in the year of 1991,1994 and 1997. In that period the dry season started earlier and ended later compared to other years. Even in the year of 1994 and 1997 has recorded the longest dry season taken from the data from season development of Indonesia (Bappedalta South Sulawesi Province,2004).

The condition of drought and floods which happened in Tempe Lake has given positive and negative values in sustaining the social and economics around Tempe Lake. The adaptation process on the severe environment condition has given sustainability in getting daily activities and earning activities as well. The experience of living in the flood sensitive area gave the process of building informal Buginese house which is responsive toward the climate changes and environment. The used of structure by using built up system and flexible room arrangement has caused the people of coastal Tempe Lake live sustainable living in the flood sensitive areas until now.

## 3. FINDINGS AND DISCUSSION

### 3.1 THE FORM AND THE PHILOSOPHY OF BUGINESE' INFORMAL HOUSE IN THE COASTAL AREA OF TEMPE LAKE

The Buginese' informal house which exist on the flood sensitive area generally form
stilt house architecture philosophy concept. This public house architecture concept were
formed not only because of the culture or habit to build the house from generations, but it also develop because of the nature's condition and environment. So, eventually, has developed into architecture concept which is naturally formed because anticipating the nature' condition or environment which often has floods.

In general, the architecture house in this area has no difference with the other Buginese stilt house. However, if it is looked in more details of its components and building structure details, it is found that columns and poles of the house which its height is over compared to the other Buginese' stilt house in the other area.

The building appearance is formed from base form of rectangular as general stilt house model in South Sulawesi especially Buginese tribe. Only that the philosophy values and the local nature condition has influenced much in forms and building structure in this area. The influence of people's

philosophy of life toward the house or the building was the belief that the earth-like building is consisted of 3 elements that is the land, water, and air, and as the human body which consisted of three parts such as:

(1) Upper : head, that is the roof or *Rakkeang/Ate'*
(2) Middle : body, that is the building plan or *Ale Bola*
(3) Lower :leg, that is the space underneath the house or *awa bola*

A house is considered incomplete if does not have one of the three parts above. The concrete of this philosophy can be seen from the form of stilt house in which generally made of wood. Whereas, the concrete building as the reflection of nature condition that is flood sensitive was the use of high columns/ supporting poles of the house. This is meant to anticipate the flood which come to this area annually.

To the informal Buginese' house in the flood sensitive area, the space underneath the house (the lower floor) usually be used for a place to gather , chat or take a rest with family member or closest neighbors, mainly in the day-time. Besides, it also be functioned as a place to store the boat, farming equipments, or a place for raising chickens or goats. The space underneath is equipped with *bale-bale* made of wood or bamboo for just taking a nap or sleeping in the day-time.

On the upper part/ roof is usually made by using the same structure and material as the floor has. This is meant that the roof of the house (*Rakkeang*) besides be used as the place to store the farm products, or fishing equipments, it also be used for an alternative place when the flood come for more than 4 meters high. If the flood reached the body of the house, so the *Rakkeang* is used for a sitting place to do the daily activities such as taking rest and eating. As the entrance to *Rakkeang*, the front side of the upper roof (*timpa laja)* is be opened for the passing place from the upper space to the boats, Even the boats as the means of transportation during the flood, is also tied to the front of the roof (*timpa laja*). The view like this can easily be seen when the floods come to this place, maily can be seen around the Tempe District (Salomenraleng, Laelo), Sabbangparu District (Salotengnga, Pallimae and Benteng Lompo) and Tanasitolo District.

The saddle roof form generally be used with the leaning stage between 30-45 degree, is aimed to speed the rain water flow considering that the rainfall rate is high enough in this area. The people's habit in building the house with minimum windows is the cause by people lack of knowledge on the importance of good lighting and fresh air for keeping the dweller's health.

### 3.2 THE STRUCTURE AND BUGINESE' INFORMAL CONSTRUCTION HOUSE IN FLOOD SENSITIVE AREA

The Buginese' informal house in the coastal of Tempe Lake is a permanent dwelling place. The land's condition and area which is near to

the lake and river has caused the Buginese' house experience be submerged in the water for 1-3 months, minimal once a year. Sometimes, it happened twice in a year. For that reason, the Buginese' house used structure and stilt house with the construction which is easy to be reconstructed (mainly on the wall) when the floods overflowed up to the upper floor. Whereas the roof structure (plafond) were made as strong as the house floor considering that it can be used as the second dweller in flooding time. In general, The structure of the Buginese informal house use foundation structure system which consisted of three parts, that is the lower part structure (step foundation and column), the middle part structure ( floor and wall) and upper structure ( roof and top). The placing of the floor, wall and roof are the supplement which are not functioned in supporting the house's burden.

**a. The foundation/lower part of the house and frame building**

To the Buginese tribe, who considered a house is as a self picture and family. The form and the measurement of the house is determined from the shape body of the husband and wife. On the lower part of the house the foundation is made from the step stone. Over the step were built column or poles as the main structure of the lower part which go to the plafond limit. The pole or pillar is made from beam wood in rectangular shape which functioned to support the upper house burden. The measurement of the height of the poles is made higher than the other Buginese' house in the other place. This is meant to anticipate the water's level during the floods. The underneath room space of the house is called by the Buginese as *kolong* (underneath space). The height of the underneath space or the floor from the ground is measured from the husband's height measurement and then is added with some more *depa*. The underneath house is functioned for the cattle, other activities which is impossible to be done in the stilt house such as raising the cattle, storing the boat, fishing equipments and storing farming tools, Besides it also be used for spinning the silk cloth material, open a small stall, and for the resting place during the day. The activities in the underneath house were done mostly by the husband than the women.

The first pole to be posted on the frame is *posi bola* pole (center of the house's pole), that is the pole which is the central pillar of the house. After this pole done, the second pole is going to be done that is *pakka* pole. *Pakka* means branched, that is pole which accommodate two *arateng*. After both poles were polished, the other poles is going to be done also. For the floating house, the lines of the side poles were 3 and 4-5 to the back side. The distance of the back poles is longer than the side ones. That is why, although the total of the poles are the same but the shape of the house is rectangular. The total compartments depends on the needs and the availability of the owner. The most important thing in posting the poles that is the poles are not supposed to be posted upside down, meaning that

posting the lower part of the poles are posted in the bottom and the upper part is tied backward in lines.

After all the poles is completely done, *mappatama arateng* is started. *Mappatama* means to insert , while *arateng* is a kind of flat beam which the length is the same with the length of the floating house to be built.. In the upper part of *arateng* poles, is also installed long flatted beams in lines with *arateng* , this beam is called *bare'*, The installment of *bare'* and *arateng* should star from *posi bola*. After the *bare*' and *arateng* poles are posted, the work is continued with *mappatetong bola* or building the house. Building the house is started from the pole's line in *posi bola*. After that, the right pole followed by inserting *pattolo riawa* and *pattolo riase* , so that the poles are not collapsed. And then followed by other poles . After all the poles were posted, the *barakapu,* a small beam for the base floor of *rakkeang* (plafond) is begin to be posted. The total of the *Barakapu* should be odd. After that, the top frame is going to be done witch be organized as follows: (1) *ciric ciring* or right and left, that is flat beams which functions to straighten out top roof; (2) *suddu* or supporting pole for *aju lakke* (rigger pole). And then *Aju te'* or timbering for a roof that is the beam to stick the rafter (*kaso*) as a place to tie the roof. The rafter is usually made of wood or bamboo. The material roof in floating house, some were made of nipah leaves (*bakkaweng*) and zinc. After the roof is being done, and so the building of the house activities is finished, the following is to complete the other parts such as *tunebba* (small beam as the basic of the floor made from wood or bamboo, the floor and the wall (*renring*).

**b. The Floor (*salima* or *pepeng*)**

floor which made of bamboo is called *salima* and made of wood is called *pepeng*. The floor is divided into *lontang* ( room ), to specify guests' room and bedroom for parents or children. Making *salima* should be done carefully because two joints of the bamboo can not be slipped by the other joint. This is called *maggareppu'* means to bite or demolish and it is believed that the owner of the house will easy to face danger and easy to be sick. In the time when the floods reached the upper floor, people made extra floor made of bamboo which is not permanent and be arranged like *bale-bale* for sitting place for children, resting place and for storing place such as chairs, cupboard, or mattress. If the flood water became higher in the house, so the dwelling area will be moved to the upper floor (plafond). A straight ladder is used to connect lower floor and the upper floor (*rakkeang*).

**c. The Wall (renring) and Window**

The wall which made of wood is called *pepeng* and the wall which made of bamboo is called *renring awo*. The wall according to its place is divided into front wall (*renring panggolo),*upper wall (*renring uluang*) that is the wall which face the head in sleeping position, that is the right position of the house. And back wall ( *renring monri*) , lower wall, that is the wall which located in the leg sleeping positionor the wall in the left position of the house. Sleeping in the Buginese' house, the leg position should be in the left position of the house.

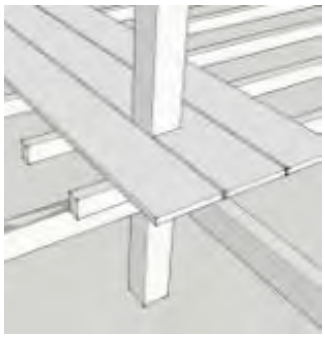
The outer wall installment system were made flexible by using waterproofed building materials such as boards. While the inner part is using tying system by using cords tied to the column. Besides that, many used hinge system on the upper part side, so that it is easy to be lifted and removed when the floods reached up to the wall. This system is the adaptation process toward environment condition which often experience water floods for months.

In the Buginese house in this area, only few use windows. As a window replacement on the side wall, ventilation is made through the wall space which is arranged in a certain distance so that the location between one board to the other board is not too close. If the walls are made of bamboo piles which were arranged vertically, so the wind blew through the bamboo's gaps. This is meant to anticipate cold weather in the night as a result of the dry season or cold weather because of water floods underneath the house. This traditional knowledge is based on the house adaptation process toward the climate condition in Tempe Lake. The wall without big window, besides for saving the materials it also because of the climate condition in the lake with strong blowing wind , so that the use of the windows is not too necessary to be needed.

**d. Top/ Upper part building**

The top structure of the Buginese house on the coastal area of Tempe Lake is consisted of small beams which function as the frame and plafond's (*rakkeang*) support and top frame as a place to stick the roof. The Buginese house roof is in the base form of triangular which consisted of sawhorse, curtain, rafter and svelte on the ridge. The roof's material commonly used zinc, which can be used for decades. On the lower part of the roof were empty space for the local people be functioned to store home appliances, farm's product, and as second floor dwelling place in the high water flows. The material for *rakkeang* were made as strong as the main floor. This is meant as the alternative to occupy the stuff and as a safety place during the floods. On the front roof is usually given a cover made of wood or zinc that can be relocated, and be functioned for the entrance of the boat and as the boat's tether when the floods has reached the wall's limit. For the extreme floods, the room's function under the roof helped the people in saving some stuff ad a place for temporary dwelling place.

Picture 3 : House frame structure of the Buginese informal house



Picture 4 : Lower structure (column and floor) of Buginese' house

Picture 5 : Upper structure of Buginese' house

## 4. CONCLUSION

The Buginese'village who lived in the coastal area of Tempe Lake are the real Buginese' informal architecture with stilt house system. The village which spread out through the coastal area formed the settlement pattern which linearly arranged and clustered based on the orientation to the river's direction, lake and small street (*gang*). This settlement pattern in formed based on the social condition, culture, and nature condition. The Buginese' informal house is formed based on the adaptation process for decades towards natural environment condition which often has floods. The framing structure concept with the high house's poles or underneath house and even higher than the body of the house, the use of removable walls and *Rakkeang* which functioned as an alternative dwelling place in the floods time, has been used and sustained by the community as special characteristic to anticipate nature's threats.

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**PAPER NO 7**

# Mud Salt Wall, Local Material, As Alternative Wall to Substitute Timber Wall at Coastal Areas

V. Totok NOERWASITO
Department of Architecture
Institute of Technology Sepuluh Nopember (ITS)
Surabaya

**ABSTRACT**

At present, vernacular houses have a lot of damage. It is the results of old age of the building and there is no maintenance from the dweller. This condition discovered in Kraksan area, representing coastal and fisherman area.

In the past, the original materials of vernacular house in Kraksan, were timbre wall. Now, this construction material is more difficult to find than before. The forests around the area mentioned as source of construction material are forbidden to be explored. The Forest damage in this area have been very substantial, so that impossible to explore the wood from around forest.

The timbre wall substitution is local construction material. Possibility of local construction material for the wall is material which is utilizing soil as raw material.

The affiliation method of construction material Pisé and earth compressed block is a method which can be used for substitute material. It is a construction material which utilizes clay and cement as raw material. This block does not need burning process like red brick, so it does not need firewood from forest.

This paper describes about wall substance to change the damage of timber wall in Kraksaan area. The wall is made of salt mud, representing application of the writer's research before. This alternative wall is local construction material, friendly environment, efficient embodied energy material and appropriate technology materials. This wall can be developed as substitute wall for reconstruction of vernacular buildings in Indonesia.

**Keywords**: Mud Salt Wall, Local Material, Coastal Areas.

## 1. BACKGROUND

Construction material is one of cause factors of natural source depletion in the world. The growth of building construction which influence to environment, namely; utilizing 25% forest wood, 40% stone per annum (WRI 1998, Ken Yeang 1998). In general building consumes 16% water and 40% world energy per annum (Dimson B.1996). From this data, forest represent the first target as construction material source, and therefore it needed the raw material substitution to avoid depletion of natural source in the forest, especially wood forest.

Effect of hard depletion of natural source, the next generation cannot enjoy the experience of natural resources from the forest. Some other depletions of natural resource often happened were caused by landslide disaster, floods and forest cutting without good management.

Architects, builders and users are responsible to control the problems, because they have the idea of utilizing the raw material, namely: “how to get the raw material with good quality but cheap in price”.

Ten years ago, wood usage from forests was not a problem, because forest still wide and wood usage was not in big quantity. The old buildings utilized much wood coming from forest, because at that time it was cheap if it compared to other construction material. But today environmental price of wood is very high.

Replacement of construction material from forest resource is important. The new building material has to utilize the local material which can be used as building material, but it can reduce the depletion of natural resources.

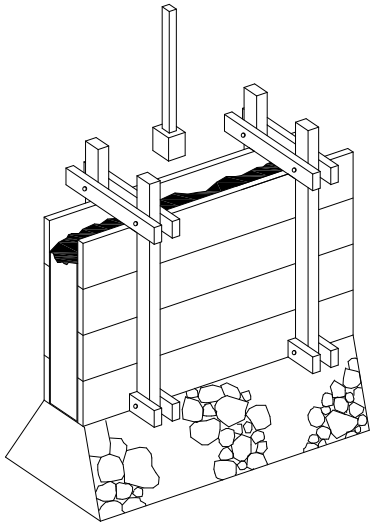
One of local potential which can be utilized for construction wall material is existing clay around location. It is processed to become the wall material in the form of block, without utilizing combustion method like red brick. The clay block can be made by the dweller of the house if they leave in rural, because it does not need high skill. So this clay block is really from local material.

## 2. SOIL WALL

One potential of salt area, namely: coastal, dam and riverbank areas, is mud soil which can be utilized as soil wall.

There are some ways to produce soil wall namely: pisé, adobe and block compressed. Each kind of that construction material is different from each other; it's depending on the process of walls production.

Pisé wall utilizes only raw material of mud without utilizing other material. It is cast and compacted into the casting wall and it is opened when clay mixture have dried. Pisé wall have thick wall compared to the other walls. (See figure 1)



Source: by author
Figure 1 Construction of Pisé wall

Adobe wall uses mould block for shaping of the clay soil to become adobe blocks. For drying process it uses direct sunshine, it does not need combustion process. The mixture of adobe also does not need other additional material, like cement or lime. (See figure 2).


Figure 2 Adobe block

The construction of wall block compressed consists of blocks, the block form is identical to adobe block. In the production process, this block utilizes cement as additional material, and it is compacted with the high pressure, so that solid blocks are really strong and have higher strength than adobe block or pisé. See figure 3.

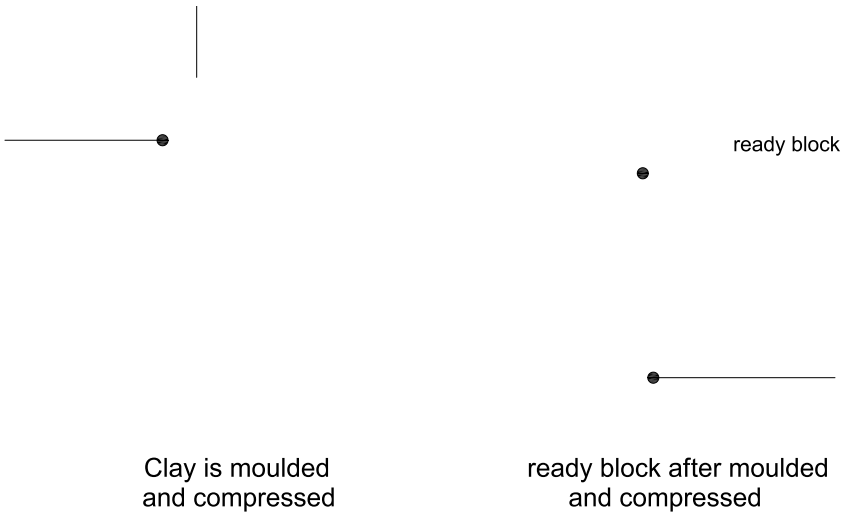



Figure 3 Block compressed

The three methods of wall construction above are low embodied energy, because these materials do not use the combustion process at the production (Petrossian, 2001) and they use maximum local material.

## 3. VERNACULAR HOUSES OF FISHERMAN IN SIDOPEKSO KRAKSAAN

Sidopekso is a village in Kraksaan Probolinggo, Indonesia (see figure 4). The majority of fisherman houses represent vernacular building which are constructed by the dwellers. At present these vernacular houses have a lot of damage. This problem is affected by old age the buildings and there were no maintenance by the dwellers.

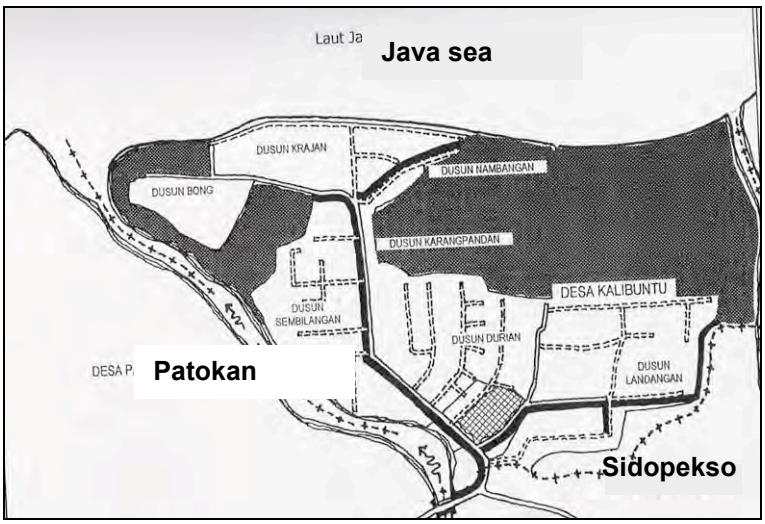



Figure 4 Map of Kraksaan Probolinggo

Most dwellers are fisherman; if they do not go to work in the sea, because bad weather, they have enough time to repair their houses. Although they have time, they do not repair their houses, because the materials for repairing their houses are not available.

Original construction material from vernacular houses in Kraksaan is timber. Timber for construction material is now difficult to obtain and its price is high.

In general, the damage at buildings (figure 5) are in part of under wall, this damage is affected by sea water and also age of building material. The

problem now is how to find the new local material which can substitute the old one.

Vernacular house in Kraksaan, where built without foundation. The wall was in direct contact with earth, without intermediate construction.

Figure 5 The damage of wall in vernacular house of fisherman in Sidopekso Kraksaan Probolinggo

## 4. CONSTRUCTION MATERIAL SUBSTITUTION

Material for wall substitution is the focus of this research. Substitution material is the material which utilizes the local material and soil material is the best material for wall substitution, because it has been processed without combustion. The raw material can be found everywhere and can be constructed by the house dwellers.

The on site application is to make wall substitution from soil which is used under the wall. Height of wall is 0.5 m and constructed outside of old timber wall.

### 4.1 RESOURCES OF RAW MATERIAL

Raw material is obtained from around the house location, it is salt soil. This raw material exist in most of the river, in the form of mud soil. This house material can be produced by residents in mass production, without

utilizing the productive land for example dam land, the soil from yard or other lands which is still useful for other purposes.

### 4.2EKSPERIMENT IN LABORATORY

There are two activities, namely: experiment in the laboratory and application on site. Experiment in the laboratory executed before application in the field.

First phase is to study the raw material content. Content of mud of countryside Sidopekso are: clay 55%, silt 10% dan sand 35%, as according to conditions for the compressed block; this salt soil is eligible.

Second phase is mixing between the cement and lime. The composition is 7% cement and 7% lime, all percentage are by weight. The composition, is salt soil, cement, and lime, mixed in a dry and wet condition until homogen.

Third phase is moulding and pressing process. It uses mould which can be pressed by big force and the composition cannot stick into the mould. The result of moulding can be seen in figure 6.

Source: by author

Figure 6 Result of moulding compressed block experiment in the laboratory

Final phase is test the strength and resistance to water. Result of strength test is 35 kg/cm2 (international standard minimal for block is 25 kg/cm$^2$) and the samples were water proofing within 1 week into water.

### 4.3. EKSPERIMENT IN FIELD

Consideration to determine the wall type to be attached at damage wall is: simple of execution at field and speed of construction. The decision of wall type is affiliation of method type of wall of pisé and block compressed. It represents the correct consideration, and method of execution of pisé wall, while method of mixture and pressing utilize the block compressed system.

Raw material of this substitution wall is ditch from around existing fishponds. Mud which is taken away from a ditch, mixed with cement and lime, the composition is 86% mud, 7% cement and 7% lime. See figure 7.

Figure 7 Source of raw material

House selected is a house which is damage at under wall and is not difficult in its construction. Repairing process does not influence all of the house construction. See figure 8

Figure 8 Sample house which will be reconstructed

Before composition is utilized as casting wall, the casting must be made first. The material of casting is made of bamboo, it has dimension as long as the wall which will be repaired and has higher than 0.4 m. After the casting has been made, it is attached with a distance of 15 cm from outside the board wall. Then wet composition is poured altogether into bamboo casting, and the same time it compacted per layer till reach the height of 40 cm. See the figure 9 and 10.

Figure 9 Casting of mud salt wall


Figure 10 Compacting mud salt into cast wall

During 14 days, the composition in casting is avoided to the direct solar and it always in wet condition during 5 days. In 14$^{th}$ day, casting is opened, and new wall is cleaned of waste coming from moment casting

process. See figure 11. In the future the other wall will be developed by the dweller.

Figure 11 Salt mud wall after the casting is open

## 5. CONCLUSION

The best building material is material which utilizes raw material from local area and it is not destroy the environment. This material represents the potencial of the area of disaster, especially the disaster affected by environmental damage.

For the reconstruction of houses in fisherman area, life time and strength of construction of new wall material is not important, but it is more important that it can reduce the utilization of raw material which can caused environmental damage. The use of local material is imperative.

In present, salt mud represents the raw material which is not useful in Indonesia. It can be exploited as new wall material to cover up the damage of timber wall. This material represents the raw material which is abundance and easy to obtain in Sidopekso Kraksaan or coastal area. Composition is: 7% cement and 7% lime by weight.

Salt Mud wall represent local material, friendly environment material, efficient embodied energy material, appropriate technology material and more importantly it can support society prosperity.

Salt Mud wall is the first wall which uses the salt soil as raw material in Indonesia. This kind of wall can be developed for reconstruction of vernacular houses in Indonesia.

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**PAPER NO 8**

# Residential Dynamics: The Co-existence of Formal and Informal Systems in Sudan and South Africa

Amira O.S. OSMAN
University of Pretoria, South Africa
amira.osman@up.ac.za

**ABSTRACT**

This paper looks at the residential dynamics in Khartoum, Sudan and typical patterns in South African cities and concludes that formal and informal systems co-exist and are mutually supportive in both contexts, though perhaps with different spatial manifestations. It is believed that any approach that does not acknowledge the presence of the 'informal' as a force that cannot be eradicated and as a legitimate power, energy and form of expression is doomed to fail.

The thoughts portrayed in the paper are the initial concepts for a new research project at the Department of Architecture, University of Pretoria.

**Keywords**: Housing, Informality, Khartoum, South Africa, Urban Environments

## 1. INTRODUCTION

While South Africa has had success in the rapid delivery of houses, it is acknowledged that there are still many challenges faced in terms of generating functioning neighbourhoods as opposed to housing-units. South Africa's approach to informality is also dominated by the idea of eradicating informality – with a deadline set for the attainment of that goal by 2014. Contradicting messages are nonetheless being conveyed by government in that the National Department of Housing is also in the process of implementing new policy through a series of business plans one of them dealing with upgrading informal settlements.

It is generally assumed that formal and informal processes are strictly separated spatially. In Khartoum, Sudan the boundaries are less

distinct. However, political unrest over many years has led to the sprawl of the city with informal areas now surrounding the city and changing the social dynamics in the peripheries.

## 2. APPROACH TO INFORMALITY

When urbanized poor people need homes they either acquire them through land invasions or they wait for government provided housing. Alternative solutions involve capacity building, saving schemes and job provision in a holistic approach which needs collaboration between diverse government agencies and more participation by various stakeholders. This would generate a complexity that needs alternative systems of governance.

Formalizing housing and markets does not necessarily guarantee poverty alleviation and neglects the skills and knowledge that the poor may contribute to development. The reality is that informality appears to be faster and more efficient when it comes to providing for the needs of the poor. Formal mechanisms of housing delivery are too slow and unaffordable. Professional architects and housing practitioners need to position themselves in terms of various interpretations of development—this is critical in order to guarantee their effectiveness.

Because there is no security of tenure, people in informal settlements are reluctant to invest substantially to convert an informal dwelling into something more permanent. This often results in people living in structurally compromised buildings for years. This volatile nature of squatter settlements inhibits long-term development, thus professional interventions are essential.

While recognising some of the negative impacts of slums on cities and their inhabitants, for example the health and safety problems they may create, a pro-removal approach to slums neglects the fact that every informal structure, whatever its form, is in reality a home. Squatter settlements are not undifferentiated areas of squalor but dynamic environments with unique characteristics that need to be properly researched before any intervention is made. Slum upgrades are complex processes requiring the combined efforts of a number of disciplines.

While the relationship between the state, market and community is complex – how that relationship is conceived and managed is incredibly important to the progress of housing policy and practice. This relationship is crucial to the success of initiatives in housing and determines the degree of participation and accessibility to housing. The building of networks should be socially inclusive and adopt a long term business plan rather than rely on short term project funding (Hamdi 2004: 108). The role of government should allow for innovation when the boundaries between public and private or formal and informal are blurred. This needs strong governance structures.

Huchzermeyer (2006: 21) summarizes state-society relations as being:

- oppositional (hostile, repressive or exploitative)
- indifferent (neglecting, tolerating or ignoring)
- cooperative (co-opting or integrating)

Hamdi envisions a re-imagined role for a state that regulates without interference (2004: 108). Cross (in Huchzermeyer and Karam 2006: 261) defines 'communal governance' as an informal, grassroots-based system built on face-to-face relationships and individual patronage. It is facilitated by a rural principal that land and building rights are allocated within the community, by the community, using social criteria in an adaptable and accessible basis. It competes directly with formal systems and is essentially an anti-bureaucratic system. She further explains how these forms of governance kick in and become active to replace failed formal systems – failure which at times would trigger violence and protest.

Hamdi (2004: 25) views this dynamic, an important resource for the poor, as being positive: "When agents like these, operating as they do, individually and informally coalesce and through their network act as a larger and single organization, when they are able to wield power and influence and become sophisticated, they emerge and become developmental." The same author states: "We have begun to invent novel forms or civic engagement where government cooperates with, rather than serves, its citizens moving from provider to enabler, much as it has learnt to do with the market. New forms of mutual engagement are emerging everywhere; based on participation and social entrepreneurship which is finding its way into the body politic of governance. Turnbull calls this 'Network Governance'; an inside out structure of social organizations and enterprises held together by well-connected and well-networked systems rather than command and control hierarchies or [the power elite]…" (ibid: 107).

He further explains how Turnbull debates the question "Who governs the city?" and how elusive the answer may be. The relationship between the state, market and communities has been viewed simplistically in the past; however communities are not a cohesive and integrated unit but are fragmented. A simplistic interpretation of markets and housing activity views two worlds that co-exist separately from each other when in reality the formal and informal feed into each other and overlap.

People living in informal settlement may be employed in the formal sector – while people living in formal dwellings may be very active in the informal sector. Physically, many types of informal dwellings are built on formal plots and as extensions and additions to formal structures.

Jenkins (in Huchzermeyer and Karam 2006: 87) elaborates on the nature of informality to include the physical ("land and house construction/redevelopment"), the social ("household structures") and the

economic ("informal access to resources"). Formal or informal activity may be a representation of survival strategies where poor households have multiple livelihood strategies (Smit in Huchzermeyer and Karam 2006: 104). Smit further explains that this diversity and complexity in livelihood strategies is reflected as family structures, built form and a determinant of decision making regarding day to day activity, including housing options.

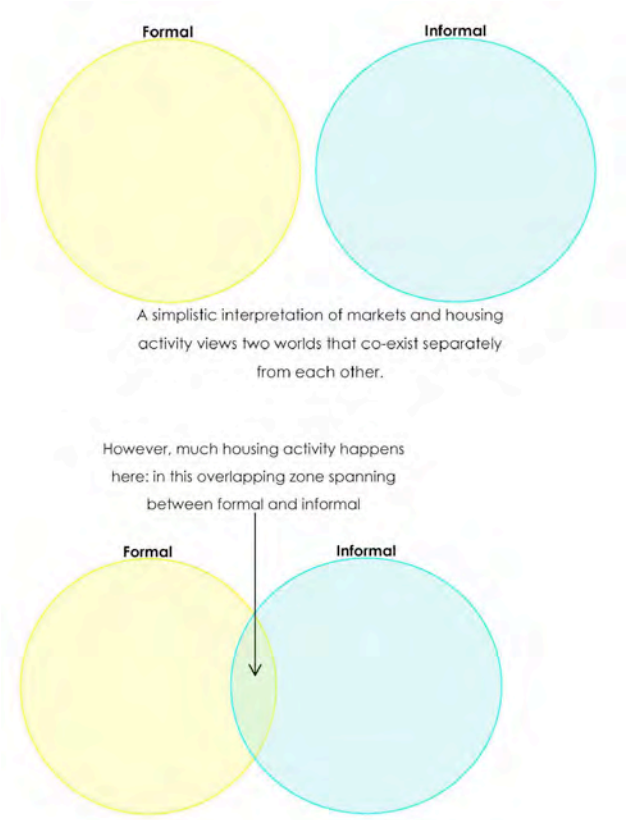


**Diagram 1.** Housing Activity Happening at the Interface Between Formality and Informality

Trying to control and regulate these processes is a futile attempt. Even developed contexts have a degree of informal processes and activity; in some cases policy and practice is trying to accommodate for that rather attempting to stamp it out. Jenkins (in Huchzermeyer and Karam 2006: 85) argues that the concept of informality itself is "…rooted in an approach that is state dominated." He views informal settlements (or informal responses and activity in general) as "…a socially legitimate response to real needs" representing some positive characteristics.

Development and participation, despite good intentions, are being

conceived in the minds of the few, defying the very meaning of the terms. The solutions actually lie "out there" – and that is where research needs to be operating.

## 3. INFORMALITY AND THE ROLE OF DESIGNERS OF THE BUILT ENVIRONMENT

Royston questions whether bridging the formal and informal is possible or even desirable, as he explains, while acknowledging that the poor are disadvantaged by informality, that formal systems may not work for the poor (Royston in Huchzermeyer and Karam 2006: 167).

Patterns of emergent systems in cities are indicators of real need and the imposition of pre-determined plans should be avoided as professionals become more sensitive to context. Hamdi (2004) explains how 'small' interventions grow and guide development and how the role of the professional becomes one of creating conditions for emergence and in this respect searching for catalysts. These catalysts then generate a process of 'negotiated reactions' (Dewar & Uitenbogaardt, 1991), whereby continuous transformation is achieved within a stable environment. The built environment is not static: it is a complex relationship between stability and transformation (Habraken, 1998).

In squatter settlements transformations happen at an enormous rate compared to formal (more static) designed environments. Furthermore, the relationship between structural supports and detachable units is unclear. There is a degree of permanency in a squatter settlement—such as the layout of the site, but the overall set up is experienced as short term. Any design intervention will need to support a process in which speed of construction, changeability, affordability and transportability are important characteristics. Transformations will not only apply to structural elements but also to location and function.

Hamdi (2004: xviii) expresses the difficulty to determine the level of intervention to be implemented; he states that too much formal structure may inhibit personal freedom, limit progress, destroy the system it was built to serve, and only serve itself. He also explains how small initiatives which may "…lack a global perspective…" but are however important as their "…collective actions become 'a natural part of the effort at social reconstruction' and an effective way of managing cities."[1]

Harber (2006) explains how a squatter settlement develops in a process that is the exact opposite of a formal settlement: the land is occupied, buildings put up and services finally installed. He believes this usually generates an environment that is layered, develops gradually and is less disruptive to the existing site. This gradual, organic process is perceived as a common characteristic of successful urban places and is a quality found in vernacular settings.

A heightened sensitivity to various forces of urbanisation needs to be developed among practitioners and policy makers in order to strike a

balance between stability and transformation: multiple levels of the environment where multiple agents may intervene in transforming their areas of control through complex decision-making, modification, adaptation and appropriation. This will contribute towards the generation of a layered and complex environment which fosters a sense of belonging, ownership and pride. This is direct opposition to conventional approaches to decision-making in the built environment which is a top-down process, strictly planned and rigid. This strict planning results in monotonous, fragmented, mono-functional environments and disempowers people (professionals and communities alike).

Within urban structures, the house is seen as a flexible/adaptable product rather than a fixed final product. Urban design as an inseparable component of housing acknowledges the various levels of the environment differing in the degree of permanence and changeability thus allowing for more involvement and affordability. This challenges our understanding of informal economies, settlements and structures and our role as professionals in interacting with these alternative systems and "ways of doing/living".

## 4. SOUTH AFRICAN CITIES

Current development and housing policy claims to be "pro-poor" and with a focus on "in-situ" up-grading of informal settlements. While a world-renowned housing programme is in full swing in South Africa, the housing backlog is not decreasing. Informality, emergence and the so-called "2nd economy" are aspects of the South African social/economic scene that will probably remain for many years to come.

Current debates regarding development, in general, and housing, in particular, attempt to position the issues in the broader perspective of the 'south', the African continent and new policy directions in South Africa. This would mean that an approach to informality needs to be appropriate to context and cannot follow the attitude of the developed world to informal systems where there is a high degree of government regulation.

The table below shows a hypothetical housing ladder in South Africa where informal processes exist, not only at the bottom rungs, but also higher up on the ladder. The assumption of many officials and professionals is that these rungs need to be eradicated and people in those categories integrated into the upper rungs of the ladder. Informality in all the other forms of housing has not been sufficiently studied.

[1] Rodney Harber: personal communication.

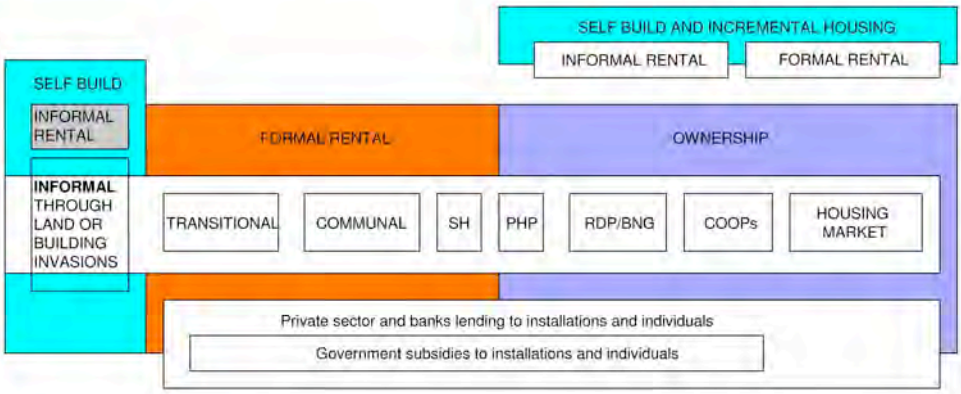


**Diagram 2** A Hypothetical Housing Ladder in South Africa Showing Informality As Being on the Lower Rungs of the Ladder

## 5. KHARTOUM, SUDAN

The table below shows a portrayal of the various types of housing and housing processes in Khartoum, Sudan. In the last two decades Khartoum City has expanded considerably. With recent oil wealth becoming apparent, real-estate is booming with exorbitant prices. Due to the congestion of the older neighborhoods of Khartoum, wealthier people are seeking refuge outside of the old city boundaries, competing with informal settlements, many of them inhabited by internally displaced people due to the political problems in other parts of the country.

Like South African cities, informality is very evident even in formal neighborhoods with one dynamic being very unique to Khartoum: the many Sudanese working abroad send money to incrementally build homes in the capital city resulting in many building sites with buildings at various stages of completion being inhabited by guards and builders. This creates an interesting dynamic with people from different social classes living next to each other for many years.

New dynamics also result from the influx of foreigners into the country after opportunities opening up with the oil industry. These, as well as tribalism issues among internally displaced people from areas of political conflicts, that now inhabit the peripheries are all opportunities for further research that have not been thoroughly investigated. There are also problems with social stigma arising from an inherited system of classifying residential areas as first, second, third or forth class. However one interesting comparison with South Africa is that in the latter improvements in financial status usually imply that people move from one area of the city to another while in Khartoum improvements happen on the same site irrespective of the classified class system. This happens informally in many cases and has led to shifting dynamics in many Khartoum neighborhoods.

| No | | **Description/examples of residential area** | **Building materials + descriptions** | **Additional notes** | **Research opportunities** |
|---|---|---|---|---|---|
| 1 | First Class | Site and service government schemes for certain professional categories. Private sector built, self funded (Sariya). Illegal on agricultural land (Fardos) – referred to as luxurious informality Al 'Ashwaii al Fakhir. | Predominantly reinforced concrete frames with infill brick panels. This defines the aesthetic of many neighbourhoods in Khartoum. | 1st-3rd class funded through Al Bank Al 'Agari or other banks; conditions minimum 3000 salary, guarantees as land. Gated communities as a new phenomenon. | Social dynamics created by incomplete homes.[2] To what extent is there interaction between the permanent residents and the temporary residents (guards and builders) of first class areas? |
| 2 | Second Class | Site and service schemes (1960-2000). Sometimes employer-assisted (Ayoob Al Ansari as an example), government built sakan shaabi.[3] | Reinforced concrete and brick construction. Sakan shaabi: semi-detached house 1 room+ kitchen+ Bathroom/ toilet), 200-300m² repaid over a long period of time. | Site and service schemes have stopped since 2000. This has led to difficult access to land. | Reselling making land unaffordable. Current densifying is unplanned thus leading to problems of services not being upgraded accordingly. Sprawl is creating displacement of poorer segments of societies. Different classes having to co-exist causing social tension. |
| 3 | Third Class | Site and service schemes. Site only, services added through community initiative and funding. Government funded Sakan Igtisadi or Economic Housing. | Reinforced concrete or load bearing brick construction. | Current government supported programme: extra room added to existing house to the value of 10, 000. | Social stigma associated with areas classified as third class. Home improvements: mix of income levels in the same area. Multi-storey buildings impacting on the use of open spaces. |
| Traditional | Traditional occupation of land later upgraded | Salha (Omdurman), Faki Hashim, Allzbaa (Bahri), Laoota, Soba El Hila (Khartoum) | Load bearing structures, reinforced structures, 3-D panels | | Community initiated processes such as the establishment of informal suqs: Laoota as an example. Servicing systems for upgrading. |
| Informal | Initially informal occupation later upgraded and legalised, | Mayo | Mud blocks strengthened by straw or manure. Plastered by zibala[4] for water proofing.[5] Damuriya[6] as ceilings | Rent-a-bed (usually to immigrants from other African countries). | Social dynamics between locals and foreigners. Installation of services. Alternative infrastructure. |
| Informal | Illegal occupation and building: not upgraded | Mandela, Angola | Unstable construction of tree branches, cardboard,[7] metal sheets and fabrics. | | Community dynamics. Tribalism issues. |

**Diagram 3** Portrayal of the Housing Eco-System in Khartoum, Sudan with Informal

Systems Existing Across All Levels[8]

## 6. CONCLUSIONS

This theoretical background and these comparisons are the initiation of an academic exploration being embarked on by the Housing and Urban Environments (H-UE),[9] Department of Architecture, University of Pretoria which acknowledges informality as a legitimate energy within cities. It is believed that for designers of the built environment to be able to intervene in the development of cities in any meaningful way, they must arrive at solutions through the understanding of the unique everyday realities of a specific context – thus avoiding blanket solutions and by acknowledging the many agents acting on an environment at any given time.

It is believed that enterprises emerging from informal settlements are more suitable for low-income groups and that support of the informal sector better addresses the urgent need for poverty eradication. We are challenged as professionals to investigate beauty and efficiency in informality as an antithesis to a middle-class interpretation of how life should be lived.

[2] Builders and guards creating different levels of income within the same area, informality in areas classified as first class. Lijaanshabiya issues certificate of residence to the guards to enable them to access schools and facilities. [3] Peoples' Housing

[4] Zibala is a mix of manure, adobe and straw.

[5] These materials vary between areas; sometimes wire mesh is used on the external surfaces, then plastered, internal plastering sandwith gum Arabic, [6] Damuriya is rough handwoven cotton traditional to the northern areas of the Sudan.

[7] Referred to as "carton", thus the name attributed to some of these areas.

[8] This table is not all inclusive and is merely based on a brain storming exercise and impressions of a group of lecturers from SudanUniversity, December 2008. It will have to be revised with available statistics and other studies done on housing and urbanism inKhartoum. [9] www.h-ue.co.za

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**PAPER NO 9**

# The Implementation of Comprehensive KIP Activity In The *Kejawan Putih Tambak* Village

Permana, Ramel, Hamid, Indra, Sudrajat
Master Student, Department of Architecture
Institute of Technology Sepuluh Nopember (ITS)

**ABSTRACT**

Comprehensive KIP program in *Kejawan Putih Tambak* village is the development program that based on Community Development. The execution of the program directed to empower community of the local village, to increase the social-economic and their environment by own power and continuously with "bottom up" approaching pattern. The execution on the field by initiating and aspiring of the community, starting from the planning, execution, monitoring and the development.

The problem in this paper are to know how the execution / implementation of the activities in *Kejawan Putih Tambak* village starting from the planning, execution, monitoring and the utilization.

The goal of this paper is to know the role of the community in the execution of C KIP activity and to know the barrier and the problem that occurs, and evaluated the final result reached in the activities execution.

The method used in this paper is through interview, literature study and the execution report about the C KIP and direct observation in the field. From the field study, there is a result in the role of community in the execution of C KIP. The improvement included the restoration of the road / channels / bridge and the making of garbage box and community economical restoration side such as fund flow to support the capital of sponsorship.

**Keywords**: Community Participation, Implementation

## 1. PREFACE

Solid Village Restoration Program or well known as C KIP in Surabaya city is the second generation from the village restoration program executed before that, held in the big city. The first generation of KIP had

several weaknesses if we see from the continuity of the development, environment effects and the local community self-empowerment. The result of evaluation on the first generation of KIP shows an indication of the community's consideration that development through KIP is just temporary village development. In this matter, the community dependency is so high, and they never realize about the effect, they never experienced the feeling of ownership toward the result of development.

The program of C *Kampung Improvement Program (C KIP)* in Surabaya is the development program that follows the concept of *Community Based Development,* the execution of the program is directed to the action of empowering the local community in order to increase the social-economic condition and their environment by their own power and sustainably.

The program of C *Kampung Improvement Program (C KIP)* is formulated and executed using the approach of "Bottom Up" which in the field, execution were performed by the initiative and aspiration of the community starting from the planning, execution until the monitoring of the development execution. The community holds important role and demanded to active participation in the implementation of this program.

The execution of C KIP program in Surabaya is the one of the efforts to increase restoration condition and social condition of the community in Surabaya City, which the action were done in harmony, whether it is the restoration of physical environment or social-economic condition of the community on that village.

This paper comprises of :

1. The information about the activities in execution of village restoration through C KIP program in the village of *Kejawan Putih Tambak*.
2. Determine the barriers and the problems occurs in the level of executing the activities
3. Evaluating the final result reached by executing the activities

Research method is by using the field surveys to determine the existing condition of the location studied and determine the level of execution or implementation of the activities done by the community in the program C KIP in the village of *Kejawan Putih Tambak*.

## 2. THEORETICAL BACKGROUND

Goran Tannerfeldt and Per Ljung, 2006; estimating that t in the future, the majority population growth within developed countries, will stay in the urban city. But the transformation about the rural social matter compared to the urban ones, are the complex problem and it won't be easy to deal with. Beside of the chance and the luck, there are some negative consequences, such as:

- The poor and unbalanced revenues
- There are slum area and decreasing of the environment quality
- Socially unbalanced and unsafe condition

The theory above is about causality of the urbanization. In general the urbanization viewed as the negative thing that caused poverty in the urban area. Urbanization also has positive side such as the variety of the chance and work field, higher level of education on the community and so on. But we must pay attention to equal the spread of welfare facility between rural and urban area to decrease the natural urbanization level.

Based on Louis Helling and friends, 2005, that the elements of the local development planning are:

- Empowerment
  To increase the chance and performance of the community in order to make and decide the step taken to reach the development target, compared to the potency and the problems occurs.
- Local Government
  As the authority that has power in planning, decision making and rule executor. Local government, not only in the context of the nation, but also as an institution that grows from the community themselves
- Public Service Provider System
  As the one regulating resources, services, and public facilities, as a source to fund the continuous development.
- Enabling Local Private Sector
  When there is good chance for private party to be actively involved in the economy

Community Empowerment is the prime component in decision making in national development, in order to reach increasing of capacity and resources. In order to meet the policies versus real condition occurrence, we need a community that understands about potency and the problem in their environment. Besides, we also need the other factors to directing the wisely of the local development.

## 3. THE EXECUTION OF COMPREHENSIVE KIP

### 3.1. PREPARATION STAGE

The Surabaya local government through the Department of Urban Management in the years of 1998/1999 programmed the activity of village restoration with funding from World Bank loan or P3KT program. The target to reach was the village restoration. To execute this program, Department of Urban Management cooperates with the institution of high education, *Institut Teknologi Sepuluh Nopember* (ITS) Surabaya as assistant consultant. The name of this village restoration is the C Kampung Improvement Program (KIP).

### 3.1.1. Program Socialisation

The execution of C KIP program involves the local government of Surabaya (Department of Urban Management) with the assistant consultant as informant. This socialization also involve the community in the target area, in this case the village of *Kejawan Putih Tambak* in sub district of Mulyorejo. The factors that will be discussed in the socialization are:

- To reach similar perception about the village restoration program (C KIP) to the community.
- To explain about the local institution that will execute the KIP program, that comprise of organizational structure, the tasks of the institutions, till the law order and the target criterion.
- To explain about the activities that will be executed in C KIP program.

### 3.1.2. The Institutions Forms

The activity of institutions forms in the village, is the development in the village institution such as community cooperatives, PKK, Karang Taruna, religious group and so on. The institutions that exist nowadays do not have any correlation to each other in the constellation of village development. Through the form of institutions for village development that have many factors are the *Yayasan Kampung,* village cooperative, and the groups of NGO that hoped could be arranged for their role as well. The existence of village development is in the political districts. In the activity of planning and the implementation, YK, cooperative and KSW assist by assistant consultant from the architecture discipline of FTSP ITS, mainly in the time during executing the physic activity, while execution of flowing capital activity will be evaluated after the execution by assistant consultant

The institutions are being run by the community, and they are being facilitated by assistant consultants from ITS. The mechanism of forming the institutions is explained below:

- The forming of *Kelompok Swadaya Masyarakat* (KSW). KSW is formed in the area of administrative unit (RW) and involved all of the community members. The membership nature is voluntary and every KSW consists of 10 persons.
- The forming of Coordination Agency (BK-KSW). This agency exists in the area of village and made based on the group of each RW. They function as the initial of *Yayasan Kampung* (YK).
- The forming of *Yayasan Kampung* (YK). The YK made from, by and for the community of *Kejawan Putih Tambak* village. The function or prime task of YK is to execute all activity in C KIP program.

### 3.1.3. The forming of Cooperative

In order to perform the task for social economy restoration to make the community better, then *Yayasan Kampung* with the community formed cooperative.

### 3.1.4. The Execution of Community Mapping

The community mapping activity by the community members during the first stage of the development program is to study and determine the village potency itself, consisting physical potency, medium and infrastructure, social-economy condition, then observe the problem that occurs in the village.

Community Mapping is the process of activity that aimed to accommodate and analyze every village problem that occurs in *Kejawan Putih Tambak* village. The target of Community Mapping is to determine the problems of development in *Kejawan Putih Tambak* village, that comprises of:

- Physical Condition
  a. House
  b. Environment & Sanitation
  c. Village infrastructures : religious site, *Pos Kamling*, The gate of village, and so on.
- The community economic condition
  a. Identify the community social economical condition that need to be constructed and the development of the trading .
  b. To map the need priority and the target of receiving community

## 3.2 THE IMPLEMENTATION STAGE

### 3.2.1 The Execution of Physical Environment Restoration

The physical environment restoration activity that already rolled in the *Kejawan Putih Tambak* village comprise to:

1. The construction of environment road : 11,2 ml (concrete road)
2. The construction of attached facility : 380 (RW I, II, III) temporary trash can, rubber trash can
3. The construction of channels : 62 (RT I, RW II)
4. The construction of trash wagon : 2 units
5. The construction of Watergate : 1 unit (RT 2, RW1)
6. Bridge restoration : 1 unit (RT 3, RW 2)

### 3.2.2. The Development of Middle to Low Trading (Trading Capital)

1. Grant Fund (To perform funding towards the community improvement/human resources).
2. Flow Fund (to develop of middle to low trading )

Grant Fund implemented to activities such as :

1. Cooperative training and *yayasan kampong*
2. Incentive of the board members of YK and cooperative
3. Office supply
4. YK's Operational and cooperative

Formed 9 KSW

1. Tunas Harapan
2. Tunas Mekar
3. Tunas Muda
4. Tunas Jaya
5. Tunas Sejahtera
6. Tunas Baru
7. Flamboyan
8. Jaya Baru
9. Jaya Mulya

### 3.3 FIELD OBSERVATION RESULT ON THE LATEST IMPLEMENTATION

#### 3.3.1 The Institution

3.3.1.1. *Yayasan Kampung* Kipratama Jaya, exist but no activities and existing board just 2 person

3.3.1.2. Cooperative "Pundi Sejahtera"
The activity of Cooperative "Pundi Sejahtera" is no longer active due difficulty in flow for claiming the loan because the community considered the loan is grant fund.

3.3.1.3. KSM
KSM no longer exist because of no more activity.

#### 3.3.3. Implementation of Middle to Low Trading Development

According to the result of interview with the chief of *Yayasan Kampung* Kipratama Jaya, the middle to low trading development become stagnant, the compiled fund not flowing yet and save in YK, around 20 millions.

### 3.4. THE ACTIVITY AFTER IMPLEMENTATION

According to the result of interview with the board of *Yayasan Kampung* in 2005, in *Kejawan Putih Tambak* village receives the village restoration program that is similar to KIP and Kimpraswil agency. The restoration program mainly to capitalize the trading that originated by grant fund, the community never considered the help from KIP anymore. This program make the activity of *Yayasan Kampung* become stagnant and then halted, this condition worsen by the community that didn't pay what they receive from KIP for their trading activity. So, the activities of C KIP are halted, and the board of *Yayasan Kampung* at least just 2 active person left.

### 3.5. THE LINK OF IMPLEMENTATION TO THE THEORY

According to the theory of *Luis Helling* (2005), that the elements from the plan of local development are:

1. Empowerment
2. Local Government
3. Local service provision system
4. Enabling local private sector growth

From the description above then in the implementation in KIP program comprise to:

1. Empowerment
   KIP program in *Kejawan Putih Tambak* village sub district Mulyorejo Surabaya is the development program that based on participation of the community, which from the starting activities such as the potency mapping, planning, execution and maintenance are the initiative from the community themselves
2. Local Government
   Local government of Surabaya through Department of Urban Arrangement is the national institution that facilitated KIP program with cooperation to Local Government as the planner of the program, in the implementation they gave the non direct power to the growing institution from the community to execute the KIP program under the umbrella of KSW and *Yayasan Kampung*
3. Local service provision system
   Is the implementation that binds development between the communities themselves in the financial management, or the execution of physical activities. Cooperative tented is the institution that functioned to manage community's economy which source from and for the community themselves.
4. Enabling local private sector growth
   We hope the support of private sector in the acceleration of community's economic growth.

From the theoretical approach above, then it can be explained that the development based on community approach need to be continuously developed in order to empower the community.

## 4. CONCLUSION AND RECOMMENDATION

### 4.1. CONCLUSION

1. Based on three implementation components observed in the beginning of the activity, principally are in good condition and meet the rule of participative approach of the community as the main factor. This condition caused by the presence of assistance from the consultant party.
2. There is misunderstanding from the part of the community about the flowing fund, this condition caused by similar program launched in the same place with the different approach so the community considered that flowing fund is the grant fund.
3. The need of strong basic by the institution of the community, about the function and the responsibility of each part, so next time will appear consciousness that all poverty lifting programs are used for all community member, and for the community themselves.
4. The restoration of the physical medium that already rolls through KIP programs can lift the quality of life the local community. Thus the physical results that are ready, can be kept and everlasting, so the development can continue.

### 4.2. RECOMMENDATION

1. C KIP activity must be continuous and not only depending on fund and assistance from the local government, so it would increase the skill of the community in the development execution, increasing the environment quality of the village and increasing people economics.
2. The need of the agencies of *Kejawan Putih Tambak* village in the reformed of the *yayasan kampung* board that was halted because of the inactivity of the several members.
3. The need of conscious efforts to the community in the flow fund, that community payback on loan to the cooperative to the next development.

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**PAPER NO 10**

# Clean and Green Kampung-Informal Settlement in Surabaya-Indonesia

Happy Ratna SANTOSA
Department of Architecture
Institute of Technology Sepuluh Nopember (ITS)
*happyratna@yahoo.com*

**ABSTRACT**

Kampung is informal settllement, which is legal and built by the people themselves. In Surabaya, the second largest city of Indonesia, Kampung housed about 65% of the population. To meet the Agenda 21, housing for all, the local government strive to keep the kampung clean and green and suitable for living for the big population of the city.

The objective of the research is to understand how the kampung inhabitans can manage their settlements as clean and green kampung and provide nice and healthy place for living. The discussions inlude the management of the kampung by the men, the women and the youngster and the management of wastes and greeneries. The result of the study shows, that many kampungs can increase the clean and green conditions as expected and many activities of reduce, reuse, recycle of wastes are created.

**KEYWORDS:** Clean and Green Kampung, Informal Settlement, Waste Management

## 1. INTRODUCTION

Kampung is informal settlement in the city, which was built by the people themselves without any planning. This is legal informal settlement built on legal land and provided with infrastructure, allthough the infrastructure are sometimes inadequate. The kampungs cover 7% of the city area, but it housed about 65% of the city population (Building and Social Housing Foundation, 1993).
Most kampung inhabitants are from the low income groups with limited resources to built the houses and maintain their neighbourhood. To keep

the kampungs healthy the government help improved the kampungs and their infrastructure with people participation; under the Kampung Improvement Programme (KIP). In Surabaya, this programme started in 1979 for the improvements of infrastructure such as street, gutters, water supply and waste collection system while the houses were improved by the dwellers.
The KIP programme has improved about 70% of the kampung in Indonesia and in 2000 the Comprehensive-KIP started with improvement of economic conditions of the inhabitans. How the people participate in the KIP and Comprehensive-KIP programmes are discussed here. Futher discussion include the management of the kampung by the dwellers to maintain the results of the programme and to keep their settlement and houses clean and healthy.

## 1.1. KAMPUNG SETTLEMENTS AND HOUSES

Kampung is not a squatter settlement, it is continuous and incrementally developed self-help housing and mostly on traditionally owned land. The houses are in indigenous concept with various shape, sizes, and densities. Kampungs in Surabaya are strategically located in all parts of the city. Such location provides easy access to many employment opportunities and services (Municipal Government of Surabaya, 1992).
The kampung houses offering different standards of housing at different price levels, mostly for low and middle low income families. Many houses are used for home industries, ranging from manufacturing of leather, cloth, metal goods, to various ready made food and services. The home industries provide additional incomes to the dwellers.
The Kampung Improvement Programme (KIP) is a neighbourhood improvement programme implemented within the low income areas. The improvements included footpaths, drains, water supply, sanitary facilities and improved solid waste management. This KIP programme was to improve unhealthy living conditions and to provide adequate shelter for all the inhabitans; implemented from 1979 to 1998. Almost all kampungs reached by the programme. The KIP programme stimulates the gradual improvement of most houses from non permanent to semi permanent and permanent structure.

## 1.2. CONSTRUCTION OF INFRASTRUCTURE AND HOUSES

The KIP programme was implementated with cooperation between local government and kampung communities. The types of kampung improvement were as follows.

### 1.2.1. PEOPLE SELF-HELP PROJECT

The community identified specific neighbourhood needs or problems and addressed these by bringing together their own local funds and labour. The government provided assistance, such as appropriate guide lines and standards for proposed facilities. This project could successfully solve specific problems in the neighbourhood by rellying on the people's own resourches.

### 1.2.2. WR SUPRATMAN PROJECT

The government encouraged kampung communities (i.e. the WR Supratman kampung) to formulate self-help project. Particularly the community was encouraged to construct access roads and other infrastructure in the kampung since financial and technical resources were limited, the programme could only be realized succesfully with a large community involvement. The government only supplied prefabricated concrete slabs and gutters on request and the community was responsible for the construction of footpaths and the side drains (Municipal Government of Surabaya, 1992).
The community contributions were matched by government funds, up to 50% of the required budget. The programme had been proven to be effective. Over a period of 15 years, 1,000 projects had been implented with a total value of US $ 6.7 million (Municipal Government of Surabaya, 1992).

### 1.2.3. URBAN KAMPUNG IMPROVEMENT PROGRAMME

The programme was gradually increased in scale and scope. The Surabaya government had been most successful in mobilizing communities to improve and manage their own living environment, and the programme was more comprehensive than the two previous approaches. The specific improvements at the neighbourhood level were:

- Limited number of access roads with side drain
- Footpaths and side drains
- Water supply network with water stand pipe for each 25-35 families
- Sanitary facilities (consisting of public washing, bathing, and toilets facilities)
- Solid waste management facilities (receptacles for solid wastes, garbage carts, transfer station)
    - Elementary schools
    - Public health centres

The programme was funded by local, provincial and central government. World bank loans were channelled through provincial government. The communities provided the land were responsible for organizing the movement of dwellings, other buildings and fences where additional space was required. They also organized the operation and maintenance of the facilities provided (Municipal Government of Surabaya, 1992).

### 1.2.4. COMPREHENSIVE KAMPUNG IMPROVEMENT PROGRAMME (C-KIP)

Comprehensive Kampung Improvement Programme (2000-2008) was not for improving the quality of kampung environment, but also focus on social and economic aspects of the kampung through community empowerment (Septanti, 2004).
The C-KIP programme had the component programme of improving the house quality. The objectives of the C-KIP were:

- To improve the environment of housing and settlement
- Community empowerment to strengthen in the implementation of the programme
- Developing opportunities in business to create employment and income for the kampung community

(Septanti, 2004)
The fund for C-KIP was provided as a grant from city development budget, and the programme components were as follws:

- Physical environment improvement
- Geenery and cleanliness
  Supplying and planting family medicine plants and trees to reduce pollution and provision of waste facility
- Community development
  Develop motivation and independnecy of the people in the hope that they can implement the development by their own potential
- Small and medium business improvement
- Housing improvement, both of the physical quality and tenure status

(Septanti, 2004)
The C-KIP programme spread all over the 58 districts in Surabaya city. To maintain the good results of the KIP and C-KIP programmes, the kampung communities are expected to be independent, creative and have initiative in caring their own settlements and houses. How the kampung communities maintain the sustainable livelihood and the environment in the kampung, are discussed in the following sections.

## 1.3. MANAGEMENT OF THE KAMPUNG

The management of the kampung environment and the houses are done by all community members, i.e. the men, the women, and the youngster. To maintain the KIP and the C-KIP improvement in the kampung and to keep the kampung clean and green, the government promoted “the Clean and Green Kampung of Surabaya” programme, which programme was for the reduction of wastes and the planting of plants in the kampung. All the kampung communities in Surabaya took part in this programme.

### 1.3.1. MANAGEMENT OF THE KAMPUNG ENVIRONMENT AND HOUSES

Usually the responsible group for the maintenance of the kampung environment and houses are the women, since the men work during the day. Cleaning the houses and the footpaths in front of the houses are done by the women, in the morning or in the afternoon. After school the youngster can help the cleaning of the environment and the houses.
Special attention is given to the maintenance of facilities provided by the KIP and C-KIP programmes. The community takes pride in keeping the houses, the footpaths and the side drains clean and also do the minor repairs. Garbage is collected in garbage bins that are regularly painted bright yellow. Some houses are also function as home industries. In this case husband and wife work together in maintaining the environment and the house.
The KIP and C-KIP programmes has received national attentions because they address the basic infrastructure needs of the low income population in a sustainable way. Also the C-KIP programme supports the community empowerment and participation in the programme. The sustainable local development can be achieved by linking the public sector and the community with the university (Laboratory for Housing and Human Settlements - ITS) as catalytic role. The university provides regular consultation, mutual commitments, a shared contribution to development, and core for the development of the living environment.
The kampung communities are consulted through their community leaders and elders. The leaders are chosen by the people and have the key role in mobilizing the community's development potential and in representing the community to the outside world (Municipal Government of Surabaya, 1992).

### 1.3.2. MANAGEMENT OF WASTES

To meet the need for better environment the collection of wastes is important. At the city level, street waste collection is carried out in two tiers system. To collect the wastes and sweep the street of Surabaya, about 15,000 workers are needed. Only 10% worker's salary is paid by the city government, the rest is paid by the city residents. Wastes is collected through self organized method from waste producers to the nearby depot station, and the kampung community also has its own method in organizing the wastes. From the depot station to the end disposal point is the responsibility of the city government. For the service every household pay about IDR 2,000 to 5,000.
Next to the street sweepers and waste collectors, about 4,000 waste scavengers work along side the street sweepers and waste collectors; as an integral part of the waste management system of the city. The basic policy is to include the scavengers as part of the overall urban employment system (Municipal Government of Surabaya, 1992). The scavengers can

help in the effort to look at the potential value of the wastes; which part of the wastes that still have economic value, and can be reused.

## 1.4. REDUCE, REUSE, RECYCLE OF WASTES TO CREATE THE CLEAN AND GREEN KAMPUNG OF SURABAYA

### 1.4.1. REDUCE, REUSE, RECYCLE OF WASTES

Reduce, reuse and recycle of solid wastes are very dominan activities in the kampung. Every community member participate in the activities, although the women are the most active group. To reduce the wastes the women provide some boxes to collect the wastes separately, for bottles, cardboards, cans, plastics, and papers. Every community member is persueded to give away the wastes and collected in the appropriate boxes as the “bank of wastes”. Then the women group sell the wastes and the money from selling them are used to build infrastructure in the kampung. One kampung Wonokromo managed to build a playgroup with the collected money from selling the wastes. Every week the women group can obtain about US $ 8.00 and they can reduce the waste to 90%. The money obtained are also used for greenary and safing and lending money (Jawa Pos, 29 July 2008). This is one example of the women group creation to obtain some money from solid wastes and used it for infrastructure improvement and develop safing and landing money cooperation.

To reuse and recycle the wastes the kampung community make used the plastics, bottles, card boards, papers, cans as raw materials for handycrafts such as plastic maths, paper flowers, souvenir boxes, plastic and paper caps, plastic bags, fests etc. The men creatively used the plastic aqua bottles for gate decoration during the celebration of the independence day. For one gate they used 600 bottles.

With the recycle of wastes the kampung community can safe money for the gate decoration and the women group can have money from selling handycafts made of the wastes. More importantly the activities in reducing wastes create good social bonding and mutual helps among the kampung communities.

Reduction and recycle of wastes by using Takakura composting system is very common in the kampung. Every kampung then created their own system in providing fertilizer from the wastes. In Rungkut Menanggal, the Takakura syatem was improved. The composter usually can process only 0.5 kg of wastes. Therefore the community created a bigger Takakura by digging a whell of 3 m depth, with diameter of 80 cm; hence more organic wastes were composted. There are a whells in kampung at present and the whell’s name is Sumokura (Sumo means “sumur” or whell in Javanesse language) (Jawa Pos, August 2008).

Some small composters were placed in the side drains of the kampung footpaths. This was to reduce the flood water. In the kampung 20

composters were placed in the ground, 15 composters were placed in the drains. The composters were given by the Telkom office of East Java to all the kampungs in Surabaya, as social responsibility programme of the industry for the communities.

Other creation in reducing kitchen wastes was with the help of snails. The snails were placed in the perforated bucket of 40 cm height with its volume of 70 liters. Ten snails placed in the bucket and kept in the shadow. The snails do the reduction of wastes and the wastes of the snails used for fertilizer. After 3 months the snails were removed from the bucket (except the breed) and sell to others. According to the community the snales are useful for curing alergy, astma and itchy (Jawa Pos, 14 July 2008).

Wastes in the drainage can also be used for fertilizer. The community trapped the mud and water in the drainage with 3 phases of trapps, using bamboo traps. The first phase of trap was for filtration of detergent, using ijuk as the matterial for trapping detergent. The second phase using charcoal for netralizing the toxic water and mud; and the third phase is for netralizing the water with lime stones. The clean water can be used for watering the plants and since the water in the kampung drains is clean, the water in the whell in the surrounding area is also clean (Jawa Pos, 27 August 2008).

Other innovation in the management of wastes was done by the Cleaning and Garden department of the City Government of Surabaya. The methane gas from the waste dumping area will be used for electricity in the dumping area and the street. About 12 megawatt electricity can be produced (Jawa Pos, 8 August 2008).

### 1.4.2. GREENARY IN THE KAMPUNG

To keep the environment green and clean the kampung community plant many kinds of fruits such as mango, guava, five corner fruit, jack fruit, lemon, etc. Some medicine-plants are planted on the side of the footpath's drains or in the pots. The pots were of reused materials, such as computer monitors, baskets, cans, or plastic containers. Flowers are usually hang at the house fences or at the ceiling. The community can obtain some additional income from selling fruits, medicine-plants and leaves, and flowers such as orchids, adenium, euphorbia, roses. Their every-day activities in minding the plants and flowers together also create social cohesiveness among them.

Children involve in the management of the plants in the kampung. They usually work on Sundays. Besides cleaning the kampung they also join the lessons : to make use of wastes to create plastics, cans or botel crafts. One who can submit wastes to the " waste bank" will recive some sweets for the return. The men invove in the management of the infrastructure of the kampung by cleaning the toilet and bathing facilities, paint the footpaths, or clean the gutter during holiday and sundays. Everyone in the kampung join the activities to keep the kampung clean and green.

## 1.5. CONCLUSION

The informal settlement: kampungs in Surabaya can house about 65% of the city population, allthough it covers only 7% of the city area.
The KIP programme resulted in the improvements of infrastructure in the kampungs ; then following the improvements the kampung community improved their own houses. The Comprehensive KIP programme, resulted in the improvement of the environment, the social and economic conditions and the community initiative, creativity and independency.
To sustain the results of improvements by the KIP and the C-KIP programmes, the kampung inhabitants manage their own settlements and its environment. The “Clean and Green Kampung of Surabaya“ programme is to enhance the kampung community to keep the healthy livelihood in the kampung, also to support the “adequate shelter for all“ as dictated by the Agenda 21. The programme is in line with the MDG’s programme to reduce poverty in the city to 50% in the year 2015.
With the Clean and Green Kampung programme the communities of the kampung actively manage the cleanlines and the green environment of the kampung. Some initiatives in the management of wastes were varied from kampung to kampung. All groups: women, men, children actively participate in creating good environment. More importantly the social cohesiveness in the kampung is increasing.

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Figure 1: The “wastes bank”. The wastes are collected in the box, with different labels
(Source: Jawa Pos, August 23, 2008)

Figure 3: The gate, made of plastic bottles for this gate the community reused, the 600 plastic bottles
(Source: Jawa Pos, August 18, 2008)

Figure 2: Handicraft, showing the butterflies made of plastic wastes
(Source: Jawa Pos, August 27, 2008)


Figure 4: The composting whell, calle Sumokura
(Source: Jawa Pos, August 21, 2008)

Figure 5: The composters, which will be placed in the ground and in the drains
(Source: Jawa Pos, July 14, 2008)

Figure 6: The lady showing the snails that were harvested from the composter bucket and ready to be sold
(Source: Jawa Pos, July 14, 2008)

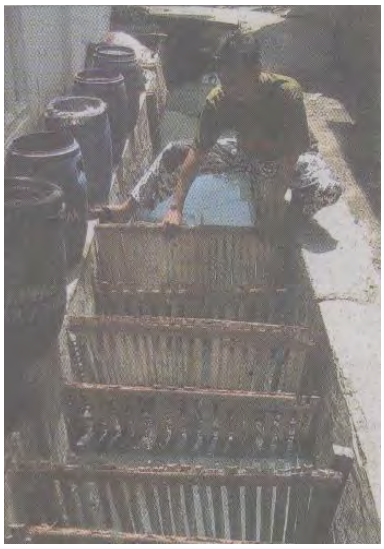

Figure 7: Traps are placed in the drainage to trap the mud in three phases
(Source: Jawa Pos, July 14, 2008)

Figure 8: Flowers are grown in the kampung and ready for selling
(Source: Jawa Pos, June 12, 2007)

Figure 9: Chilren are involved in the management of plants in the kampung
(Source: Jawa Pos, June 27, 2007)

Figure 10: The children join the course for making handicrafts made of wastes
(Source: Jawa Pos, July 7, 2008)

**PAPER NO 11**

# Sombo Multi Storey Development in Surabaya

Walojo, Purba, Cahyadi, Zulviton, Lopulalan

**ABSTRACT**

With rapid economic development, the center of economic activities, government, tourism, and others, are mostly centered at the city. This triggers the appearance of urbanization that will increase the number of city population. Most urban just have minimum education level, do not have any specialty, and came from low income economy society. Therefore, they only have jobs from informal sectors with minimum wages. Income limitation and expensive cost of living in the city, make them try to find house around their working area, in order to reduce their living costs.

Sombo Multi Storey Housing was built on the employee ex-dormitory area and warehouse (place to keep cleaning tools) of Dinas Kebersihan Kota Surabaya (Surabaya Cleanliness Department). The background of this (Multi Storey Housing) development was housing condition in Sidodadi V Los KMS in Sombo area which population was getting dense and the increment of housing number made the environment slums. This multi story housing development was performed for people that already live on that location previously, with rental system.

The development was based on Transitory Housing Theory, and its data collection was using direct interview method with the society, society prominent figures and RT/RW of the multi story housing of Sombo. Observation in the field showed that Sombo multi story housing Development Implementation performed in 5 steps, start from 1990 until 1994. The preparation process includes socialization, planning, citizen houses' dismantle and temporary citizen relocation.

Multi story housing development must give more attention to social and economy factors, so that the purpose of this development as transitory

housing can be reached. Moreover, management control and maintenance must be performed well.

**Keywords**: Multi Storey Housing, development.

## 1. INTRODUCTION

Sombo Multi Storey Housing is located on Sombo street Simolawang district, Simokerto sub district, Surabaya. Precisely on the instance ex-asset area that handles city cleanliness in the Netherlands Colonial Era which at that time utilized as cleaning tools warehouse, horse-drawn cart and cleaning officers dormitory.

During the independence, this area was used for the same activities by Dinas Kebersihan KMS. The next development was that manual cleaning tools will be modernized, therefore cows and horse-drawn cart were not utilized again. The function of this area was changed as dormitory of single Dinas Kebersihan KMS officers. Initially, newly-wed families are placed at dormitories that are already divided. Therefore new families were separated from their single friends and then, this action was followed by others. The dormitory spaces became small and the conditions are very dirty. Finally, the location consists of 469 houses and populated by 3.012 people. With such condition, Surabaya Government initiated the vertical housing development concept.

In this paper, the following aspects are being addressed :

1. Observation to the implementation aspects at Multi storey housing development.
2. Review to the implementation aspects at Multi Storey housing development.

Things that included in the discussion are as follows :

1. Physical condition of Sombo Multi Storey Housing
2. Occupant of Sombo Multi Storey Housing

## 2. THEORETICAL BACKGROUND

### 2.1 THE MEANING OF HOUSE, HOUSING AND SETTLEMENT

In the Regulation Number 4 Year 1992 about Housing and Settlement, at Chapter I in regard to General Determination, it is stated that :

1. A “House” is a building which is functioned as a place for living and family guidance
2. “Housing” is a group of houses which are functioned as the environment of place of living or living environment which equipped with built environment and infrastructure.

3. "Settlement" is part of living environment outside the protected area, whether in the form of city or village area which is functioning as settlement environment and place for activities to support life and living.
4. "Settlement environment unit" is an area of place for housing with many forms and sizes with structured land arrangement and environment infrastructure and tools.

According to John F.C Turner (1972), house can be understood with the following meaning : housing has two meanings, that is as a noun and as a verb. As a noun, housing can be understood as a commodity or product, meanwhile as a verb, housing is understood as a process or activities. The meaning of housing as a process or activities that hard to be understood when there is no correlation with development, building and utility of the housing itself.

Along with the theory of John F. C. Turner, according to Johan Silas (1993) in its relation with housing, house is an intact part of a housing and it is not just a physical result, a housing is not a noun but it is a verb that is as a continuous process and it is related with occupant economic social mobility. Housing is more than just a place for living (or 'house'), especially when it is related with occupants. Housing concepts should always show unity, intact and balance among human, house, and its surrounding nature. Housing is not just a house because it can not stand by itself, it needs others and its built environment and infrastructure.

Other opinion, that is from Amos Rapoport (1969), is that house can be understood as an institution and not just a structure, that made for many complex purposes and since building a house is a cultural symptom, then its form and rules are mostly influence by cultural environment of the location of the building. Based on its form, house is not the result of physical factor but it is the consequence of many cultural factors that seen in the wide meaning. The form of a house may change based on the condition of climate, construction method, existed material and technology. The main one is cultural and social factor and the other is the second factor that will complete or modify it. Amos Rapoport also gives explanation for relation between the form of house and settlement, which is the form of house in settlement is a physical picture of culture, religion, material and social aspect, and it is the symbolic nature of the settlement's single factor, but it is the consequence of the whole social cultural factor that can. Built environment will try to show social cultural strengths including faith, family relations, social organization, way of living and social relation among individual.

The above theory is strengthened by the Agenda 21 (1997) that explains that settlement must be created in harmony with ecology functions, working field, service and transportation. It means that settlement

must be able to fulfill physical and non physical aspects of its occupant and able to take dynamic that develop inside of it.

## 2.2SLUMS

According to the Ministry of Civil Housing Office (1985), the criteria of slums area is that, when its environment is not managed well, does not have enough basic tools and infrastructure, small lot, high density, low material quality, and weak structure quality.

According to Johan Silas (1996: 18-19), in Surabaya "Kampung" (residential area for lower classes in town or city) towards Metropolitan, the characteristics of slums include :

1. When the valid standard is below the minimum standard, such as the space of the house that less from 5,2$m^2$ and the space of building and yard is less than 2:1.
2. The living in slums threatens the safety of occupants, especially their health and fire hazard.
3. When the house (as a person living savings capital) is in danger or may be lost any time, whether by natural destruction or by human, such as fire or illegal condemnation. Actually, slum condition is the cause of non physical criteria (social, economy, culture and politic).

Meanwhile, according to Eko Budiharjo (1994), the meaning of slums has three components that can be grouped at informal sector are :

1. Slums includes squatters, in which the meaning of slum itself is dirt, untidy and polluted.
2. Transportation method is public vehicles that commonly used by citizen, usually it is called the fourth type of vehicles such as pedicab, '*ojek*', bicycle, and others.
3. Economic activities is a productive economic activities or as underground economy that includes home small industry, vendor, food/cigarette stall, itinerant food seller, pedicab and garbage recycler.

Amos Rapoport (1997) and *Human Aspects of Urban Form* defines slums as sub standard settlement that related with environment quality which shows certain value and image.

*Dwyer* (1975) calls slums or marginal settlement as "Spontaneous Settlement", meanwhile Unauthorized or Clandestine terms is given for semi legal settlement, which house's construction break building rules, has no license, although the utility of the land is already right.

According to Siswono Yudo Husodo (1991), Spontaneous Housing is meant as unplanned housing development, therefore its development growth as irregular settlement. Settlement is differentiated into two types that is ‘kampung’ type (generally edged 'kampung') and illegal housing type (along the river banks, train railway tract edges, garbage dump area, and others) that generally built illegally.

## 2.3MULTI STOREY HOUSING

Based on the Regulation No. 16 Year 1985 in regard to Multi Storey Housing, Chapter I of General Determination, Article 1, the meaning of “Multi Storey Housing” is : leveled building development, that divided in parts that structured functionally in horizontal and vertical direction, and it is a unity. Each part of it can be owned and used separately, especially for settlement, that equipped by jointly-part, jointly-material and jointly land.

According to Komarudin (1997) there are 4 (four) types of Multi Storey Housings :

1. Rental Multi Storey Housing
2. Middle group Multi Storey Housing
3. Simple Multi Storey Housing, and
4. Cheap Multi Storey Housing

## 2.4SYNTHESIS

Relation between theory and study material can be seen from indicators in the study location : Sombo multi storey housing

The houses at Sombo Street before and after the building of Multi Storey Housing, were always developed/changed by the occupant based on the need and wants. Before the Multi Storey Housing was erected, the condition of housing and settlement in Sombo Street were very dense with very low quality housing and settlement.

The valid standard of the house is below the minimum standard, i.e. less than 5,2 $m^2$. The living in slums threatens the safety of occupants, especially their health and fire hazard, since the houses were very dense. When the house as a person living savings capital is in danger or could be lost at any time, whether by natural destruction or by human, because there was no legal aspects.

Sombo Multi Storey Housing development was for Low Income Society that previously inhabited dense and slums at Sombo Street. Types of the Multi Storey Housing which was built based on the occupants qualification are :

1. Simple Multi Storey Housing
2. Cheap Multi Storey Housing

## 3. SOMBO MULTI STOREY HOUSING DEVELOPMENT

### 3.1. PREPARATION PHASE

At the preparation phase, there were 4 (four) activities that should be performed, those were:

a. Socialization
b. Planning
c. Citizen house dismantle
d. Temporary citizen relocation

Socialization that was performed at the final quarter at Year 1989 by officers of the local government of Surabaya with the help of Team from Laboratory for housing and human settlements ITS and occupants of Sidodadi V Los KMS that discussed things, as follows :

a. Willingness of citizen in accepting housing arrangement activities.
b. Design of Multi Storey Housing
c. House dismantling procedure
d. Temporary relocation procedure
e. Resettle the people to Multi Storey Housing procedure
f. Unit Division stipulation
g. Stipulation about house contribution value and dismantle contribution.

Planning was implemented by Team of laboratory for housing and human settlements ITS and coordination with local government of Surabaya and citizen of Sidodadi V Los KMS (candidates of Sombo Multi Storey Housing occupant), resulted 10 (ten) blocks of Multi Storey Housing designs that each has 4 (four) floors with total 600 units with standard size for every unit 6 m x 4 m. Meanwhile, stipulation about unit division was made based on original house space with the following stipulation :

a. Occupant candidates that previously had a house which space less than 10 $m^2$ would get ½ unit of room in Multi storey housing.
b. Occupant candidates that previously had a house which space was between 11 – 36 $m^2$ would get 1 unit of room in Multi storey housing
c. Occupant candidates that previously had a house which space was between 37 – 42 $m^2$ would get 1 ½ unit of room in Multi storey housing.

Dismantling of old house has been done by the owner with the hope that the building material can be reused again at other place. In the dismantle process, citizen got dismantle fund contribution from the local government Surabaya.

For the implementation of development, citizen was be relocated temporarily at other place they choose with housing fund contribution

around Rp. 1.500,-/$m^2$/month for 8 (eight) months or Rp. 18.000,-/$m^2$ with the following assumption :

a. 1 (one) first month was for preparation period to leave the old house.
b. 4 (four) month was development period of Multi Storey Housing.
c. The last 3 (three) months was the period to enter the Multi Storey Housing.

### 3.2 DEVELOPMENT PHASE

Sombo Multi Storey Housing was built on 18.900$m^2$ area and its purpose is to solve the problem of slums in Sidodadi V Los KMS as the target.

The implementation of Sombo Multi Storey Housing development in 5 (five) phases, and in every phase, 2(two) blocks were constructed, those are :

a. Block A and E built on 1990.
b. Block F and G built on 1991.
c. Block B and C built on 1992.
d. Block H and I built on 1993.
e. Block J and K built on 1994.

Meanwhile, executor party of Sombo Multi Storey Housing and its liabilitor were:

a. Local government (Pemda Kotamadya Surabaya), as manager.
b. Private (entrepreneurs), as development fund provider for 2 (two) blocks at the first phase, for 8 (eight) blocks at sides and its infrastructure were funded by using APBN and APBD funds.
c. Private contractor, as Multi Storey Housing developer.
d. Occupant target were KMS local government employee/retired employee that previously live in KMS and temporary occupant at that place.
e. The planning of Multi Storey Housing was done together with ITS Surabaya.

### 3.3 UTILIZATION PHASE

Sombo Multi Storey Housing was managed by Dinas Pengelolaan dan Bangunan dan Tanah Surabaya. Housing payment process was in installment and collected by management officers. For electrical, PDAM water payment and public facilities payment determined for every month, meanwhile for electrical utility, each house unit was suited with the number of users. Moreover, for cleanliness management, performed by the citizen themselves through grouped working at certain days.

Sombo Multi Storey Housing was aimed for previous citizen, that was 469 KK (family). However after the development, the total became 600 KK. Until today, Sombo Multi Storey is not filed completely and total occupants up to today are not clear. Therefore, its management system must be fixed. Some occupant who lived in Sombo's since the first day until now, had make some adjustment to their rooms, it's vary from one to another. In particular, amendments are made to the spatial plan.

In early design, the room for the occupant is only a single room with various dimensions, where the rest of service areas are placed outside of rooms (on the same floor). The basic idea was all the services were communal use, such as bathroom, kitchen, etc. The main alley in every floor, was used as communal living room, which is very common for the residence to meet and chat with their guests at this place, and for some occasions, this place was used as a wedding party place, religious ceremonies (e g. pray/*pengajian, tahlilan, etc)*, etc.

The idea about communal kitchen has failed, since most of the residence uses the kitchen only as a store box, to keep all the kitchen tools. But when they prepare the meal/cooking, they took all the tools into the rooms. Some families adjusted their rooms by dividing the room into smaller rooms, which are being used as kitchen, but they keep their cooking tools in tool boxes where the common kitchen place is. Some of them even took the corridor ways as extended place for their room. It seemed that the extended development has been approved or had to be approved by other residences in same floor.

In C Block at Sombo Multi Storey Housing Complex, we found that the main entrance had been justified by the occupants into extra rooms. It's base floors was designed as the main market to support the residences daily needs, such as, raw food, vegetables, ingredients, and others. According to one of the occupant, many of the residence feels that the distances between blocks are near, but difficult for them to run to each floor, every time they need something. Besides, the Sombo Multi Storey complex location is relatively close to local market or downtown, which is making most residence go there to buy their needs every week.

## 4. CONCLUSION AND SUGGESTION

### 4.1 CONCLUSION

Sombo Multi Storey Housing that was built by Surabaya local government together with the Laboratory for housing and human settlements Institut Teknologi Sepuluh November Surabaya as Sombo multi storey housing planner designer, already received attention from Indonesian government and become the model to solve the slum area problem in the world and many foreign nation.

## 4.2 SUGGESTION

Sombo multi storey housing development still has many lacks in the planning, such as :

1. Room for one family which size is 3 x 6 m2 is too small and needs to be widened, since many of occupants had married and have childrens too.
2. The location of tools and infrastructure such as kitchen and bathroom must be given more attention during the planning ethics. There are some complain about the position of bathroom in the building, as many of the peoples feel embarrassed when they had to take a bath being near many other peoples, where they must pass the kitchen to get into the bathroom, same as the people who tried to use the kitchen.
3. Built environment and infrastructure such as clean water and electricity are basic needs that must be improved. We found that in block C, the amount of water are not enough for the rest of the day, so to fulfill the need they had to spare the water with others occupant wisely in little amount. The policy to use only one electric meter, had make them to pay with the same amount among of them, while the ratio of usage are different.
4. Building maintenance is a serious problem that must become the main priority of Sombo multi storey housing.

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- Agenda 21 for Sustainable Construction in Developing Countries
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**For more information contact**
CIB General Secretariat:
e-mail: secretariat@cibworld.nl

PO Box 1837, 3000 BV Rotterdam,
The Netherlands
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**CIB General Secretariat**
post box 1837
3000 BV Rotterdam
The Netherlands
E-mail: secretariat@cibworld.nl
www.cibworld.nl

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