



ELSEVIER



CrossMark

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

Procedia - Social and Behavioral Sciences 179 (2015) 250 – 257

---

---

**Procedia**  
Social and Behavioral Sciences

---

---

International Conference Green Architecture for Sustainable Living and Environment (GASLE),  
29 November 2014

## Contribution of community-based housing development toward environment improvement as an effort of poverty alleviation

Winy Astuti<sup>a\*</sup>, Dyah Widi Astuti<sup>a</sup> and Dedy Syarifudin<sup>a</sup>

<sup>a</sup>Center for Information and Regional Development, Urban and Regional Planning Study Program, Sebelas Maret University,  
Jalan Ir. Sutami 36 A Kentingan Surakarta 57126 INDONESIA

---

### Abstract

Squatter settlements is defined as a residential area developed on a non-residential area according to the city masterplan, went through illegal procedures and had no permit from the legal authority. Resettlements (Relocation) Program is a housing policy aims to redistribute residents from squatter settlement to residential area planned in the city master plan. Community-based Housing Development (CBHD) is one of housing delivery system in Indonesia based on community empowerment, which is believed to have contributions to poverty alleviation in terms of increasing access to adequate land and housing, increasing infrastructure condition, housing affordability, and social development sustainability. Those purposes manifested in the betterment of the neighbourhood in the residential area. Kelurahan Pucangsawit Surakarta City, is a residential area located in the riverbank of Bengawan Solo River, one of twelve Kelurahan (approx. 1.571 houses) in Surakarta potentially affected by annual flood. Relocation Program was conducted in 2007 and relocated 268 families to the residential area in Kelurahan Mojosongo in northern part of Surakarta. The research aimed to analyze the contributions of Relocation Program to environment improvement as an effort for poverty alleviation. Methodology used in this research was deductive approach using quantitative data from the questionnaire to the beneficiaries of the program. The result of the study shows that relocation program has contributed to environment improvement mainly in terms of increasing water supply, better access to sanitation, better housing condition and land status clarity.

© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of Department of Architecture, Faculty of Civil Engineering and Planning, Institut Teknologi Sepuluh Nopember (ITS).

*Keywords: housing; settlements; poverty alleviation; environment; Surakarta*

---

---

\* Corresponding author. Winy Astuti Tel.: +62-878-364-69141; fax: +62-271-662-118  
E-mail address: [winyast64@gmail.com](mailto:winyast64@gmail.com)

## 1. Introduction

In Indonesia, there are two housing delivery system (Kuswanto, 2005). Firstly is formal system which is based on supply side provided by formal developer, and secondly is informal system, self-help system which is based on demand side and popular as community-based housing development (CBHD). CBHD makes almost 90% housing developments in Indonesia, and puts community as the fundamental part of the system and the predominant actor of housing development.

Most of urban poor people live in slum areas with substandard housing condition and insufficient infrastructure and services. Their exclusion from decision making process in local government level has excluded them from housing and infrastructure provision. The involvement of community (either personal or organization) in the planning process is the success key of government programs related to poverty alleviation. Urban poor needs capacity building to participate and involve in the government's program planning process, thus bring them into contact with a wider network of individuals and organizations through collaborative planning. Therefore, empowered community becomes the goal of CBHD.

This condition is appropriate to Millennium Development Goals (MDGs), which places poverty alleviation and hunger as the first goal. Housing sector becomes an indicator of poverty alleviation in term of housing affordability in which people are able to rent or to own houses. In addition, community reserves the right to habit not only standard housing construction but also adequate living space, as well as security of tenure over the land and housing (Moser, C; Gatehouse, M and Garcia, H, 1996 in astuti 2013)<sup>5</sup>

Surakarta is a municipal city located in the centre of SUBOSUKA region, Central Java, Indonesia, with the area of 44.04 square-km. It is surrounded by three regencies, i.e. Boyolali, Sukoharjo and Karanganyar. Surakarta City is dominated by developed areas with population of approximately 550.000 people. The level of poverty was 22% covering 125,600 urban poor people (TKPKD, 2011). The Government of Surakarta stated that in 2006, there were 6612 substandard houses spread in 5 districts of Surakarta. Of these numbers, 1571 of them (about 24%) live in squatter settlements, along the riverbank and railway land, which is either public land or simply illegal for settlements development due to its safety issue.

In order to overcome the problem of slum and squatter settlements, the government of Surakarta has developed several housing policies, which operated through CBHD. Basically, there are three policies; firstly, improvement of slum areas which includes rehabilitation and renovation of substandard houses which are built on legal land with certified property right; quality improvement of substandard houses and their neighbourhood (RTLH program on legal land, secondly, rehabilitation and renovation of substandard houses which are built on illegal land (RTLH program on illegal land); and thirdly, relocation of settlements located along riverbank areas to legal and certified land with standard housing construction.

Relocation program was developed due to the rapid growing informal-illegal settlements located along the non-residential riverbank areas. In order to manage the residential development on the right track according to the City masterplan, those riverbank settlements need to be relocated. Riverbank areas are classified into disaster-prone area, which are periodically flooded due to the overflow of Bengawan Solo River in rainy season. The worst flooding occurred in 2007 in which approximately 6.368 houses spread in 12 *kelurahan* and 3 districts of Surakarta were covered with water. Of those numbers, 1.571 houses were located along Bengawan Solo riverbank. Pucangsawit is a *kelurahan* in Surakarta to which relocation program was implemented toward 268 houses along the riverbank (Bapermas, 2012). The people were mostly relocated to Mojosongo, distributed into 6 residential spots, namely Ngemplak Sutan (112 houses), Solo Elok (89 houses), Donohudan (36 houses), Mipitan (8 houses), Kedung Tungkul (18 houses), and Sabrang Lor (5 houses).

Housing sector is believed to have contribution on poverty alleviation in term of increasing access to housing, access to infrastructure and services, society development, environment management, economic development and governance (Moser, 1996; UN habitat, 2004). The increase of poverty level indicates the decrease of environment condition. This research aims to analyze the contribution of relocation program in Pucangsawit on poverty alleviation seen from housing sector indicators.

## 2. Research Theory and Method

### 2.1. Research Theory

Physical environment condition of urban informal settlements has been concerned by UN Habitat. *The United Nations* asked UN-HABITAT to officially monitor all nations to achieve the UN target on “*Cities without Slums*”, which is famous as “Target 11”. *Target 11 is “ By 2020, to have achieved a significant improvement in the lives of at least 100 millions slum dwellers”*. Target 11 as a part of Goal 7 in MDGs, proposes live improvement in slum areas. Some indicators of poverty alleviation in informal settlements are described in table below :

Table 1 : List of Indicators of Poverty Alleviation in Slum Area

Focus	Indicators
Shelter	<ul style="list-style-type: none"> <li>- Promote the right to adequate housing</li> <li>- Provide security of tenure</li> <li>- Provide equal access to credit</li> <li>- Provide equal access to land</li> <li>- Promote access to basic services</li> </ul>
Social development and eradication of poverty	<ul style="list-style-type: none"> <li>- Provide equal opportunities for a safe and healthy life</li> <li>- Promote social integration and support disadvantaged groups</li> <li>- Promote gender equality in human settlements development</li> </ul>
Environmental Management	<ul style="list-style-type: none"> <li>- Promote geographically balanced settlement structures</li> <li>- Manage supply and demand for water in an effective manner</li> <li>- Prevent disasters and rebuild settlements</li> <li>- Promote effective and environmentally sound transportation systems</li> <li>- Support mechanisms to prepare and implement local environmental plans and local Agenda 21 initiatives</li> </ul>
Economic Development	<ul style="list-style-type: none"> <li>- Strengthen small and microenterprises, particularly those developed by women</li> <li>- Encourage public-private sector partnership and stimulate productive employment opportunities</li> </ul>
Governance	<ul style="list-style-type: none"> <li>- Promote decentralisation and strengthen local authorities</li> <li>- Encourage and support participation and civic engagement</li> <li>- Ensure transparent, accountable and efficient governance of towns, cities and metropolitan areas</li> </ul>

*Source: UN Habitat Program, 2004, Urban Indicators Guidelines Monitoring the Habitat Agenda and the Millennium Development Goals*

Policy on Housing and Human Settlements has a new paradigm on poverty alleviation and places poverty alleviation as one of its target priorities, beside creating as many as job vacancies and increasing access to basic infrastructure and services. Basically, those targets also represent improvement of environment. Moser (1996) defined some key indicators of housing sector contribution on poverty alleviation as can be seen in table below

Table 2 : Key Indicators of Poverty Alleviation on Housing Sector: Access to Housing

Policy Targets	Urban Key Indicator
Adequate housing for all	Housing production the net number of units produced (units produced minus

Adequate housing quality and space	units demolished) in both formal and informal sectors per 1,000 population Floor area per person the median of usable floor area per person Permanent dwelling units the percentage of dwelling units likely to last twenty years or more given normal maintenance and repair, taking into account locational and environmental hazards (e.g. floods, typhoons, mudslides, earthquakes)
Secure housing	Unauthorized housing
Tenure	the percentage of the total housing stock in the urban area which are not in compliance with current regulations

Source : Moser, et al, 2006

In Indonesia, indicators of poverty are determined by BPS (Center Bureau of Statistics). Those indicators are: a) type of building tenure, b) quality of roof construction material, c) quality of wall construction material, d) quality of floor material, e) sufficiency of clean water supply, f) type of electricity usage, g) sufficiency of sanitation, g) condition of sewerage system (BPS, 2011).

2.2. Research methods

This research was conducted in deductive approach using both quantitative and qualitative data. Qualitative data were obtained from interview to stakeholders such as : The Board of Planning and Development (BAPPEDA), the Board of Community Empowerment, Woman Empowerment and Family Planning (DKRPP and KB), Department of Public Works (DPU) and National Agrarian Bureau of Surakarta (BPN). Whereas quantitative data was collected by using questionnaire to 40 household samples among 116 beneficiaries of relocation program in the area. On other side, the environment quality improvement was developed from two major built-up environment variables, i.e. Housing physical condition and access to basic infrastructure. The contribution of relocation program was derived from the changes happened to housing and infrastructure after the relocation took place. Research variables used in this research are presented as follows:

Table.3. Research Variables

Contribution of Housing Sector toward Improvement of Environment as an Effort of Poverty Alleviation	Access to Housing and Shelter (Moser, 1996) Access to Services and Social Infrastructure (Moser, 1996) Affordability of Urban and Social Services (Moser, 1996) Shelter Improvement (UN Habitat, 2004, BPS, 2011) Social Development and Eradication of Property (UN Habitat, 2004) Environmental Management (UN Habitat 2004) Economic Development (UN Habitat, 2004) Governance (UN Habitat, 2004)
--	---

Sources : UN Habitat, 2004; Moser, 1996

Analysis of housing sector contribution toward environment improvement was conducted through T test analysis. The analysis determines the environment changes before and after the program implementation with significance value / P-Value 0.5%.

Hypotheses :

- Ho : there is **no significant difference** before and after the program implementation.
- Ha : there is **significant difference** before and after the program implementation.

If *P-Value* > 0.005, therefore  $H_0$  is rejected and there is no significant difference. It means that there is no environment improvement of the settlements after the program implementation.

### 3. Results and Discussion

#### 3.1. Contribution of relocation program toward environment improvement

Sustainable development is dedicated to improve future living through environmental, economic and social sustainabilities. However, living standard as an indicator of urban quality involving settlements should be assessed (Santosa, 2002). Housing policy has developed its goals known as TRIDAYA (three aspects of development, namely: physical environment, social and economic developments). In the implementation of relocation program, its contribution toward physical environment improvement is more tangible than economic condition improvement and area management. Economic condition improvement can be measured at least after 5 years of the program implementation, while the program has just run for 3 years so far.

The relocation program gave grant 12 millions rupiahs for land purchasing and 8.5 millions rupiahs for house construction. Therefore, the physical condition of the new settlements was improved. Most of the beneficiaries spent the grant for roof and wall materials improvement.

- Improvement of housing physical condition

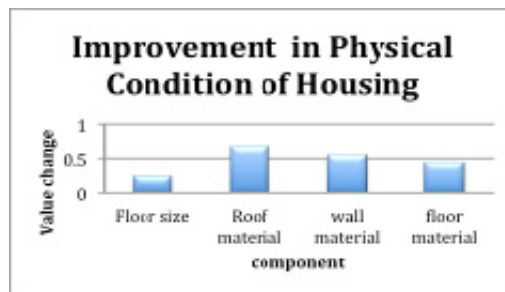


Fig. 1. The Changes of Housing Condition after Relocation Program

Table 4. Contribution of Relocation Program toward Physical Condition Improvement

Component	P-Value	Resume	Value change
Floor size	0.048	No significantly different	0.250
Roof material	0.000	Significantly different	0.675
Wall material	0.000	Significantly different	0.550
Floor material	0.002	Significantly different	0.450

- Improvement of access to infrastructure condition

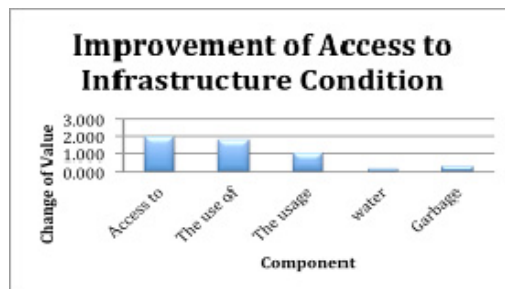


Fig. 2. The Changes of Infrastructures after Relocation Program

Table 5. Contribution of Relocation Program toward Improvement of Access to Infrastructure Condition

Component	P-Value	Resume	Change of Value
Access to water supply	0,000	Significantly different	1.975
The use of toilet	0,000	Significantly different	1.800
The usage of Septic tank	0,000	Significantly different	1.025
Water supply sufficiency	0,006	No significantly different	0.175
Garbage management	0,004	Significantly different	0.325

The biggest contribution of the program toward environment improvement is on the access to water supply (the change value is 1.975). The previous settlements were informal settlements along the riverbank area of Bengawan Solo without any provision of water supply services. Relocation program provided access to clean water supply for the inhabitants. The use of toilet indicated the inhabitants’ habitual change in sanitation.

In terms of urban services affordability, relocation program has displaced people from their previous settlements in slum areas to another location. Questionnaire showed that 65% of the people should pay more expense for water supply service. Before relocation, they paid nothing for water supply but after relocation they had to pay 20.000-30.000 rupiahs montly. In addition, about 22.5% of the people should pay more expense for transportation due to longer distance to public facilities .

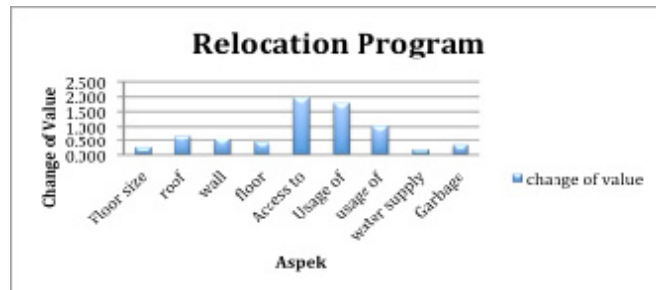


Fig. 3. The Changes of Housing and Infrastructure after Relocation Program

Fig. 3 shows that through relocation program there were only two among eight variables of poverty alleviation in housing sectors which contribute toward environment improvement. Firstly, improvement of access to housing and shelter, especially in the roof material improvement (change of value is 0.675). Most of the inhabitants had improved their house condition from nonpermanent to permanent houses which could be seen from changes of roof conditon (0.675) and wall condition (0.550). Secondly, improvement of services and social infrastructure, especially access to water supply (1.975) and toilet usage (1.800). Those numbers of value There had been many changes of settlements condition in study area compared to the previous settlements along Bengawan Solo riverbank area in Pucangsawit.

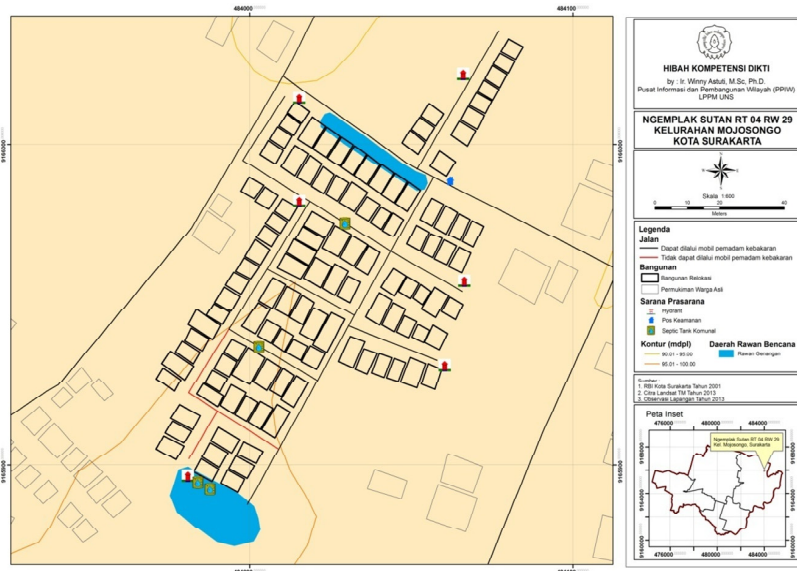


Fig. 4. Map of Resettlement Location in Mojosongo after Relocation Program



Fig. 5. (a) Settlement condition in Pucangsawit before relocation program; (b) Settlement condition in Mojosongo after relocation program

The third variable, urban and social services affordability, tended to be decreased because the relocation had displaced people from previous area which was close to public facilities to more distant area. Social and economic developments had not been determined due to the short term implementation of the program. The inhabitants need to survive longer to be more economically stable.

**4. Conclusion**

Relocation program is a housing policy which displaces informal settlements to other residential locations according to the government’s master plan in order to improve housing and environment conditions. However, relocation program carried out by Surakarta government in Mojosongo only contributed to two aspects of environment improvement; firstly, improvement of access to housing and shelter. Most of the inhabitants have improved their houses condition from non permanent to permanent houses with the most changes on roof and wall conditions. Secondly, improvement of services and physical infrastructure condition. Whereas, in terms of urban services affordability, it was found that relocation program has displaced people from previous settlements to other location far from the previous settlements in slum area. They have to pay more expense, especially for water supply

and transportation. They have to pay 20.000- 30.000 rupiahs montly for water supply. About 22.5% of the people should pay more expense on transportation due to longer distance to public facilities

### Acknowledgement

Directorate General of Higher Education of Indonesia (DIKTI) for full financial support to this research; Rector of Sebelas Maret University; and Head of LPPM Sebelas Maret University; Chairman of PIPW LPPM UNS; Head of BAPPEDA; Head of SKPD Public Works.Chairman of BLU; Head of BPN and PDAM; Head of Kelurahan Ketelan and head of LPMK Ketelan, Head of POKJA RTLH Ketelan and Reseach team : Diah Widi Astuti, Habibah, Diyah Setiyani, Hanung, Daniel P, Dedy syarifudin; Arif Fakhir and all parties which can not be mentioned one by one.

### References

- Astuti, W. (2013). *Characteristics of community-based housing development and its contribution to poverty alleviation* (Research of Competency). Jakarta: Directorate General of Higher Education (DIKTI).
- Astuti, W., et al. (2012, September). Model of Empowerment for Slums Community as a Main element of Community-based Housing Development (CBHD)- Case Study in Kelurahan Tipes , Surakarta City, Indonesia. Paper presented at the National Seminar of Green Urban Housing Policy. Semarang.
- Bappenas. (2004). *Laporan perkembangan Pencapaian MDGs Indonesia*. Jakarta: Tim Penyusunan Laporan Tujuan Pembangunan Milenium (MDGs) Indonesia.
- Data Statistik Kota Surakarta 2011*. (2011). Surakarta: BPD.
- Kuswartojo, Tj (2005). *Perumahan dan Permukiman di Indonesia. Upaya untuk membuat perkembangan kehidupan yang berkelanjutan*. Bandung: Penerbit ITB
- Mikkelsen, B. (2001). *Participatory Research Methodology and Efforts for Empowerment, Books for Practicians*. Jakarta: Yayasan Obor Indonesia.
- Moser, C. O. N., Gatehouse M., and Garcia, H. (1996). *Urban Poverty Research Sourcebook: Module II, Indicators of Urban Poverty*. Washington, D.C.: UNDP/UNCHS/World Bank-UMP.
- Santoso, J. (2002). *Menyiasati Kota Tanpa Warga* [Deal with City without People]. Jakarta: Kepustakaan Populer Gramedia dan Centropolis.
- TKPK. (2011, December 19). A Big Job of Coordination Team of Local Poverty Alleviation. *Solopos*.
- Turner, B. (Eds). (1987). *Building Community: A Third World Case Book*. London: Building Community.
- UN Habitat Program (2004) *Urban Indicators Guidelines Monitoring the Habitat Agenda and the Millennium Development Goals*
- UN Habitat. (2004). *Urban Indicators Guidelines Monitoring the Habitat Agenda and the Millennium Development Goals*. Kenya: UN Habitat.