

**COMMUNITY EMPOWERMENT IN SERUT VILLAGE  
ON CLIMATE CHANGE ADAPTATION AND MITIGATION**

*Permana Arief Mardika*

Ministry of Environment and Forestry  
Perumahan Taman Mahkota Bandara 3 No A3, Jalan Jogja-Solo Km 10  
Sorogenen 2, RT 4 RW 1, Purwomartani, Kalasan, Sleman, Yogyakarta  
Email : permana.am@gmail.com

*Ahmad Sarwadi dan Retno Widodo, DP.*

Departement of Architecture and Planning, Faculty of Engineering  
Universitas Gadjah Mada

**ABSTRAK**

Berdasarkan Peraturan Menteri Lingkungan Hidup Indonesia nomor 19 tahun 2012 tentang Program Kampung Iklim (Proklim), Dusun Serut ditetapkan sebagai Kampung Iklim pada tahun 2012 karena upayanya dalam adaptasi dan mitigasi perubahan iklim. Keberhasilan ini tidak lepas dari upaya pemberdayaan masyarakat pasca musibah gempa Bantul tahun 2006. Penelitian ini bertujuan untuk mendeskripsikan pemberdayaan masyarakat dalam adaptasi dan mitigasi perubahan iklim kemudian mengidentifikasi faktor-faktor yang mempengaruhi pemberdayaan masyarakat. Metode penelitian yang dipilih adalah studi kasus dengan kasus tunggal menggunakan pendekatan deskriptif kualitatif. Hasil penelitian menunjukkan bahwa pemberdayaan masyarakat terjadi secara simultan tanpa disadari oleh masyarakat yang dipicu oleh kejadian gempa bumi tahun 2006. Pemberdayaan masyarakat tercermin dalam banyak sektor, seperti

*Kata Kunci: Adaptasi; Mitigasi; Pemberdayaan; Perubahan iklim.*

**ABSTRACT**

*Based on Regulation of Indonesian Environment Ministry number 19/2012 about Climate Village (Proklim) Program, Serut Village is designated as Climate Village in 2012 because of the effort on climate change adaptation and mitigation. This success is not separated from the community empowerment efforts after Bantul earthquake in 2006. This research aims to describe the community empowerment on climate change adaptation and mitigation then identify factors influence community empowerment. This research method used case study with single case using qualitative descriptive approach. The research results indicate that the community empowerment has occurred simultaneously and unnoticed caused by the earthquake. Community empowerment is reflected in many sectors, such as development of organic farming, management of livestock farming with communal cages, community base litter management, disaster response, greening and water resources management. Factors that influence the process of community empowerment are natural conditions; society culture, norm, and community self-help; local leader; and government.*

Keywords: Adaptation; Climate change; Empowerment; Mitigation.

## **INTRODUCTION**

Climate village which usually called ProKlim is a program that based on society in order to do continuous mitigation and adaptation about climate change on the residence area [1]. Serut Village wick located in Palbapang districs, Bantul Regency, Yogyakarta Province is one of climate village that receive a National acknowledgement. Eviromental conservation movement in Serut village raises after the Earthquake disaster that was happend in 2006. There are some activities in case of adapt and mitigate climate change such as flood control system with the manufacture of biopore and drainase, water-saving movement, reboisation, crop field system integrated argiculture, the reduction of fertilizer and chemical insecticides, etc. Climate change adaption and mitigation effort which have done by Serut village was proved the importances of society in order to succesing the enverinmental conservation, especially climate changes. This research aims to describe the community empowerment in case of adaptation, mitigation the climate change and also identify the influence factors of the community empowerment.

### **Climate Change Adaptation and Mitigation**

Climate change is limited to a certain region or can occur in all regions of the Earth.

Significant changes to climates that last for at least 30 years or longer [2]. This term can also mean changes in mean weather conditions or changes in the distribution of average weather events, for example, the number of extreme weather events that are increasingly or slightly smaller.

Climate change adaptation is an adjustment in natural or man-made systems to respond to actual or predicted climatic or climate influences, in order to control the hazard posed or provide a favorable opportunity. Adaptation can also be defined as natural or human efforts to adjust to reduce the impact of climate change that has or may occur. While climate change mitigation is the things that can be done to reduce greenhouse gases in the atmosphere [2].

### **Community Empowerment**

Community empowerment is a concept of economic development that encompasses social values in which this concept reflects a new, centered, participatory, empowering and sustainable development paradigm [3]. In terms of phasing, empowerment starts from: (1) individual empowerment that includes time, psychological empowerment, and economic empowerment, (2) institutional empowerment, and (3) political empowerment [4]. If it is

associated with the level of empowerment then such a concept described that there are four things that must be seen the level of empowerment of a society that is the level of consciousness and the desire to change (power to), the level of ability to increase the capacity to gain access (power within) level of ability to face the barrier (power over), the level of ability of cooperation and solidarity (power with) [5].

Factors that led to the success and failure of community empowerment consist of internal and external factors. Internal factors include the history of the community itself, the structure and capacity of the organization, resources, and leadership (community leadership). While external factors include the macro political social system where the community is located and the presence or absence of intermediary agencies (intermediary agencies) [6].

### **Climate Village**

Climate Village (ProKlim) is an administrative area consisting of harmonious residents, hamlets or dukuh, village, and other administrative areas where the community has made efforts to adapt and mitigate climate change on an ongoing basis. The Climate Village Program is implemented with the aim of improving understanding on climate

change and its impacts so that all parties are encouraged to implement concrete actions that can strengthen community resilience to climate change and contribute to the efforts to reduce GHG emissions [1]. Broadly speaking, ProKlim consists of climate change adaptation and mitigation which includes some activities that can support the program, among others: Firstly, Climate Change Adaptation Activities consisting of Drought, Flood and Landslide Control; Increased food security; Handling or anticipating sea level rise, rob, sea water intrusion, abrasion, ablation or erosion due to wind, high waves; Climate-related disease control. Secondly, Climate Change Mitigation Activities consisting of Waste Management and solid waste, Treatment and utilization of liquid waste, Using of new energy, renewable and energy conservation, Management of agricultural cultivation, Increase of vegetation cover, Prevention and handling of forest and land fires.

### **Method**

#### **Type of Research**

This research used case study as an approach of the reseach with single case. Case study approach is fit in this study which related to the question (how) and (why) board control from researcher in certain event are bordered.

For example, if the researcher has a little chance to manage a particular object in the research and the focus on contemporary event is differ from historical occurrence [7]. This reseach used descriptive qualitative approach which not containing a numerical orders. The form of qualitative data are direct and indirect interview of goverment officials, villages public figures and the society that involved to the program. The society that live in climate village used as an object of this research. Meanwhile, it is

located in Serut Village, Palbapang districts, Bantul Regency, Yogyakarta Province.

**Data Collecting and Data Sampling Technique**

This research used primary data which retrieved from interview and observation. Interview of twelve correspondent aquired to collect the data, each of them is the representative of villages public figures and citizens, which are:

Table 1. Interview of twelve correspondent aquired to collect the data

NO	CORRESPONDENT	INFORMATION
1	Mr. Rahmad Tobadiyana	Village Chief
2	Mr. Tukiman (RT 07)	Chief of Pusat Pelatihan Pertanian Perdesaan Swadaya (P4S) "Sidodadi".
3	Mr. Sukamto (RT 9),	Chief of Beef Cattle Group "Sidodadi".
4	Mr. Sumadi (RT 4)	Chief of Goat Cattle Group "Unggul 4"
5	Mr. Pulung (RT 5)	Chief of Goat Cattle Group "Unggul 5"
6	Mr. Supartono (RT 2)	Chief of chicken livestock group "Hanggoro Manis"
7	Mr. Fajar Aldikoro (RT 3)	Chief of Fish Cultivation Group "Ulam Jaya"
8	Mrs. Hesti	Administrator of "Asola" Group
9	Mrs. Jumini	Chief of "Asola" Group
10	Mr. Slamet selaku	Chief of "Ngudi Mandiri" Group
11	Mrs. Martiyah	Citizen
12	Mrs. Dilah	Citizen

The result of the interview used to identify the enviromental conservation effort, while the observation technique aims to reconize the enviromental condition that related to adaptation and mitigation of climate change at the place.

Moreover, the researcher used secondary data which retreived from Institutional Data of Bantul Regency, books, publication that related to climate change, ProKlim and community empowerment, and the policy of legislation about

climate change along with Climate Village Program.

This research used Purposive Sampling to collect the data that obtained from a person that involved to the environmental community based conservation (Climate Village Program) in Serut Village.

### Data Analysis Technique

This research used qualitative technical data analysis to narrate or describe information which is found in the research. This analysis was done by comparing the data of the content from the theory or knowledge and used it as reference, so that it can be drawn as a conclusion. Common strategy relying on theoretical proposition. Case study data analysis follows the theoretical proposition which leading into the case of study. The origin objectives and designs are estimated to be based on propositions which further reflect a series of research questions, literature review, and new insights [7].

### DISCUSSION AND RESULT

Community empowerment in Serut Village on Climate Changes Adaptation and Mitigation

There are some efforts of Community empowerment on Climate Changes Adaptation and Mitigation that reflected from Serut's citizen to grow their villages. The effort such as:

- 1. The management of organic agricultural cultivation
- Serut citizen committed to keep their agricultural land for 25 hectare or almost 50% of the village width and turn them into enduring land up to the year of 2030. Since 2007, organic agricultural start to develop in Serut Village by Mr. Rahmad Toba (Village Chief) as a pioneer. Indeed, in 4 December 2007, organic agricultural in Serut Village was received an Organic Farming Certification from Inofice. Besides as cultural heritage, organic agriculture also environmentally friendly. In fact, that the market value of the crop that higher than nonorganic gives more economical assessment. Some of the people community which holding in agriculture formed to gain Serut capacity such as: Farmer Association "Harapan", Barn Community "Harapan Makmur", Women Farmer Community "Harapan Subur", and Training Center for Rural Agriculture (Sidoadi).
- 2. The management of Livestock and Fishery Cultivation.
- Generally, the farmers in Serut Village also raise livestock for cultivation. Besides for their self benefit, the existence of live-

stock also supports organic farming efforts to be applied by Serut residents through the application of organic fertilizer (either liquid or solid) from livestock owner to rice crops. The existence of communal cages for livestock residents such as cows and goats are facilitation the processing of dirt to be used as organic fertilizer. Some communities are formed to accommodate the interests and expertise of Serut residents in the field of livestock and fisheries, including: "Sidodadi" Beef Cattle Group, "Unggul" Goat Cattle Group, chicken livestock group "Hanggoro Manis" and Fish Cultivation Group "Ulam Jaya".

- 3. Litter Management.

- The society in Serut Village has done trash management which separated the control of organic and non-organic litter. Household litter has already processed in each residence by divided them into organic and non-organic litter. The organic litter has processed into fertilizer by Ngudi Mandiri Community which later will be applied to citizen's plant or selling it to the market. Meanwhile, non-organic litter (plastic, cans, and aluminium) has been delivered to Asola Community for being processed as a craft that has economical value. To make more economical benefit, Serut citizen also establish litter bank. A trash which cannot be processed, later will be given to third party through temporary collection point.

- 4. Disaster Response.

- The concept of disaster mitigation in Serut Village is manifested into the design of the area that responds to the threat of natural disasters that are prone to threaten this village. The changes are visible in the design of resident buildings. Before the earthquake disaster many homes are facing north. This causes the evacuation of victims during the earthquake disaster becomes difficult. Currently residents' houses are fully facing the road as part of disaster mitigation efforts. Design changes are also visible in the cattle livestock. If previous cattle stables are near even inside the house, now cattle pens have been collected in one place or commonly called a communal enclosure. Currently, Serut area is equipped with space allocation that used for evacuation activities in the event of a disaster. In addition, it is also supported by the opening of evacuation routes that are equipped with a marker as a sign for delivering evacuation information. Community understanding of what actions to take when disaster happens is now good. Start from the danger sign with Kentongan or modern means of communication such as handy talkies (HT) and mobile phones
- 5. Improving the Quality of Environmental Health.
- The establishment of Posdaya Edelwys with five main functions of religion, education, health, environment and economy. These

five functions are expected to develop into a service and empowerment community, especially at family level in an integrated manner to improve the welfare and quality of life of the people of Serut Village.

- Community empowerment included in Posdaya are programs that support the refreshment of family, religious, cultural, charitable, protection, reproductive, health, education, economic and environmental functions. Strengthening these functions is expected to make every family able to build itself independently, improve the welfare of the family and ready in the face of challenges in the future.
- 6. Greening in open space.
- The commitment of the people of Serut Village will create a green open space is manifested into the construction of corridors of plants on the roadside environment. Crop corridors consisting of vegetables and fruits in addition to making the environment more beautiful, can also build food security and as a source of income for the residents. Fruit crops other than can be consumed can also be sold in raw or processed form.
- 7. Water Resources Management.
- Activities undertaken in efforts to manage water resources in Serut village include flood control with the manufacture of biopore and absorption wells, water-saving movement. Other efforts undertaken to manage water resources in Serut Village is to make Installation of Communal Wastewater Man-

agement. The hope with this communal Wastewater Management is that household wastewater does not directly flow into the waters but is treated first, so it does not pollute the existing water resources.



Figure 1  
Picture of the Serut Village condition after 2006 earthquake

### **Factors Which Affecting Community Empowerment in Serut Village in Climate Change Adaptation and Mitigation**

- 1. Natural Condition.
- The earthquake disaster of 2006 became the turning point for the people of Serut Village to clean up. With emotional attachment and similarity of fate, citizens initiated the "Green Economy Movement, Improve the Quality of the Environment". Community empowerment begins with the development of organic farming that is expected to add value to selling than inorganic farming. The need for fertilizer for agricultural land is synchronized with the development of cattle and goats by communal cage method, so that livestock manure can be easily made into organic fertilizer. In addition to applied to agricultural land, organic fertilizer in the form of solid fertilizer (cage and compost) and liquid fertilizer is also applied to the plants in the yard of the house. The waste problem that is the source of dengue fever and tuberculosis is tackled through community-based management program which can also increase the income of the citizens from the manufacture of handicraft goods from the inorganic residents.
- 2. Local Leadership
- Mr Rahmad Toba as Head of Serut Village is innovative, active, communicative and

adaptive to the issues that are developing not only in the internal village but also external. The concept of Serut village development focuses on environmental hygiene that is actively managing waste by considering 3 (three) aspects of ecology, social and economy. Community empowerment Serut done by strategy approach by the way, lure and ameng-ameng is applying an approach strategy that puts forward the evidence as a trigger to mobilize its citizens, not a promise. Since the leadership of Mr Toba, has formed at least 24 (twenty fours) new groups that play an important role to realize "Serut Village as a village of learning together". With these groups, the process of learning and transfer of knowledge becomes easier because it is no longer from person to person but community to community so more effective and efficient. With the process of learning and transfer of knowledge is still more then the community itself will be more empowered.

- 3. Community Culture and Community self-help
- Community self-help which is the hallmark of Indonesian society is actually implemented by the people of Serut in developing the region. Culture community self-help strengthened by the similarity of circumstances in the community of Serut

Village due to the earthquake disaster 2006. The similarities of this situation that makes awareness of citizens to grow up to rebuild the region. The community took the initiative to build the area after the 2006 earthquake although there has been no assistance from outsiders. This community initiative and awareness will ensure community empowerment rather than waiting for new assistance to move. In addition, the norms and unwritten rules in Serut also play a role in the development of Serut to the village climate among the rules should not burn garbage and not keep the animal goats and cattle in the house also impact to the public's credibility in the development of livestock with communal enclosure in hill country. The people of Serut Village are very obedient to the norms and rules they have agreed upon, even though the sanctions imposed on violators are only social sanctions. The public agrees if the people who violate the rules and rules will be ostracized.

- 4. The Role of Government
- In the development of Serut Village, the government's assistance is apparent through the physical repair of houses and other infrastructure after the 2006 earthquake. In agriculture, the government plays a role in making irrigation channels of agricultural land. In the management of government aid

waste appears on the provision of wagon carts, compost bin, separated garbage for each RT and garbage transport motor. While in the government's softskill increase regularly provide assistance in the form of counseling and training whether it is how to make organic fertilizer, making crafts from waste recycling, etc.

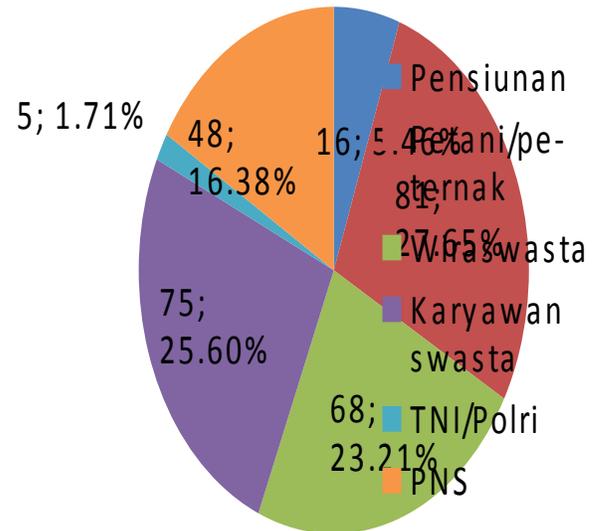


Figure 2. Pensiunan (Pensioner), Petani (Farmer), Peternak (stokbreeder), Wiraswasta (entrepreneur), Karyawan Swasta (private employee), TNI (National army)/ Polri (National police)

Serut Village has given an example of how the community empowerment should be done well, from the previously helpless after the earthquake and then able to rise to achieve the Climate Village. Community empowerment can occur because of failure and hope [8]. Failure due to community structures and beliefs that make infrastructure in Serut Village not adaptive to earthquake disaster. Expectations arise due to the similarities of fate and similarity sees the opportunity that the earthquake disaster is an early milestone for the realization of the development of Serut better in terms of economic, cultural and environmental. A good process of community empowerment is the result of interaction between top-down and bottom-up concepts [8]. Indeed, at the beginning of the reconstruction of Serut after the earthquake, there are various types of assistance from outside parties, both government and private for the development of villages, especially infrastructure. But so many emerging initiatives from the community that show the existence of community empowerment independently.



Figure 3.  
Picture of organic farming certificate in Serut village

Community empowerment in Serut Village not only occurs at the individual level but also occurs on a larger scale ie at the level of group or community. This is reflected in the large number of community organizations formed as a result of the community empowerment process. No less than 24 community organizations are formed and active until now. These societal organizations are formed as a result of equality of interest and awareness that the potential of society will tmbul and grow stronger if contained in a community. In terms of phasing, empowerment starts from: Firstly, individual empowerment that includes time, psychological empowerment and empowerment of economic business, Secondly, institutional empowerment, and Thirdly, political empowerment [9].



Figure 4.  
Picture of Mr Rahmad Toba receiver Climate Village Award for Serut Village from Ministry of Environment the in the Indonesia vice president's palace

Whether we realize it or not, community empowerment in Serut Village will not only have a positive impact on the welfare of the people of Serut Village, but it also has a good impact on the environment. The efforts of citizen in Serut to build the area was directly proportional with criteria of both climate change adaptation and mitigation. ProKlim criteria matrix and Community Efforts Village Serut to the village climate presented in below:

Table 2. ProKlim criteria matrix and Community Efforts Village Serut to the village climate

The Criteria of Climate Village	Serut Village's efforts
<b>Climate change adaptation</b>	
a. Controlling of droughts, floods and landslides	the manufacture of biopore absorption wells, water saving movement, and make Installation of Communal Wastewater Management.
b. Enhancement of food security	The management of organic agricultural, Livestock and Fishery Cultivation
c. Anticipation of rob, abration	None because Serut Village has no coast line and sea water intrusion
d. Disease control because of climate	Improving the Quality of Environmental Health through change effect Posdaya Program.
<b>Climate change mitigation</b>	
a. Litter and waste management	community base litter management and litter bank
b. Renewable energy conversion	None
c. Reboitation	Greening in Open Space
d. Forest and land fires management	None. Because of there is no forest in Serut village

## CONCLUSION

Community empowerment in Serut Village in adaptation and mitigation of climate change occur simultaneously and unconsciously by society. This was triggered by the 2006 earthquake that devastated Serut Village. Awareness to re-rise later became the capital for the start of "Green Economy Movement, Improve the Quality of Environment". Community empowerment is reflected in the various efforts of the people of Village Serut in developing his village, namely: (1) Development of organic farming, (2) Management of farm cultivation with pens communal and fisheries, (3) community-based waste management, (4) greening in green open spaces, (5) disaster response and (6) water resources management. This is what led to the achievement of the Serut Village award as the village of Iklim given by the Ministry of Environment in 2012. Factors affecting the community empowerment process in Serut Village in climate change adaptation and mitigation are; (1) The natural conditions caused by the earthquake in 2006 which resulted in the similarity of fate, (2) Culture of society, norm, and mutual cooperation, (3) Local leader factor, (4) Government

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