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Social Capital in Housing Reconstruction Post Disaster Case of Yogyakarta Post Earthquake

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***Abstract*—**This paper will focus on the concept of social capital for especially housing reconstruction Post Disaster. The context of the study is Indonesia and Yogyakarta Post Earthquake 2006 as a case, but it is expected that the concept can be adopted in general post disaster reconstruction. The discussion will begin by addressing issues on House Reconstruction Post Disaster in Indonesia and Yogyakarta; defining Social Capital as a concept for effective management capacity based on community; Social Capital Post Java Earthquake utilizing *Gotong Royong*—community mutual self-help, and Approach and Strategy towards Community-based Reconstruction.

***Keywords*—**Community empowerment, Gotong Royong, post disaster, reconstruction, social capital, Yogyakarta-Indonesia.

I. Issues on House Reconstruction Post Disaster

INDONESIA is particularly prone to earthquakes, as it is part of the Pacific Ring of Fire. This ring is where a number of tectonic plates come together and push against each other. Jogjakarta's earthquake especially has been influenced by the movement of the Indo-Australia plate and the Eurasia plate [1]. Earthquake events around Jogjakarta were documented in 1867 (372 houses were reported damaged and five people died), 1908, 1943 (213 deaths) and the latest earthquake on May 27, 2006 (5716 deaths). The May 2006 earthquake which killed 5716 people was not an exception. Earthquake events had already rocked the region over decades past. Historical records indicate that in 1867, a major earthquake caused damage to 372 houses and the deaths of five people; in 194,3 at least 213 people were killed and 2,069 injured as a result of a tectonic earthquake [2]. Merapi is also considered one of the most dangerous volcanoes in the Ring of Fire. More than 60 people were killed when Merapi last erupted in 1994, while 1,300 people died in a 1930 eruption. Lessons learned from prior experiences of both disasters—Jogjakarta's earthquake and Merapi's eruption helps to define profiles of risk related to people and the region in the face of particular potential sources of loss or damage.

The degree of loss or damage indicates the vulnerability of the region. Conventionally, risk is expressed by the notation "Risk = Hazards x Vulnerability" [3]. The vulnerability level, in term of victims' death and economic loss and damage can be compared to the magnitude of the event of the earthquake. Logically, the bigger the earthquake is, the higher the vulnerability level. However, the Jogjakarta tectonic earthquake at a scale of 5.9 resulted in extensive economic losses over a widespread area. The human casualties of the Jogjakarta earthquake reached 3% of those of the Aceh disaster in December 2004 that resulted in the deaths of at least 165,700 people. Although the death toll in the Yogyakarta earthquake was much less than the disaster in Aceh, the post-disaster economic losses caused by Yogyakarta are almost equal to the amount of 74% (US$3.314 million) of the economic losses resulting from Aceh of around US$4.5 million (Consultative Group of Indonesia, 2006). The calculation of economic losses after the earthquake in Yogyakarta is based on the home as a workplace, especially family-run small to medium-sized enterprises (SME). Almost every house in the disaster affected area of the Yogyakarta earthquake serves as an SME. Many homes serving as SMEs suffered severe damage and collapsed in the Java earthquake in 2006. Those collapsed houses can generally be categorized as a non-engineered construction/building. The non-engineered house construction was built with low cost material and techniques, and by unskilled labor or without intervention of qualified engineers and architects [30]. Therefore, better housing construction post-earthquake is very important, not only for protecting lives, but also to preserve economic productivity.

It is believed that the Reconstruction in Yogyakarta and Central Java is the largest, fastest, and most efficient post-disaster housing program based on community participation. Mr. Budiono (the Coordinating Minister of Economy) mentioned that, "A year after the disaster, 90% of earthquake survivors were living in permanent reconstructed houses while only 10% remained living in temporary shelters". He highlighted community participation by explaining that the absorption of the prepared government budget for the reconstruction of 282,000 homes was 55% of US$5.4 trillion within six months. Nevertheless, it has been covered 62% progress of physical construction in the field [4]. The government reconstruction program post-earthquake in Java was implemented faster than the reconstruction post-tsunami in Aceh and Nias. It was supported not only by government, but also by local families and communities [5].

One of the key successes of the Java Post Disaster Reconstruction was a synergetic cooperation among the government with its supported policy post-disaster, the various institutions, national and international donors with their concrete plans and actions to meet the gap government-community needs, and the strong community participation with what is called in Indonesian, '*modal sosial*' - social capital.

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II. Defining the Concept of Social Capital

Although *modal sosial* has a long tradition embedded in the community, to understand the concept theoretically, one should refer the discourse of "social capital" from many sources.

The word "social" is primarily related to human society rather than the individual; it refers to how people get together or even live together in a group or a community by taking into account others' behaviors. The word 'capital' also can mean first-rate, or valuable, or primary important assets available for further production which are capable of generating income. However, defining the phrase "social capital" is a crucial matter. It is not just a definition but a concept which in social science is used in public discourse. Social Capital as a concept has been defined in various studies and references. Although the following definitions could not represent the degree of "crucial discourses" on "what social capital is," these definitions could explain the complementary aspects to structure the concept:

> The term "social capital" is a way of conceptualizing the intangible resources of community, shared values and trust upon which we draw in daily life [6].
>
> "Social capital" consists of such concepts as social networks, social contacts, social cohesion, social interaction and solidarity [7].
>
> "Social capital" is a useful concept that seeks to explain the characteristics required for effective and egalitarian community-based management capacity. At the same time technology is increasingly part of people's daily interactions and social relationships [8].
>
> "Social capital" is about trust, associations, and norms of reciprocity among groups and individuals [9].
>
> Gilchrist argues that all these types of "social capital" are needed to produce the well connected community. Socially 'rich' people those with relationships that 'bond', 'bridge' and 'link' [10].
>
> Reviewing the literature, therefore, Gilchrist (2004, 4) finds social capital broadly defined as 'a collective asset made up of social networks based on shared norms and trust and mutuality [10] in [11].

Discussing the definition of social capital as mentioned above can vary from one field of study to another; some of the basic understandings of the definition can be mentioned as follows:

A. Network: A Basic Valuable Asset for Social Cohesion

In defining social capital, we should start from peoples' need for interaction. Social capital consists of personal connections and interpersonal interaction [6]. The connection or interaction can be defined as "the structural dimension of social capital" that refers to the extent to which people are engaged in all kinds of informal and formal networks that may connect them to their neighborhood and the wider world [12]. Informal networks can be mentioned such as family, relatives, friends, and neighbors. Formal networks usually work through more formally based connections, such as school class, contractual based workplace, membership in professional associations, membership in research consortiums, or jointly owned business cooperation. However, in a formal network one can develop further an informal network, such as classmates and co-workers. Even in the virtual world, there is an interest to maintain an informal network through social media (an e-mail group, blogs, Facebook, Whatsapp, Line, etc.). Thus, beyond the existing network in the neighborhood, social networks are city-wide, national, international and increasingly virtual [13]. The more the network is embedded in the neighborhood the stronger people are attached to place and its physical identity. The more the network is characterized by the virtual connection, the more distant people are from place identity and the more dependent people are on media and technology.

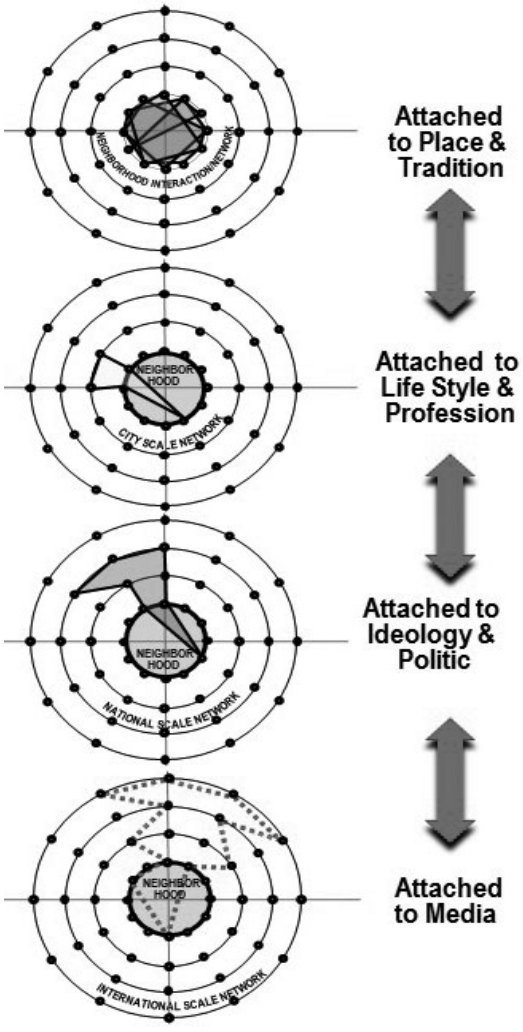

Fig. 1 The Social Network

Without the personal connection or the social network, people could not start to cooperate and do effective collective action. Field emphasized that the central idea of social capital is on social networks as a valuable asset [6]. He also raised the role of "network" to provide a basis for social cohesion

because it enables people to cooperate with one another—and just with people they know directly—for mutual advantage. [6] The social network can be simplified by the type of people connections or attached to the place, to life style and profession, to ideology and to media (see Fig. 1).

B. Social Cohesion through Trust

It is true that a network can be a basis of social cohesion which enables people to work together. But a network alone cannot guarantee the tightness of the bonds of society. 'Social cohesion' is generally recognized as necessary to a functioning social order [14]. Social cohesion can be defined as a state, a condition, or a process to develop a community in an integrated way to share and facilitate their participation equally in their communal life. The crux of the concept of a cohesive society is 'hangs together' or the 'glue that holds societies together' or 'bonding within community' [9], [10], [13], [14]. Furthermore, Gilchrist points out the strength of mutual commitments which usually stem from the "similarity" that belongs to people who were bonded [10].

From the point of view of time, Social Cohesion can be born and strengthened by similar past life sentiments (such as same village of origin, same ethnicity, similar faith and beliefs) or by similar present life style, (such as professional association, hobby's membership, "gossip-based" gathering) or by similar future life ambitions (such as political and institutional affiliations). Social Cohesion can be strengthened by social service involvement, recreational and cultural activities' participation; economic and business partnership relations, political forums, and religious and spiritual gatherings. Although Social Cohesion mostly works with "horizontal" relationships (such as family, friends, classmates, co-workers, business partners), but it needs to be supplemented by 'vertical' relationships (with those with a different 'knowledge' and other resources, including government) [11].

Almost all studies related to social relationship begin with a fundamental statement about 'trust'. [15] 'Trust' can be both a cause and a consequence of social interaction or network. On the one hand, existing trust may prompt the formation or further development of networks. On the other, where networks are sustained and people find that they are developing some common understandings and values so that they can rely upon each other, trust emerges [11]. In other words to explain trust as "the causal factor", it can be shown from a process of building trusting relationships, mutual understanding and shared actions that bring together individuals, communities and institutions [16] in [9]. Meanwhile, trust as "the consequential factor" can also be described from social interaction and networks, which gives rise to trust and makes it possible for people to share and exchange information, and then as a result, it builds a capacity for collective action [17]. Thus, trust in social interactions or relationships will influence the degree of social cohesion. The utilization of social capital starts with the existence of this social trust. When a community is bonded, glued or hanging together dependently through social trust, they do not only have a capacity to work cooperatively, but also disruptive behaviors or conflicts among them can be minimized.

C. Social Cooperation to Achieve Mutual Goals

The concept of social capital is a means of explaining how people manage to cooperate [6]. The essential spirit for cooperative behavior is trust [15]. Trust is built from social cohesion or bonded by social interaction, which provides a framework for sharing information, coordinating activities, and making collective decisions [14], as well as to have easy resolution of collective action problems [18]. After discussing 'social interaction' as a basic valuable asset for 'social cohesion', where social trust becomes the important glue to bond society together, we come to the benefit of having good social cohesion. People's togetherness improves people's cohesiveness, and then the cohesiveness improves the sense of people collectiveness which gives a benefit to and helps people for cooperative actions.

One of the "fathers" of Social Capital, Putnam [7], presumes that: "the more people connect with each other, the more they will trust each other and the better off they will be individually and collectively, because social capital has a strong collective aspect". The question is why do people want to cooperate or work collectively? What is the mutual goal of people? A more common goal, people use their connections to cooperate and help themselves to improve their lives [19], [6]. There is growing evidence that social capital can have an impact on development outcomes, including growth, equity, and poverty alleviation [20].

Social capital can facilitate coordinated action, so that it increases the efficiency and productivity of a group [6], [8], [14], [21]. The significant role of social capital is that the group's productivity is greater than the sum of that of the individual members [17]. People act rationally to maximize their benefits and minimize their costs when they choose alternative courses of action so as to get the best outcomes according to their own preferences [11]. Thus, the main reason why people work cooperatively through their networks and connections is because people can coordinate resources, do collective actions, and improve their efficiency and productivity to achieve their mutual goals.

III. The Social Capital Post Java Earthquake

The local understanding of the term "social capital" or *modal sosial*, according to Idham Samawi—the *bupati*, a regent of the most devastated area of Java Earthquake 2006—is a community ability to achieve a mutual goal based on the spirit of togetherness, religious values, and local wisdom [22]. He mentioned that customary activities such as helping people who faced problems and difficulties, *bersih dusun*—literally means "clean village"—or other work done together for the betterment of their own environment do not only show the strength of social ties but also indicates the strength of tolerance within the community. At the time as the Java earthquake, in 2006, Samawi also illustrated that the evidence of social capital's existence has been colored and recorded by various witnesses and disseminated through mass media,

books, photos, and even passed through "*mulut ke mulut*" (word of mouth) how togetherness is formed. People themselves proved the existence of social capital by forming spontaneous *dapur umum* (public kitchen), *pos ronda bersama* (a community security service), setting up a *posko* (a community aid center) or doing other direct voluntary actions with the community outside the disaster area hand in hand, such as helping disaster survivors to clean the ruins of damaged houses and put possible recycled materials in order and ready to be used.

In a more direct explanation of social capital in the reconstruction process, which many people have mentioned, is a strong community tradition of what is called *gotong royong*, a spirit to do mutual cooperation to cope with community living problems. The question is how this modal social or gotong royong became a key success of the reconstruction process especially in providing shelter or housing after the disaster. This study tries to relate social capital and the physical reconstruction through various typologies of shelter and house post-earthquake.

Social capital is a concept that is useful to describe the effectiveness of management capacity undertaken by a community [8]. There is evidence that a community that can be characterized by decentralized decision making through social networks using trusting and reciprocal normative behavior leads to a more effective disaster response [8]. People's reaction towards disaster basically can explain how social capital existed in the community. How intensively did the interaction among the community components occur? How were the roles of various actors, locally, nationally, and internationally played to cope with the emergency period and reconstruction phase including the transitional period post disaster?

One of the types of social capital that is believed to exist in Indonesia is *Gotong Royong*. The words "*gotong royong*" were originally from Javanese or have a Javanese nuance. The word "*gotong*" literally means "lift-up" and "*royong*" means "together" [23]. *Gotong Royong* can be meant as community mutual self-help and cooperation, from open discussion among all representatives of a community to have consensus known as *musyawarah* and *mufakat* [24], to more physically involved community services called *kerja bakti* to work together dealing with improvement for a better environment. The *gotong-royong* concept of social capital has existed in various places and across various ethnicities—at the neighborhood scale from the smallest units such as *Rukun Tetangga,* to village levels or even the city level. Therefore, the government has set *gotong royong* as the National character. The democracy of *gotong royong* has met true democracy in Indonesia [24]; thus, all points of view within the community, institutions and government organization are heard in the decision-making process.

The practices of *gotong royong* in the daily life of the community—such as coming together to clean up the house yard/village/environment or streets, can be taken as evidence of the existence of this principle. Practices of post-earthquake community activities that can be understood as evidence of *gotong royong* as social capital for post-disaster can be mentioned such as:

- Community Self-Coordination After Disaster, by forming a *Posko* (a spontaneous community center for aid), support, doing *gotong royong* to clean ruins and volunteer, by empowering the community network to gain support through the role of *Rukun Tetangga/Rukun Warga* (smallest unit of neighborhood), etc. [25].
- The Practice of Government Policy which is pro-community, such as developing community based reconstruction using community groups known as "*pokmas*" (*Kelompok Masyarakat*) supported by facilitators.
- The Roles of various components of society, such as the role of NGOs and donors, the role of international humanitarian agencies/countries, the role of academia, the role of the media, and the self-reliance of the community in coping with the need of immediate responses with a shortage of resources and limited time [26].

IV. Approach and Strategy towards Community Based Reconstruction

The fact that the Post-Earthquake House Reconstruction in Java was one of the fastest and well managed reconstructions can be judged by its achievement with regard to the number of houses built within less than one year [27]. The community-based housing reconstruction with Yogyakarta Social Capital is believed to be the key factor. In the wake of this disaster, the Government of Indonesia demonstrated fast action both in terms of its immediate reaction and its policy response. The UNDP reported government support of an estimated US$600 million into the housing program post-earthquake, and recognized it as one of the fastest and most efficient post-disaster housing program ever [28].

The issue of community empowerment is always connected to many programs of disaster relief activities including the housing reconstruction program. Since the Jogjakarta local government, both at the provincial and district levels (*kabupaten*) strongly recommended community based reconstruction, Universitas Gadjah Mada, together with many other institutions have promoted and taken into account three important aspects for "institutionalizing" the process of community empowerment known as "*pendampingan*" in housing reconstruction. The *pendampingan* empowerment in Yogyakarta, known as "pokmas" (stand for: kelom*pok mas*yarakat), means "group community" empowerment.

The schemes of "pokmas", as a result of the strong social capital of Yogyakarta, consist of three aspects: Support or Funding, Control, and Community Facilitators [29]. Firstly, funding makes it possible to support empowering the community to rehabilitate and reconstruct housing and infrastructure better and to fulfill the technical aspects. Secondly, controls that guarantee the housing and infrastructure reconstruction are carried out to earthquake resistance structure requirements through regulations and controls on building and infrastructure code, building guidelines (leaflet, poster, etc), training, and a mechanism for

"fast building permission procedure" (proposed "IMB Cepat"). Thirdly, if the community still faces difficulties to accomplish the requirements, they need a facilitator or a sort of community consultant. The facilitator, or so-called "pendamping", should aim to empower the community to have better housing, environment and infrastructure suitable by: (a) design (socially and culturally sensitive); (b) construction (earthquake resistance and technical aspects); (c) legal (ownership and building permission); (d) funding (access to funds). The above framework of the community empowerment housing reconstruction program is outlined in Fig. 2.

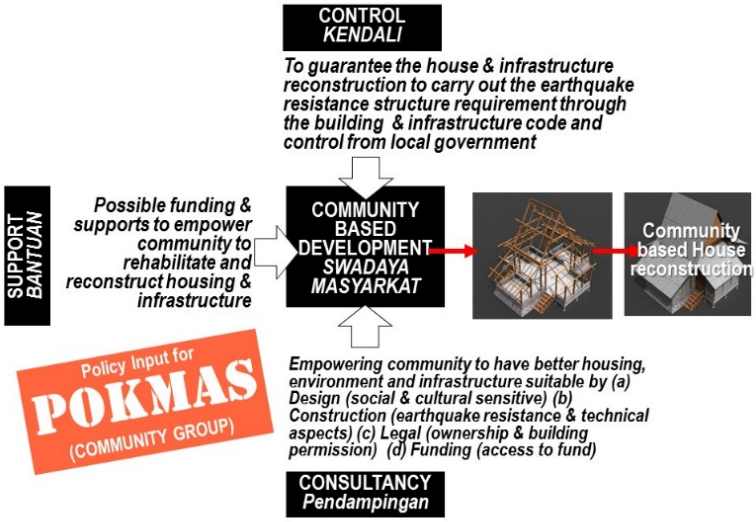

Fig. 2 Important Aspect of Community Based House Reconstruction Post Earthquake

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