Social Capital of Parak and Rimbo Management in West Sumatera

Ferdinal Asmin+, Dudung Darusman, Iin Ichwandi, Didik Suharjito

+Forestry Office of West Sumatera Province, Jl. Raden Saleh No 8A, Padang, Indonesia 25114

Department of Forest Management, Faculty of Forestry, Bogor Agricultural University, Academic Ring Road, Campus IPB Dramaga, Bogor, Indonesia 16680

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Abstract

The topic of social capital has been gaining many concerns from social researchers throughout the world, especially in collective action perspective. This study aimed to describe the organizational activities of the local forest management practices (parak and rimbo) as a social capital in collective action perspective. The research method is a case study of Koto Malintang and Simancuang people in West Sumatera. Collecting data was conducted by unstructured interviews, field observations, and document studies. Data analysis uses categorization and coding, document analysis, and historical analysis. Our findings were described in the context of decision making, resources management and mobilization, communication, and conflict resolution. Collective action for decision making involved the acquisition, allocation, and distribution mechanisms to divide land and forest product among local people. In the context of resources management and mobilization, they applied kinship relations among families, sub-clans, and clans to manage their resources. They then communicated their needs in any formal and informal meetings. When a conflict occurred in related to forest utilization, they applied an adat court to make a win-win solution. Nevertheless, the challenges of collective action are still about the resources availability, benefit equity, and external supports.

Keywords: communication, conflict resolution, decision making, resources management and mobilization

*Correspondence author; email: ferdinalasmin76@yahoo.com, ph.: +62-751-7052725

Introduction

Understanding the community characteristics in natural resources management (including forest) has been interesting many researchers, especially in related to the collective action (Vanni 2014). Collective action perspective is one of the interesting focus of social capital studies (Ahn & Ostrom 2007). The natural resources management involved mutual benefit collective action in a social structure (Uphoff 2000; Uphoff & Wijayaratna 2000). The actions related to social norms of the local community (Ostrom 2000; Adger 2003; van Laerhoven 2010; Narloch et al. 2012). Therefore, collective action perspective has been studied in the context of reward system (Narloch et al. 2012), institutional intervention (Barnes & van Laerhoven 2015), community-based forestry (Gautam & Shivakoti 2005), natural resources conservation (Agrawal & Gibson 1999), and local monitoring system (Hartanto et al. 2002).

Many scientists have suggested that it is important to know enabling factors of a collective action. Agrawal (2003) proposed some factors based on his analysis of the previous studies which were conducted by Ostrom (1990), Wade (1994), and Baland and Platteau (1999). These factors were formulated in four categories, i.e. resource characteristics, group characteristics, institutional arrangement, and external environment. The recent studies then categorized the factor into functional and durability indicators of collective action, as studied by Barnes and van Laerhoven (2013) and Barnes and van Laerhoven (2015). Nevertheless, some challenges of collective action study are still needed to be addressed, especially its construction for sustainable forest management.

This research described a different perspective of collection action in the context of social capital which differs from the previous studies. The collective action was observed from organizational activities of Minangkabau communities in parak and rimbo management. Parak is a land which was cultivated by agroforestry system and rimbo is forested land which was reserved or protected to secure the agricultural land and settlement area (Michon et al. 1986; Martial et al. 2012; Asmin et al. 2016; Asmin et al. 2017). Parak and rimbo are the important spatial entities of Minangkabau communities which could not be separated one to another. Spatial relations between parak and rimbo as well as other spatial entities need to be considered in community forestry studies, as suggested by Charnley and Poe (2007). The social capital in collective action perspective has not discussed in the previous studies on parak and rimbo management.

The aim of this research was to describe any organizational activities of parak and rimbo management in
Koto Malintang and Simancuang people. Both people are part of Minangkabau people in West Sumatera Province. Koto Malintang people is regarded as one of the original areas of Minangkabau people (generally called with luak), meanwhile Simancuang people is regarded as one of expansion area of Minangkabau people (generally called with rantau). This research was not aimed to compare both people. Observed organizational activities were considered as a form of social capital in collective action perspective according to Uphoff (1986; 2000). Furthermore, social capital in collective action perspective is defined as a set of resources to manage all activities of parak and rimbo management which were implemented in form of organized actions to achieve sustainable forest management, including decision-making, resources management and mobilization, communication, and conflict resolution.

Methods
The research approach is a qualitative research with case study method. Observed case is local forest management, namely parak and rimbo, in Koto Malintang and Simancuang communities. Both communities represented luak and rantau area of Minangkabau people. This research referred to meanings, concepts, definitions, characteristics, metaphors, symbols, and descriptions (Berg 2001), as well as characterized an inductive process, interpretive orientation, and constructivism (Bryman 2004). The meaning of parak and rimbo management was conducted by giving an empathy, intentionality, and interpretation on subject statement and action, also known as hermeneutics (Suharjito 2014).

Collecting data was through unstructured interviews, field observations, and document studies. Interviews were conducted with 22 informants which are village government officers, adat leaders, local community members, and local facilitators. Field observations aimed to understand the local community behavior which was written in field notes. Meanwhile, document studies included any related documents, such as local history documents, statistic reports, photos, maps, adat rhyme, and other reports. Data analysis uses categorization and coding, document analysis, and historical analysis which completed each other. This study was conducted from September 2015 to August 2016. Our discussion begun with literature review about the spatial concept of parak and rimbo according to Minangkabau culture. Hereinafter, we elaborated the organizational activities according to Uphoff (1986; 2000), i.e. decision-making, resources management and mobilization, communication, and conflict resolution.

Results and Discussion
The Minangkabau's concept of parak and rimbo The forest management of Minangkabau community has a distinctive way and related to other agricultural cultivation activities, especially rice field (Michon et al. 1986). The Minangkabau community recognized the spatial pattern of agricultural and forestry land as a part of their village (nagari). As explained by Navis (2015), a nagari consists of babalai bamusajik (have meeting room and mosque), basuku banagari (have clans and village), bakorong bakampuung (have sub-villages), bahuma babendang (have communication mechanism), balabuah batapian (have boundaries), basahaw baladang (have wetland and dryland), bahalaman hapamedaman (have outdoors), and bapandam kapusuaro (have cemetery). Furthermore, a nagari is recognized as an autonomous area of Minangkabau community (Oki 1977) because nagari:
1 has a consistent socio-cultural system,
2 has political power and justice institution, and
3 has an independent economic base.

Nagari lands have been recognized in three categories which were developed before the colonial era (Oki 1977). The first is uncultivated land, generally forestland or called with rimbo. This land can be clan land or reserve land for nagari. The utilization rights of this land are obtained according to clan leader (panghulu) permit, meanwhile, their inheritances are given according to the mother family descendant (matrilineal). Rimbo can be protected strictly (as rimbo larangan) or reserved for next agricultural land and settlement (as rimbo cadangan). The second is cultivated

<table>
<thead>
<tr>
<th>Parak</th>
<th>Rimbo</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Also termed as dryland crops (ladang), palak, and garden which are the converted forestland for dryland cultivation (Oki 1977; von Benda-Beckmann 1979; Colfer et al. 1988; Otsuka 2000).</td>
<td>- Also termed as balukau and imbo (Colfer et al. 1988).</td>
</tr>
<tr>
<td>- Be mixed with other commercial crops, such as cinnamon, rubber, coffee, and other fruit trees (Michon et al. 1986; Colfer et al. 1988; Otsuka 2000; Otsuka 2009; Martial et al. 2012).</td>
<td>- Is a jungle and uncultivated forest land (Oki 1977; von Benda-Beckmann 1979).</td>
</tr>
<tr>
<td>- Be known as agroforestry land (Michon et al. 1986; Colfer et al. 1988; Otsuka et al. 2001; Otsuka 2009; Martial et al. 2012).</td>
<td>- Vegetation cover is nature forest or primary and secondary forest (Michon et al. 1986; Colfer et al. 1988; Otsuka et al. 2001; Otsuka 2009).</td>
</tr>
<tr>
<td>- The property rights are arranged according to family, sub-clan, and clan rights by matrilineal system and islamic law (Oki 1977; von Benda-Beckmann 1979; Martial et al. 2012).</td>
<td>- The property rights are arranged according to sub-clan, clan, and village (nagari) rights (Oki 1977; von Benda-Beckmann 1979).</td>
</tr>
<tr>
<td>- As buffer zones between settlement and rimbo (Michon et al. 1986).</td>
<td>- As a source for agricultural lands, including parak (Oki 1977; von Benda-Beckmann 1979).</td>
</tr>
<tr>
<td>- According to Indonesian Forestry Act, some lands were appointed as state forest.</td>
<td>- According to Indonesian Forestry Act, almost all lands were appointed as state forest.</td>
</tr>
</tbody>
</table>
land but only cultivated once and then abandoned. This land should be returned to nagari and become a communal land which was regulated as the first category. The third is cultivated land, including rice field, parak (agroforestry land), and other drylands. The utilization and inheritance regulation generally followed the regulation of the first and second category because the lands were considered as harato pusako tinggi (high inheritance). But, some lands were also considered as harato pusako randah (low inheritance) which can be inherited according to family regulation (generally follow the Islamic law).

In the previous research to Koto Malintang and Simancuang communities, we have proved the concept of parak and rimbo as a local practice based on local ecological knowledge and traditional ecological knowledge (Asmin et al. 2016; 2017). Parak and rimbo are important spaces for the communities in their territory. We compared parak and rimbo in the contexts of terminology, vegetation cover, property rights, and forest status as described in Table 1. It is also refers to some studies on Minangkabau community. Based on Table 1 and the definition of community based forest management (CBFM) according to Wiersum (2004), parak and rimbo are forms of local governed forest management of Minangkabau communities in West Sumatera by managing the land in their territory or in state forest for protection, conservation, and production interests. Minangkabau communities believed that the jungles are belonging to a king, cultivable lands are belonging to panghulu, and cultivated lands are belonging to family members (von Benda-Beckmann 1979).

Minangkabau communities categorized forested land into three categories, i.e. prohibited forest, reserved forest, and production forest. These categories were also proved in previous research, such as Colfer et al. (1988), Martial et al. (2012), Hamzah et al. (2015). A similar concept was developed by other communities in Indonesia, like Baduy (Ichwandi & Shinohara 2007), Dayak Kenyah (Samsodin et al. 2010), Ammatoa (Husain & Kinashi 2010), and Rumahkay (Oherella et al. 2011). The difference between Minangkabau communities and other communities is about land property rights where Minangkabau communities apply the matrilineal system.

**Decision-making** Parak and rimbo management is a result of local decision-making which was taken and implemented over generations by Koto Malintang and Simancuang people. Decision-making process is the main characteristic of planning (Uphoff 1986). Observation to the process could describe how and why a community plan parak and rimbo. The process involved any activities in related to the acquisition, allocation, and distribution of parak and rimbo. Decision-making process of Koto Malintang and Simancuang communities can be explained as illustrated in Table 2. Three ways or processes of decision-making are (1) acquisition is a way to access the natural resources, (2) allocation is a way to provides the resources, and (3) distribution is a way to implement the allocation schemes. Decision-making objects concerned land and product of parak and rimbo management.

Forest lands like parak and rimbo are common-pool resources (CPRs) for Koto Malintang and Simancuang people. Refer to Ostrom (2005), the characteristic of CPRs is low excludability and high substractability. Rimbo was managed over generations as a received inheritance from ancestors (warih nan bajawek pusako nan ditarimo). Part of rimbo was cultivated as parak and another part was reserved for the next generation. Parak is forested land which was converted and cultivated by the mixture of agriculture and forestry crops. For Koto Malintang people, allocation of parak and rimbo is ruled in accordance with sub-clan or clan property rights. Consequently, divisibility and transferability are also in accordance with sub-clan or clan through applying the matrilineal system. Meanwhile, for Simancuang people, rimbo were appointed as communal land (ulayat) in their territory. Consequently, acquisition, allocation, and distribution were ruled by a local leader (in this case entrusted to Katik Jalaluddin Lelo Dirajo) and local representatives which have roles as community leaders (niniai mamak).

Any decision about a land has been strengthened by the clarity of land boundary among families, sub-clans, or clans. Our informants generally termed their land boundaries with

### Table 2 Decision making in related to parak and rimbo management

<table>
<thead>
<tr>
<th>Types</th>
<th>Objects</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>Land</td>
<td>There are three ways to obtain access, through (1) inherited by ancestors according to family, sub-clan, or clan, (2) become part of sub-clan or clan members (generally called asmalakok) after getting approval of panghulu and niniai mamak, and (3) family initiative to clear a new land</td>
</tr>
<tr>
<td>Product</td>
<td></td>
<td>There are three ways to harvesting, through (1) harvested self-cultivated crops directly, (2) harvested a product in rotation corresponded to family agreement (generally for existing crops and inherited by their ancestors), (3) harvested a product in a collective harvesting tradition, like balanggan in Koto Malintang when all people can harvest durian fruits within the specified time.</td>
</tr>
<tr>
<td>Allocation</td>
<td>Land</td>
<td>There are two ways to allocate, through (1) family, sub-clan, or clan relations, and (2) village asset.</td>
</tr>
<tr>
<td>Product</td>
<td></td>
<td>According to family decision which considered kinship relations, product diversity, and market opportunity.</td>
</tr>
<tr>
<td>Distribution</td>
<td>Land</td>
<td>There are three ways to distribute, through (1) matrilineal system, (2) Islamic law, and (3) collective permit from sub-clan or clan leaders and village head.</td>
</tr>
<tr>
<td>Product</td>
<td></td>
<td>According to each family, sub-clan, or clan decisions</td>
</tr>
</tbody>
</table>
“parak has a border and rimbo has a big tree (parak babintalak jo rimbo baanjulai)”. For parak, the boundaries were delineated by laying the stones in a row, planting a specific plant like puding (Codiaeum variegatum) and pinang (Areca catechu), or using natural borders (like river and hillside). For rimbo, the boundaries were known by using natural borders or a big tree. All parak and rimbo in Koto Malintang and Simancuang distributed in accordance with family, sub-clan, or clan relations. The extent of parak and rimbo was changed over time caused by people decisions to expand their agricultural land and settlement. In Koto Malintang, the expansion of socio-economic activities including agriculture and housing was directing to the South at their reserved forest. In Simancuang, the expansion was directed to the East. Meanwhile, the prohibited forest is still protected to ensure the water availability for their rice field and house.

The decision about a product differs from about a land. Any products from parak and rimbo could be acquired after getting a collective permit from family, sub-clan, or clan leaders, especially for timber and fruit. Interested way to acquire a product from parak developed in Koto Malintang with their balangge tradition which is a tradition for the collective benefit of durian fruits. But, our informants said that the product of self-cultivated crops is generally harvested by himself and the product of cultivated crops from their ancestors should be harvested in rotation among family members, even sub-clan or clan members. Michon et al. (1986) and Martial et al. (2012) also have proved that the acquisition of a product from parak considered who cultivate a crop and when a crop is cultivated. Meanwhile, the allocation and distribution of a product are generally made by each family.

Based on other studies about other local/indigenous people in Indonesia, decision-making about forest resources management also related to the acquisition, allocation, and distribution mechanisms. There are different ways to take a decision. Baduy, Dayak Kenyah, and Ammatoa people tended to enforce a sacred mechanism on given land and product (Ichwandi & Shinohara 2007; Chen et al. 2010; Hussain & Kinashi 2010; Samsoedin et al. 2010). Meanwhile, Minangkabau people tended to enforce a rules-based mechanism. This mechanism is likely similar way to Rumahkay people (Ohorella et al. 2011; Salamesssy et al. 2012). But overall, acquisition, allocation, and distribution mechanism could reveal a goal attainment of all local communities in their social system (Parsons 1991; Uphoff 2000).

Resources management and mobilization Uphoff (1986) said that any decision will be implemented by specific management and mobilization. In the forest resources management, a local community is generally managing and mobilizing any resources like funding, labor, material, information, and other inputs. The resources management and mobilization could be defined as any adaptation processes running within the social system (Parsons 1991; Uphoff 2000).

The resources mobilization in form of funding and labor has occurred when Simancuang people decided to clear a forest land for a new agricultural land in 1974 (Asmin et al. 2016). They agreed to give a contribution fee and establish a farmer group for mobilizing family members. After the 1990s, they have developed into a new settlement. Our informants in Koto Malintang also said that the establishment of a new settlement was generally begun with the clearing of forestland for a new agricultural land. They then called it as taratat. In Minangkabau proverbs (Rangkoto 1982), they are generally recognizing “from taratat to sub-village, from sub-village to village, and from village to nagari”. The base of mobilization is kinship relations among families, sub-clans, or clans. Consequently, material and information sharing streamed into kinship relations. Based on our observations and informant interviews, Simancuang people came from the same area, i.e. Muaro Labuh Village. Meanwhile in Koto Malintang, the people limited into four clans. Three clans which came later could join into one of four clans (Asmin et al. 2017), and this way is a form of malakok (Ibrahim 1979).

Koto Malintang and Simancuang people applied adat system as a management instrument for managing their forest resources. Our informants said that parak and rimbo have been managed according to their ancestor’s ways and mandates (warinh nan bajawek jo pusako nan ditarimo). They believed that their ancestors have provided a guide to manage the forest resources from generation to generation. Parak and rimbo management also developed in the relation of adat and nagari government. There is a partnership relation between adat leaders (painghulu and miniat mamak) and village leaders (wali nagari and wali jorong). There is no a special institution for managing the parak and rimbo in Koto Malintang. The management has been developed in accordance with kinship relation. Differ from Koto Malintang people, Simancuang people began to recognize a special institution for managing their forest resources (LPHN) after they got a governmental permit to manage their village forest (HPHN) in 2012 (Asmin 2015). But, this institution was always considering the roles of adat leaders.

Based on our interviews and field observations, there are four enabling factors to the resources management and mobilization, i.e. (1) the community member is limited to kinship relation, (2) there is an interdependence relation among families, sub-clans, and clans, (3) the roles of local leaders, and (4) the strength of community cultures and identities. The functional framework is in accordance with “use adat and provides the method (adat dipakai limbago dituang)”. For Minangkabau people (Rangkoto 1982), they have recognized four concepts of adat, i.e. adat from God (adat nan sabana adat), adat from ancestors (adat istiadat), adat from local leaders (adat nan diadatkan), and adat from other cultures (adat nan taradat). For ensuring their collectiveness, they also developed a set of rules-in-use as described in Table 3.

Local/indigenous people are generally managing and mobilizing their resources in accordance with kinship relation. This relation could develop any collective activities without transaction cost, ensure the benefit equity among community members, and defend their identity in forest resources management. The research findings of this management and mobilization are the similar way to other local/indigenous people in Indonesia, like Baduy, Dayak
Table 3 Rules-in-use of resources management and mobilization

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rules is simple and easy to understand</td>
<td>Sourced from Minangkabau proverbs which are transmitted over generations into a behavior provision, contained philosophical teachings of natural environment (cupak usali) and agreements from local leaders (cupak biutan)</td>
</tr>
<tr>
<td>Locally devised rules</td>
<td>Regarded as rules in their territory (adat salingka nagari), consist of adat nan sabana adat, adat istiadat, adat nan diadatkan, and adat nan taradat</td>
</tr>
<tr>
<td>Easy in monitoring</td>
<td>Begun from family level (the roles of mamak and parents), sub-clan and clan level (the roles of panghulu), to village level (the roles of panghulu and wali nagari)</td>
</tr>
<tr>
<td>Law enforcement</td>
<td>Panghulu and niniak mamak are generally enforcing adat law for any violations, but they also recognized state law fora crime</td>
</tr>
<tr>
<td>Graduated sanctions</td>
<td>Sanction with considering a reason (the violator should apologize and give a compensation), sanction with considering a matter (the violator should pay a fine material such as money and livestock), and sanction with considering a body (the violator will be deported from a community)</td>
</tr>
<tr>
<td>Local judicial court</td>
<td>Adat court (Kerapatan Adat Nagari, KAN) is local judicial institution to solve any disputes in related to forest resources management</td>
</tr>
<tr>
<td>Harvesting limitation</td>
<td>Tree felling is prohibited except there is a collective permit from adat leaders and village leader. For a given fruit like durian, all people are prohibited to harvest the fruit directly on tree trunk except the fruit has fallen to the ground</td>
</tr>
</tbody>
</table>

Source: Interview result and field observation in 2015-2016, and developed from Rangkoto (1982), Rahardjo et al. (2004), Barnes and van Laerhoven (2013), Barnes and van Laerhoven (2015), and Diana and Sukmareni (2015)

Kenyah, and Rumahkay people (Ichwandi & Shinohara 2007; Samssoedin et al. 2010; Ohorella et al. 2011).

Communication Koto Malintang and Simancuang people discussed any problem and need in related to parak and rimbo management through formal and informal meetings. The communication among people has occurred in the meetings. A communication is related to any concern about community problem and need, as well as information sharing in decision-making, resources management and mobilization, and conflict resolution. This communication is also called as coordination (Uphoff 1986). In social system perspective, communication could be defined as integration processes in the resources management (Parsons 1991; Uphoff 2000). The formal and informal meetings are illustrated in Table 4. Based on our interviews and field observations, the meeting could be in form of adat events, governmental activities, and other informal activities.

All events and activities also become an internalization medium of norms and values in forest resources management. In any meetings, local leaders could inform the importance of parak and rimbo to support their livelihoods. Local leaders are generally using some messages of Minangkabau proverb, especially in form of a poem. For Minangkabau people, a poem is not only a speech but also contains teachings, advice, and rules (Navis 2015). Therefore, in formal and informal meetings, local leaders and community members also use a poem to communicate their interest each other. One of the philosophical teachings of Minangkabau people which encourages the success of communication is “the children follow mamak, mamak follows panghulu, panghulu follows the truth, the truth stands-alone (anak kamanakan barajo ka mamak, mamak barajo ka panghulu, panghulu barajo ka kabanaran, kabanaran tagak surang)”. Strong kinship relation could ensure an effective communication. Kinship relation could encourage the development of local economic activities through arisan and lapau traditions. The tradition is not only for information sharing but also for hospitality. The roles of panghulu and mamak also influenced the communication of community members to the outsiders, like government officers and NGO's activists. In the case of parak and rimbo management, any community members should communicate their relation to the outsiders to panghulu and mamak. Yanti (2004) also has proved the communication role of adat leaders (including panghulu and mamak) in Koto Malintang Village.

Minangkabau people can be identified as an open society which connect to other people in the context of socio-economic activities. They differ from Inner Baduy people which limited their relation to the outsiders. Ichwandi and Shinohara (2007) revealed that the limitation is to protect Baduy community and ensure the availability of natural resources for the next generation. But, Minangkabau people have a different way to protect their community and natural resources. The application of the matrilineal system is a way to ensure the domination of natural resources over generations. The matrilineal system did not change significantly while the influence of socio-economic activities already exists since the colonial era and Indonesian Government (von Benda-Beckmann 1979; Stark 2013).

Conflict resolution The dispute in parak and rimbo management is generally about a land property rights. But, a local community has a conflict resolution mechanism to solve any disputes. Conflict resolution related to different interest among community members which are caused by socio-economic activities on natural resources (Uphoff 1986). The conflict resolution involves adat leaders and village government in form of organized activities, including decision-making and communication.

Koto Malintang people have a graduated mechanism of conflict resolution. If a dispute was among family members, the role of mamak is important to solve it. In Minangkabau
proverb, this way is always called as “if a fur is tangled, beak will straighten (jikok bulu nan kusuik, paruh nan manyalasaikan)”. If the dispute cannot be solved, a family member could ask the sub-clan or clan leader (panghulu) to solve it. If a family member is still less satisfied, he/she could go through adat court involving all adat leaders (panghulu and niniak mamak). The court then is called as “forum of four kinds (forum ampek jinih)”. This forum will involve any panghulu from four main clans in Koto Malintang. If a family member is still less satisfied, he/she also could go through a forum of two kinds (forum duo jinih). This forum will involve adat leaders and local government leaders.

Forum ampek jinih and forum duo jinih are kinds of decision-making processes in related to the adat and governmental issues. Forum ampek jinih takes a decision for the public interest, meanwhile forum duo jinih takes a decision for adat and sharia interest (Rahardjo et al. 2004). The dispute among community members is also generally related to public, adat, and sharia interest. But, our informants said that the dispute can be solved in family, sub-clan, or clan level. Based on the written document of village office, the process also can involve local government leaders (wali nagari and wali jorong).

The different forum is applied in Simancuang people because their territory is a relatively new settlement. Based on informant interviews, there is an influential person which is sub-clan and clan leader in their original village, i.e. Jalaluddin Datuak Lelo Dirajo. He is a member of the first family group which cleared the forestland in 1974. He has become adat and village leader in Simancuang territory. His influence can direct Simancuang people to establish a local judicial court involving the representatives of community members. The representatives considered sub-clan and clan, personality, territoriality, and elders suggestion. There are 30 persons in the court and they then are called as niniak mamak. Any disputes among community members could be solved in the court. But, a dispute generally can be solved in family level with the roles of a mamak.

Decision-making for the conflict resolution in Koto Malintang and Simancuang people uses adat system of Minangkabau. There are three ways to take a decision (Rangkoto 1982), i.e. consider deliberation process (musyawarah/mufakat), apply adat law, and compare to sharia. Deliberation process gives a priority to win-win solution. In Minangkabau proverb, this process is called as “tangle into straight, murky into clear (kusuik salasai karuah nak janiah)”. Applying adat law means to give a sanction according to the violation level. Meanwhile, comparing to sharia means to consider moral and ethics. Three ways are always applied in the process of the conflict resolution.

Other local/indigenous communities have a mechanism for the conflict resolution. According to the social system, the conflict resolution aimed to ensure the pattern of natural resources management consistently (Parsons 1991; Uphoff 2000).

**Table 4**

<table>
<thead>
<tr>
<th>Form</th>
<th>Event/activity</th>
<th>Goal description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal meeting</td>
<td>Village forum</td>
<td>Discuss the community needs in accordance with village development, especially physical infrastructures</td>
</tr>
<tr>
<td></td>
<td>Adat meeting</td>
<td>Discuss the application of adat law, the transition of adat leaders, dispute resolution, as well as sub-clan and clan needs</td>
</tr>
<tr>
<td></td>
<td>Adat ceremony</td>
<td>Share local norms and values through collective activities and Minangkabau proverb</td>
</tr>
<tr>
<td>Informal meeting</td>
<td>Family meeting</td>
<td>Discuss the need and problem of family members and generally involve mamak</td>
</tr>
<tr>
<td></td>
<td>Sub-clan or clan meeting</td>
<td>Discuss the need and problem of sub-clans or clans and the transition of sub-clan and clan leaders (panghulu)</td>
</tr>
<tr>
<td></td>
<td>Mosque recitation</td>
<td>Share the religious norms and values, including relationship between human and environment</td>
</tr>
<tr>
<td></td>
<td>Regular social gathering (arsun)</td>
<td>Share an information among individuals based on kinship relation or profession</td>
</tr>
<tr>
<td></td>
<td>Coffee shop (lapau)</td>
<td>Share an information among individuals which involve community member over generations</td>
</tr>
</tbody>
</table>

Source: Interview result and field observation in 2015–2016, and developed from Rahardjo et al. (2004) and Diana and Sukmareni (2015)
Uphoff 2000). The organizational activities contained roles and rules as the primary forms of social capital. Decision-making is reinforced by *adat* law to recognize the local practices of forest resource management which have been practiced from generation to generation. Koto Malintang and Simancuang people as part of the Minangkabau community believed that “*adat* is not cracked by the sun and not rotted by the rain (*indak lakang dek paneh, indak lapuak dek hujan*)”. The similar philosophy can also be found in the Baduy people (Ichwandi & Shinohara 2007) through the proverb "the mountain is impossible to destroy, the valley cannot be destroyed, the long cannot be shortened, the short cannot be extended, the ancestral command is not possible to change". In the Dayak people (Subiakto & Bakrie 2015), they also believed "live in the *adat* law, die on the ground".

The concept and implementation of the forest resource management by local communities and indigenous peoples have revealed that they have a concern for the sustainable forest management. They have built a mobilization mechanism, communication, and conflict management to ensure the sustainability of their forest resources. It is important that the forest resources are a livelihoods source for the local communities. While they depended on the long-term sustainability of their local resources, they would protect and utilize resources sustainably (Berkes 2007). In the context of livelihoods, forest resource management by local communities involves ways and outcomes in accordance with capability, equity, and sustainability (Chambers & Conway 1992; Chambers 1995). The local communities have demonstrated their ability to defend ways and results of forest resource management from generation to generation. They have been able to manage their land by paying attention to the protection, production, and conservation functions through social structures that have built. Several studies on local and indigenous communities in Indonesia have also concluded that adat management is able to guarantee the sustainable forest management, such as the Baduy community (Ichwandi & Shinohara 2007), Mandati community (Arafah et al. 2008), Rumahkay community (Ohorella et al. 2011), and Kerinci community (Oktoyoki et al. 2016).

Organizational activities as collective action are based on roles, rules, and procedures as well as operating within community-built networking mechanisms. The activity could also be generated by the norms, values, beliefs, and attitudes possessed by each individual and inherited from generation to generation. Internalization of norms, values, beliefs, and attitudes to local/indigenous communities is an important manner to ensure the effectiveness of local institutions for a better management of forest resources. Therefore, the phenomenon of collective action could be elaborated from the organizational activities to explain the performance of forest resource management at the community level.

Nevertheless, the collective challenges in the *parak* and *rimbo* management are still concerned about resource adequacy, benefit equity, and external support. In the context of the resource adequacy, the reserved forest (*rimbo cadangan*) has been claimed as a state forest. This may be a limiting factor in the future availability of resources for the next generation and also relates to the guarantee of benefit equity. The limiting factor has the potential to expand the conflict of natural resources (Agrawal & Chhatre 2006; Zenteno et al. 2014). In fact, community-based forest management is a local practice (including *parak* and *rimbo*) which could ensure the benefit equity (Suherjito 2009). Therefore, external support in the form of the recognition of community-based forest management practices, especially from the government, is needed to ensure the durability of community collective action in natural resource management.

The government recognition of community-based forest management practices (such as *parak* and *rimbo*) is relevant in this regard. Many researchers may ask about how a local community with their established social system is able to sustain the existing forest resource management. This is based on the fact that many local/indigenous communities are changing along with changes in the social, economic, and ecological environment. The change is something that could not be avoided because it is part of the socio-cultural dynamics. On the other hand, government policy support is important to ensure the strengthening of community social systems in the forest resource management.

**Conclusion**

Natural resources management by local/indigenous people utilized their social capital in collective action perspective to achieve a sustainable management over generations. Based on our research, *parak* and *rimbo* management of Koto Malintang and Simancuang people has been involving the organizational activities, i.e. decision-making, resources management and mobilization, communication, and conflict resolution. Decision-making contains collective action in the context of how they acquire, allocate, and distribute the natural resources among families, sub-clans, or clans. In the context of resources management and mobilization, collective action involves how they mobilize and manage funding, labor, material, and information as well as roles and rules according to their social system. The collective action also involves how they communicate their needs and problems in kinship relation and other relation to the outsiders. Meanwhile, the conflict resolution is a form of collective action to ensure the pattern of natural resources management according to *adat* law, the agreement of *adat* leaders, and moral and ethics. Although local/indigenous people have a functional collective action to sustain their natural resources, the durability of collective action depended on the recognition of their practices in governmental policies at local and national level. The next challenges are how the government ensure the availability of natural resources for local/indigenous people, how the government share a benefit fairly, and how the government coordinate any external supports.

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