

Social Capital of *Parak* and *Rimbo* Management in West Sumatera

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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

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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 & Wijayaratra 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 *luhak*), 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 *luhak* 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 bakampuang* (have sub-villages), *bahuma babendang* (have communication mechanism), *balabuah batapian* (have boundaries), *basawah baladang* (have wetland and dryland), *bahalaman bapemedanan* (have outdoors), and *bapandam bapusaro* (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 1 The distinction of *parak* and *rimbo* as management area of Minangkabau community

<i>Parak</i>	<i>Rimbo</i>
- Also termed as dryland crops (<i>ladang</i>), <i>palak</i> , and garden which are the converted forestland for dryland cultivation (Oki 1977; von Benda-Beckmann 1979; Colfer <i>et al.</i> 1988; Otsuka 2000).	- Also termed as <i>balukau</i> and <i>imbo</i> (Colfer <i>et al.</i> 1988).
- Be mixed with other commercial crops, such as cinnamon, rubber, coffee, and other fruit trees (Michon <i>et al.</i> 1986; Colfer <i>et al.</i> 1988; Otsuka 2000; Otsuka 2009; Martial <i>et al.</i> 2012).	- Is a jungle and uncultivated forest land (Oki 1977; von Benda-Beckmann 1979).
- Be known as <i>agroforestry</i> land (Michon <i>et al.</i> 1986; Colfer <i>et al.</i> 1988; Otsuka <i>et al.</i> 2001; Otsuka 2009; Martial <i>et al.</i> 2012).	- Vegetation cover is nature forest or primary and secondary forest (Michon <i>et al.</i> 1986; Colfer <i>et al.</i> 1988; Otsuka <i>et al.</i> 2001; Otsuka 2009).
- 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 <i>et al.</i> 2012).	- The property rights are arranged according to sub-clan, clan, and village (<i>nagari</i>) rights (Oki 1977; von Benda-Beckmann 1979).
- As buffer zones between settlement and <i>rimbo</i> (Michon <i>et al.</i> 1986).	- As a source for agricultural lands, including <i>parak</i> (Oki 1977; von Benda-Beckmann 1979).
- According to Indonesian Forestry Act, some lands were appointed as state forest.	- According to Indonesian Forestry Act, almost all lands were appointed as state forest.

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 (Samsuudin *et al.* 2010), Ammatoa (Husain & Kinasih 2010), and Rumahkay (Ohorella *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 of Koto Malintang and Simancuang people 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 provide 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.

Forested 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 subtractability. *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 (*niniak 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

Types	Objects	Descriptions
Acquisition	Land	There are three ways to obtain an access, through (1) inherited by ancestors according to family, sub-clan, or clan, (2) become part of sub-clan or clan members (generally called <i>asmalakok</i>) after getting approval of <i>panghulu</i> and <i>niniak mamak</i> , and (3) family initiative to clear a new land
	Product	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 anstors), (3) harvested a product in a collective harvesting tradition, like <i>balangge</i> in Koto Malintang when all people can harvest durian fruits within the specified time.
Allocation	Land	There are two ways to allocate, through (1) family, sub-clan, or clan relations, and (2) village asset
	Product	According to family decision which considered kinship relations, product diversity, and market opportunity.
Distribution	Land	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.
	Product	According to each family, sub-clan, or clan decisions

“*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 *balange* 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; Husain & Kinasih 2010; Samsuudin *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; Salampessy *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 *taratak*. In Minangkabau proverbs (Rangkoto 1982), they are generally recognizing “from *taratak* 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 Labuah 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 (*warih 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 (*panghulu* and *niniak 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

Indicators	Description
Rules is simple and easy to understand	Sourced from Minangkabau proverbs which are transmitted over generations into a behavior provision, contained philosophical teachings of natural environment (<i>cupak usali</i>) and agreements from local leaders (<i>cupak buatan</i>)
Locally devised rules	Regarded as rules in their territory (<i>adat salingka nagari</i>), consist of <i>adat nan sabana adat</i> , <i>adat istiadat</i> , <i>adat nan diadatkan</i> , and <i>adat nan taradat</i>
Easy in monitoring	Begun from family level (the roles of <i>mamak</i> and parents), sub-clan and clan level (the roles of <i>panghulu</i>), to village level (the roles of <i>panghulu</i> and <i>wali nagari</i>)
Law enforcement	<i>Panghulu</i> and <i>niniak mamak</i> are generally enforcing <i>adat</i> law for any violations, but they also recognized state law for crime
Graduated sanctions	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)
Local judicial court	<i>Adat court (Kerapatan Adat Nagari, KAN)</i> is local judicial institution to solve any disputes in related to forest resources management
Harvesting limitation	Tree felling is prohibited except there is a collective permit from <i>adat</i> 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

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; Samsodin *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

Table 4 Formal and informal meetings to communicate the community problems and needs

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

Source: Interview result and field observation in 2015–2016, and developed from Rahardjo *et al.* (2004) and Diana and Sukmaren (2015)

proverb, this way is always called as “if a fur is tangled, beak will straighten (*jikok bulu nan kusuik, paruah 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 janih*)”. 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).

Collective action as a benefit flow of a social capital

Uphoff (2000) considered that the benefit of social capital is a mutual benefit collective action. The set of norms and values rationalized the roles and rules which facilitated the collective action of local communities. Any outcomes of an individual or group action, either by self-interest or collective, could be a precedent for the individual or group to strengthen the roles and rules. In this condition, individuals or groups could be able to validate and regenerate the cognitive and structural elements of social capital. When a bad precedent was obtained, the individual or group would rationalize the cognitive elements and then rationalize the structural elements of social capital that ultimately update the collective action. When a good precedent was obtained, the individual or group would tend to maintain the social structures or improve them for the better.

A collective action could be observed from the organizational activities in accordance with decision-making, resources mobilization and management, communication, and conflict resolution (Uphoff 1986;

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 collectivity 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 (Suharjito 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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References

- Adger WN. 2003. Social capital, collective action, and adaptation to climate change. *Economic Geography* 79(4):387–404. <https://doi.org/10.1111/j.1944-8287.2003.tb00220.x>.
- Agrawal A. 2003. Sustainable governance of common-pool resources: Context, methods, and politics. *Annu. Rev. Anthropol* 32:243–62. <https://doi.org/10.1146/annurev.anthro.32.061002.093112>.
- Agrawal A, Chhatre A. 2006. Explaining success on the commons: community forest governance in the Indian Himalaya. *World Development* 34(1):149–166. <https://doi.org/10.1016/j.worlddev.2005.07.013>.
- Agrawal A, Gibson CC. 1999. Enchantment and disenchantment: the role of community in natural resource conservation. *World Development* 27(4): 629–649. [https://doi.org/10.1016/S0305-750X\(98\)00161-2](https://doi.org/10.1016/S0305-750X(98)00161-2).
- Ahn TK, Ostrom E. 2007. Social capital and collective action. In: Castiglione D, van Deth JW, Wolleb G, editors. *The Handbook of Social Capital*. New York: Oxford University Press. Pp. 70–100.
- Arafah N, Darusman D, Suharjo D, Sundawati L. 2008. Kaindea: adaptasi pengelolaan hutan masyarakat di pulau-pulau kecil. *Jurnal Manajemen Hutan Tropika* 14(3):130–136.
- Asmin F. 2015. Pengelolaan hutan nagari di Sumatera Barat: Studi kasus areal kelola hutan nagari di Jorong Simancuang Provinsi Sumatera Barat. In: *Prosiding Seminar Nasional FMIPA Universitas Terbuka*, Jakarta, Oktober 22, 2015. Pp 89–112.
- Asmin F, Darusman D, Ichwandi I, Suharjo D. 2016. Local ecological knowledge on forest clearing: a case study of parak and rimbo practices in Simancuang Community, Indonesia. *Komunitas: International Journal of Indonesian Society and Culture* 8(2):208–220. <https://doi.org/10.15294/komunitas.v8i2.5856>.
- Asmin F, Darusman D, Ichwandi I, Suharjo D. 2017. Elaborating the attributes of local ecological knowledge: a case study of parak and rimbo practices in Koto Malintang Village. *Advanced Science Letters* 23(4):2812–2817. <https://doi.org/10.1166/asl.2017.7682>.
- Baland JM, Platteau JP. 1996. *Halting Degradation of Natural Resources: Is There a Role for Rural Communities?* Roma: FAO.
- Barnes C, van Laerhoven F. 2013. Helping to self-help? external interventions to stimulate local collective action in Joint Forest Management, Maharashtra, India. *International Forestry Review* 15(1):1–17. <https://doi.org/10.1505/146554813805927246>.
- Barnes C, van Laerhoven F. 2015. Making it last? analysing the role of NGO interventions in the development of institutions for durable collective action in Indian community forestry. *Environmental Science and Policy* 53:192–205. <https://doi.org/10.1016/j.envsci.2014.06.008>.
- Berg BL. 2001. *Qualitative Research Methods for the Social Sciences*. California: A Pearson Education Company.
- Berkes F. 2007. Community-based conservation in a globalized world. *Proceedings of the National Academy of Sciences* 104(39):15188–15193. www.pnas.org/cgi/doi/10.1073/pnas.0702098104.
- Bryman A. 2004. *Social Research Methods*. Second Edition. New York: Oxford University Press Inc.
- Chambers R. 1995. Poverty and livelihoods: whose reality counts? *Environment and Urbanization* 7(1):173–204.
- Chambers R, Conway G. 1992. *Sustainable Rural Livelihoods: Practical Concepts for the 21st Century*. Brighton: Institute of Development Studies, University of Sussex. Pp. 1–29.
- Charnley S, Poe MR. 2007. Community forestry in theory and practice: where are we now? *Annu. Rev. Anthropol* 36:301–336. <https://doi.org/10.1146/annurev.anthro.35.081705.123143>.
- Chen B, Nakama Y, Yogi T, Ichwandi I. 2010. Agroforestry by Baduy community in Banten Province, Indonesia. *The Science Bulletin of the Faculty of Agriculture University of the Ryukyus* 57:17–30.
- Colfer CJP, Gill DW, Agus F. 1988. An indigenous agricultural model from West Sumatra: a source of scientific insight. *Agricultural Systems* 26:191–209. [https://doi.org/10.1016/0308-521X\(88\)90011-X](https://doi.org/10.1016/0308-521X(88)90011-X).
- Diana E, Sukmareni. 2015. *Hutan Nagari: Mengembangkan PHBM di Sumatera Barat*. Jambi: KKI Warsi.
- Gautam AP, Shivakoti GP. 2005. Conditions for successful local collective action in forestry: some evidence from the Hills of Nepal. *Society and Natural Resources* 18:153–171. <https://doi.org/10.1080/08941920590894534>.
- Hamzah, Suharjo D, Istomo. 2015. Efektifitas kelembagaan lokal dalam pengelolaan sumber daya hutan pada masyarakat Nagari Simanau, Kabupaten Solok. *Risalah Kebijakan Pertanian dan Lingkungan* 2(2):116–127. <https://doi.org/10.20957/jkebijakan.v2i2.10979>.
- Hartanto H, Lorenzo MCB, Frio AL. 2002. Collective action and learning in developing a local monitoring system. *International Forestry Review* 4(3):184–195. <https://doi.org/10.1505/IFOR.4.3.184.17404>.
- Husain SB, Kinasih SE. 2010. Pasang sebagai modal sosial pengelolaan hutan pada masyarakat adat Ammatowa.

- Masyarakat, Kebudayaan, dan Politik* 23(3):229–235.
- Ibrahim. 1979. *Mustika Adat Alam Minangkabau*. Jakarta: PN Balai Pustaka.
- Ichwandi I, Shinohara T. 2007. Indigenous practices for use of and managing tropical natural resources: a case study on Baduy community in Banten, Indonesia. *Tropics* 16(2):87–102. <https://doi.org/10.3759/tropics.16.87>.
- Martial T, Helmi, Effendi N, Martius E. 2012. Land and tree tenure rights on agroforestry (parak) system at communal land in West Sumatera, Indonesia. *Journal of Agricultural Extension and Rural Development* 4(19):486–494. <https://doi.org/10.5897/JAERD11.120>.
- Michon G, Mary F, Bompard J. 1986. Multistoried agroforestry garden system in West Sumatera, Indonesia. *Agroforestry Systems* 4:315–338. <https://doi.org/10.1007/BF00048106>.
- Narloch U, Pascual U, Drucker AG. 2012. Collective action dynamics under external rewards: experimental insights from Andean farming communities. *World Development* 40(10):2096–2107. <https://doi.org/10.1016/j.worlddev.2012.03.014>.
- Navis AA. 2015. *Alam Terkembang Jadi Guru: Adat dan Kebudayaan Minangkabau*. Padang: Penerbit Grafika Jaya Sumbar.
- Ohorella S, Suharjo D, Ichwandi I. 2011. Efektivitas kelembagaan lokal dalam pengelolaan sumber daya hutan pada masyarakat Rumahkay di Seram Bagian Barat, Maluku. *Jurnal Manajemen Hutan Tropika* 17(2):49–55.
- Oki A. 1977. Social change in the West Sumatran village: 1908–1945 [dissertation]. Canberra: Australian National University.
- Oktoyoki H, Suharjo D, Saharuddin. 2016. Pengelolaan sumber daya hutan di Kerinci oleh kelembagaan adat. *Risalah Kebijakan Pertanian dan Lingkungan* 3(1):39–51. <https://doi.org/10.20957/jkebijakan.v3i1.15235>.
- Ostrom E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.
- Ostrom E. 2000. Collective action and the evolution of social norms. *The Journal of Economic Perspectives* 14(3):137–158. <https://doi.org/10.1257/jep.14.3.137>.
- Ostrom E. 2005. *Understanding Institutional Diversity*. New Jersey: Princeton University Press.
- Otsuka K, Suyanto S, Sonobe T, Tomich TP. 2001. Evolution of land tenure institutions and development of agroforestry: evidence from customary land areas of Sumatra. *Agricultural Economics* 25:85–101 [https://doi.org/10.1016/S0169-5150\(00\)00098-0](https://doi.org/10.1016/S0169-5150(00)00098-0).
- Otsuka M. 2000. Challenges to land use intensification under commercialization of local farming systems: a case from West Sumatra, Indonesia. *TROPICS* 9(4):309–322. <http://doi.org/10.3759/tropics.9.309>.
- Otsuka M. 2009. Impacts of farmers' land use on natural forest conversion: A case study from West Sumatra, Indonesia. *TROPICS* 18(3):155–166. <https://doi.org/10.3759/tropics.18.155>.
- Parsons T. 1991. *The Social System*. First Edition. London: Routledge.
- Raharjo DY, Oktavia V, Azmaiyanti Y. 2004. *Obrolan Lapau, Obrolan Rakyat: Sebuah Potret Pergulatan Kembali ke Nagari*. Bogor: Studio Kendil.
- Rangkoto NM. 1982. *Pantun Adat Minangkabau*. Jakarta: Balai Pustaka.
- Salampey ML, Bone I, Febryano IG. 2012. Performansi dusung pala sebagai salah satu agroforestri tradisional di Maluku. *Jurnal Tengkwang* 2(2):55–65.
- Samsodin I, Wijaya A, Sukiman H. 2010. Konsep tata ruang dan pengelolaan lahan pada masyarakat Dayak Kenyah di Kalimantan Timur. *Jurnal Analisis Kebijakan Kehutanan* 7(2):145–168. <https://doi.org/10.20886/jakk.2010.7.2.145-168>.
- Stark A. 2013. The matrilineal system of the Minangkabau and its persistence throughout history: A structural perspective. *Southeast Asia: A Multidisciplinary Journal* 13:1–13.
- Subiakto WD, Bakrie I. 2015. Peranan hukum adat dalam menjaga dan melestarikan hutan di Desa Metulang Kecamatan Kayan Selatan Kabupaten Malinau Provinsi Kalimantan Utara. *Jurnal AGRIFOR* 14(2):293–314.
- Suharjo D. 2009. Devolusi pengelolaan hutan di Indonesia: perbandingan Indonesia dan Philipina. *Jurnal Manajemen Hutan Tropika* 15(3):123–130.
- Suharjo D. 2014. *Pengantar Metodologi Penelitian*. Bogor: PT Penerbit IPB Press.
- Uphoff N. 1986. *Getting the Process Right: Improving Irrigation Water Management with Farmer Organization and Participation*. New York: Cornell University.
- Uphoff N. 2000. Understanding social capital: Learning from the Analysis and experience of participation. In: Dasgupta P, Serageldin I, editors. *Social Capital: A Multifaceted Perspective*. Washington DC: World Bank. Pp 215–249.
- Uphoff N, Wijayaratna CM. 2000. Demonstrated benefits from social capital: The productivity of farmer organizations in Gal Oya, Sri Lanka. *World Development* 28(11): 1875–1890. [https://doi.org/10.1016/S0305-750X\(00\)00063-2](https://doi.org/10.1016/S0305-750X(00)00063-2).

- van Laerhoven F. 2010. Governing community forests and the challenge of solving two-level collective action dilemmas—A large-N perspective. *Global Environmental Change* 20(3):539–546. <https://doi.org/10.1016/j.gloenvcha.2010.04.005>.
- Vanni F. 2014. *Agriculture and Public Goods*. Dordrecht: Springer Science+Business Media.
- von Benda-Beckmann F. 1979. *Property in Social Continuity: Continuity and Change in the Maintenance of Property Relationships through Time in Minangkabau, West Sumatera*. Amsterdam: Springer-Science+Business Media.
- Wiersum KF. 2004. Social and community forestry. In: Burley J, Evans J, Youngquist, editors. *Encyclopedia of Forest Sciences*. Oxford: Elsevier Ltd. Pp 1136–1143.
- Wade R. 1994. *Village Republics: Economic Conditions for Collective Action in South India*. Oakland: ICS Press.
- Yanti R. 2004. Peran tokoh adat dalam mengkomunikasikan usaha pengelolaan dan pelestarian hutan: Kasus hutan adat Nagari Koto Malintang Kecamatan Tanjung Raya Kabupaten Agam Provinsi Sumatera Barat [thesis]. Bogor: Bogor Agricultural University.
- Zenteno M, Zuidema PA, de Jong W, Boot RGA. 2013. Livelihood strategies and forest dependence: new insights from Bolivian forest communities. *Forest Policy and Economics* 26:12–21. <https://doi.org/10.1016/j.forpol.2012.09.011>.