

UNIVERSITY OF GOTHENBURG  
DEPARTMENT OF POLITICAL SCIENCE

**The impact of “history of play” on rural  
communities’ participation in forest  
management: a field study in the Kakamega  
rainforest, Kenya**

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## **Abstract**

*The declining of forest covers is increasing over the years and is as high as 1%/year in eastern Africa and some forests like the Kakamega rainforest, Kenya, have lost most of its covers. Therefore many nations have adopted the participatory forest management (PFM) system. The implementation of this system varies between and within the nations and many factors can influence the implementation. This field study investigates the effect of history of play on the participation of the local communities surrounding the forests. Elinor Ostroms' experiments on the effects of history of play on cooperation were used as basis for the field work. The study may also spread some light to the disagreement on how social capital is created. The fieldwork was done in 4 community based organizations (CBO) next to the Kakamega rainforest, Kenya. Material was collected from the Kenyan national bureau of statistics and interviews of experts from the CBOs, communities and the local university. To study the effects of history of play, 2 CBOs were chosen for comparison due to difference in level of participation but similarity in all controlling variables (education, size, migration, political will, dependency, income and proximity). The results clearly showed that there is a positive relation between the history of play and participation of the communities in the forest management. This field study shows that Elinor Ostroms' theories about history of play also are valid in a real life setting. It also indicates that history of play seems to help creating social capital.*

## **List of abbreviations**

BUSH = Bukhungu and Shihingu community based organization  
CBO = Community based organization  
CFA = Community forest association  
CPR = Common pool resources  
IKUCHI = Ikuywa and Chirobani community based organization  
KACOFA = Kakamega community forest association  
KEEP = Kakamega environmental education program  
KFS = Kenya forest service  
KNBS = Kenyan national bureau of statistics  
KWS = Kenya wildlife service  
MUSHA = Musembe and Shamiloli community based organization  
PD Game = Prisoners dilemma game  
PFM = Participatory forest management  
SHAMU = Shanderema and Mukumari community based organization

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## 1. Introduction

There are few people that question the fact that the world's renewable resources are declining increasingly over the years. This is also the case for Africa's forest covers. The annual forest cover loss since 1990 in Africa as a whole is about 0.5%, but in the eastern parts it can be as high as 1% (FAO, [State of the world's forests 2011](#)). This is the major factor for the rapid change from a state lead forest management to a participatory forest management (PFM) taking places in many African nations during the last decade (Wily 2002, p. 33-38, [Mustalahti and Fries Lund 2010, p. 1](#)). Kenya is no exception and many of its forests like the Kakamega rainforest have lost most of its covers. In 2005 Kenya adopted PFM in a new forest act.

The extent of how the PFM have been implemented differs greatly between the nations where it has been adopted. In some nations such as Burkina Faso, Ethiopia and Tanzania there are many ongoing PFM projects involving many communities around the forests. In other nations like Zambia and Zimbabwe the results have not been as good and the PFM project have failed to involve the communities and the official support of the projects have been withdrawn (Wily 2002, p. 33-38).

The success of the implementation of the PFM system differs not only between nations but can also differ greatly between the local communities in different areas within a nation because of local conditions (Blomley and Ramadhani 2004).

In Kenya there are many communities that have shown an interest in participating in the forest management. Many of these have formed community forest associations (CFA) but some lack the organization and/or the true willingness to conserve the forest (Ongugo et al. 2008). If the true aim of the PFM system is to involve the local communities in the forest management, monitoring and the decision-making, it is important to understand what makes a community participate in the PFM system or not.

Today there are many theories of what makes communities participate in the forest management, one of those is that of history of play (previous experience in similar situations). The problem with this theory is that it is mainly theoretical and few if any field studies have been made to confirm it in a real life setting. There is also disagreement among researchers if history of play in itself affects the willingness to participate or if there is some other factor that affects both the history of play and the participation.

To be able to get a better understanding of how the history of play affects communities willingness to participate in forest management and potentially also help saving the world's forest it is therefore important to study the effects of history of play in a real life setting.

## **2. Theory**

### **2.1 Game theory**

In political science, game theory is often used to explain people's behavior and acting in different settings of the world. Many authors have used different game theoretical models to explain why people act the way they do. In his famous article "Tragedy of the commons", Garret Hardin creates a game setting with four herders on a common grazing pasture. He shows with the explanation of the game why and how the herders choose not to cooperate with each other (and instead bring more sheep to the pasture). The reason for not cooperating is that the immediate benefits for not doing so go to the single herder that choose not to cooperate while the cost of doing so is divided by all four herders (less grass for all herders). Because of lack of trust for each other, they choose to neglect the long term, but also high risk, benefits from cooperating (the other herders might bring more sheep while I am not), for a more low risk but less sustainable short term alternative that in the end will destroy the pasture land. This is one of the most famous explanations for why the world's natural renewable resources are declining.

Another well known game theoretical model for explaining people's cooperation is the one of the "Prisoners dilemma" game (PD game). Here the authors create a game where two suspects can choose to cooperate with each other in an investigation (not tell on each other) or not to cooperate (tell on each other). If both of them choose to cooperate, both will have a short jail sentence. If both of them choose to not cooperate, both will have a moderately long jail sentence. But if one of them chooses to cooperate and the other one not to do so, the one that cooperates will have a long jail sentence while the other one will go free. The underlying reason not to cooperate is similar to that in Hardin's game. The higher benefit strategy involves also a higher risk and therefore players (prisoners or herders), as rational human beings will choose the strategy that gives them maximum benefits with minimum risk. The reason for the high risk in cooperating is that the benefits with cooperating are dependent on the other players choosing to cooperate as well. If they choose not to, they will benefit while you will get less or pay a high cost. Therefore the safest strategy for everyone is to not cooperate as then all will get a little benefit without any risk. The long term utility strategy is

the one in which all the players choose to cooperate and all will benefit greatly in the long run. Thus, the problem and the risk with cooperation all comes down to lack of knowledge of how the other players are likely to act.

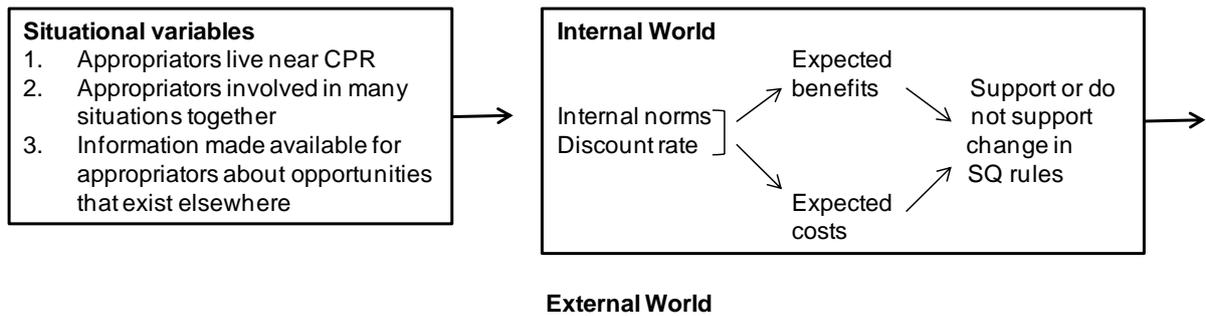
Repeated games have a solution to the problem of lack of knowledge. In repeated games, players repeat the same or similar games several times, with the same players as in the prior games or with new ones. In this way, players will gain knowledge of how other players have acted in the past. By gaining this knowledge a player can estimate his own risk with cooperating in the game and therefore be more willing to cooperate in the maximizing strategy. For an extended explanation of game theoretical models see [Turocy and von Stengle 2002](#).

## **2.2 History of play**

The knowledge that is gained during played games in the repeated game theory is often called “history of play”. The history of play will affect how the players will act in future games. In a more real life setting this could mean that a person’s past experience from a specific context and with a specific set of actors will affect how that person will act in a similar context in the future. The history of play can be used to understand people’s actions in many fields within political science and one of those are the environmental political science. One of the more prominent authors that uses the history of play in the environmental political science field is Elinor Ostrom. In her book “Governing the commons” ([Ostrom 1990](#)) she describes why we fail to secure our renewable resources, also referred to as common pool resources (CPR), and why people choose not to cooperate in the management of them. One of the reasons not to cooperate in the management of these resources is a high discount rate<sup>1</sup>, the higher discount rate there is the higher the risk that comes with cooperation. Ostrom finds three factors that influence the discount rate of cooperation and one of those is the history of play (players’ or appropriators’ prior experience of working together) (See Figure 2.1).

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<sup>1</sup> Degree to which future money are discounted relative to current money. Economic analysis generally assumes that a given unit of benefit or cost matters more if it is experienced now than if it occurs in the future. The degree to which the importance that is attached to gains and losses in the future is known as discounted. The present is more important due to impatience, uncertainty, and the productivity of capital the interest a private bank pays for a loan. ([http://www.socialsciencedictionary.com/discount\\_rate](http://www.socialsciencedictionary.com/discount_rate). 2011-30/7)



**Figure 2.1 Situational variables affecting internal norms and discount rates in management of CPR resources (Ostrom 1990 p. 206)**

Even though effective management of natural resources is a big problem in our society and history of play is a potential explanation to help make this management more effective there is surprisingly little non theoretical studies done in the field of history of play. The exception is a study by Ostrom et al. in which they preformed an experiment in the field of history of play. The results of those experiments will be tested in the present study. Further the result of the experiments and the whole field of history of play can be connected to the larger field of social capital which will be discussed briefly further down.

In the article “Cooperation in PD games: Fear, greed, and history of play” (Ahn et al. 2001) Ostrom further investigates history of play’s effects on players’ way of acting. In their research, the authors constructed a repeated game experiment in which a total of eight different groups of people were exposed to four different games, two groups for each game. The players were paired together and for each type of game the pairs were kept constant (fixed) in one group during all turns of the game, while for the other group the players were matched to a new partner(random) for every turn. In each turn of the game the players within a pair could either choose to cooperate or not just like in a regular PD game. The type of benefit was different for the four types of game, but the benefit for both players within a pair was always highest when both cooperated and lowest when none of them cooperated. On an individual basis, the lowest benefit for a player was when he or she cooperated and the other player didn’t, and the highest benefit was in the opposite situation (Ibid p. 140-144) (See Figure 2.2).

		Player 2	
		D	C
Player 1	D	60 60	110 50
	C	50 110	100 100

**PD-Game 1**

		Player 2	
		D	C
Player 1	D	60 60	110 20
	C	30 110	100 100

**PD-Game 2**

		Player 2	
		D	C
Player 1	D	60 60	140 50
	C	50 140	100 100

**PD-Game 3**

		Player 2	
		D	C
Player 1	D	60 60	140 20
	C	20 140	100 100

**PD-Game 4**

C=cooperation; D=defection; the numbers in the squares represent the reward for choosing to cooperate or to defect

**Figure 2.2 PD-Game structures adapted from Ahn et al. (Ahn et al. 2001 p. 141)**

A total of eight turns were played in this way and in the end a ninth turn was played during which all players participated in all four games. These games were new but similar to the games in turn 1-8. The players with a fixed partner during the eight turns kept the same partner during the ninth turn, while the others were mixed with a new partner as before (Ibid p. 140-144).

The first theory that was tested in the experiment was if fixed or random mixed pairs mattered for the likelihood of cooperation in the ninth turn of the game. In a real life situation this could be compared to a situation where you have to cooperate with your neighbors to protect a natural resource (fixed pairs) or to reduce the amount of fish that you catch in an open access fishing spot where new fishermen come every day (random pairs). The other theory was if players will base their choice to act in the ninth turn based on their experience of cooperation from the past eight turns of the game (history of play).

The results of the experiment showed that the history of play mattered for the likelihood of cooperation both in the random and the fixed matched pairs situation, but the impact was greater for the fixed pairs. (Ibid p.149). If one player had not cooperated even once in the first eight turns of the game the overall probability of cooperation in the ninth turn was 16 % and if the player had encountered cooperation during all eight first turns, the chance of choosing cooperation in the ninth turn was 65 % which gives a difference of 39 % that can be explained with the history of play factor. (Ibid p. 150) This shows that the history of play has a significant effect on the likelihood of choosing to cooperate.

As Ostrom et al. states in the end of their article “we should expect to find higher levels of public goods provided, less shrinking, and a more sustainable use of resources in those dilemma situations where participants interact repeatedly with the same set of individuals and reputation can be built” (Ahn et al. 2001 p. 153). The aim of the present study is to investigate if this is the case in a non-experiential setting (Kakamega rainforest), far removed from the settings of a university campus and by this give some empirical evidence in a field dominated by theories.

### **2.3 Social capital and participation**

Why would a history of prior play or in the case of the present study a history of prior participation help to facilitate more participation in the forest management? One explanation could be that the history of play helps to construct social capital. Social capital refers to the connections between individuals in a society, the norms of reciprocity, social relations and trustworthiness between people (Putnam 2000 p. 19). Social capital is said to facilitate good and efficient governance as people trust each other which creates a feeling of “if I do this for you today, you will do something for me tomorrow”. Robert Putnam uses the lack of social capital as the core factor to explain why political and civic participation has declined in the US the last couple of years. Researchers like Robert Putnam suggest that social capital is created when a diverse set of people have frequent interactions with each other and in dense social connections, e.g. in the family, school, workplace and organizations (Ibid p. 19-22).

#### ***2.3.1 Alternative explanation of social capital***

Not all researchers believe that social capital is created via interactions between people and that this social capital then leads to more cooperation or better governance, in fact some researchers believe the opposite. In a study of the Scandinavian welfare system and social capital, Bo Rothstein and Staffan Kumlin explain why the Scandinavian countries, which have a low history of people engaging in charity work due to the extended welfare system, has one of the world’s highest rates of social capital. This research is skeptical to Putman’s explanation of how social capital is created. They also mention that many researchers have found it difficult to verify Putnam’s theory. Some investigations even show that an active civil society results in less social capital (Kumlin and Rothstein 2005 p. 346). Instead of having the civil society as the causal link of creating social capital, Rothstein and Kumlin believe it is the state that creates and destroys social capital and that people’s view on society and trust in people is shaped by their experiences of welfare systems that the government has

provided (Ibid p. 347). The explanation to why the Scandinavian countries have a high social capital is that their welfare system is universal for everyone and is not based on an individual's need, and therefore there is no need to distrust officials as they don't make any decisions affecting the specific individual (Ibid p. 348-349). There is no need to withhold information to the government or to officials and nor is there a need for the government to distrust their citizens. In societies where the welfare is selective, the opposite can occur and then the withholding of information to officials leads to stricter bureaucracy and a larger distrust and in the end, less social capital (Ibid p. 349).

#### **2.4 Aim of the study**

The aim of the present study is to test the results from the experiments presented in Elinor Ostrom's study "Cooperation in PD games: Fear, greed, and history of play" (Ahn et al. 2001). The results show that history of play affects peoples' decisions in present time. The results will be tested in a non-experiential setting (with environmental character) in the Kakamega rainforest, Kenya and will give empirical evidence to if Ostrom's theory works in a real life setting or not.

The study aims also to spread some light to the disagreement among researchers about how social capital is created.

The specific objective in the study is to answerer the question: **"Do history of play affects local individuals' willingness to participate in community forest management?"**

The study hypothesis is that the history of play does affect the participation and that the community with a high level of participation in the forest management also should have a high level of history of play.

#### **2.5 Alternative explanations for participation in environmental management**

The research field of environmental management is broad and history of play is not the only factor that is thought to affect peoples' participation in the management these resources: in prior research several other factors have been discussed (Dolisca et al. 2006, Kosoy et al. 2008, Ostrom 1990, Brännlund et al. 2009, Wietze 2000, Behera 2009, Agrawal and Gupta 2005, Poteete and Ostrom 2004). A brief introduction on these factors will follow.

*Education* is one of those factors. Illiterate persons are shown to be less engaged in conservation of natural resources. The number of years at school is also shown to affect the participation in natural resource conservation (Dolisca et al. 2006 p. 325,329).

The *size* of the village, i.e. number of inhabitants, also affects the extent that people participate. Studies have shown that people in smaller communities do participate to a greater extent than those in bigger ones (Kosoy et al. 2008 p. 2079). But others have also stated that the community cannot be too small, it should be big enough to be able to secure the participation and also funds (Ostrom 1990).

*Migration* is also a factor that affects participation as people that have migrated to a new area often don't have the same land rights and the same security as people that have lived in the same area for many generations. Thus, it has been shown that people that have migrated are less engaged in conserving natural resources (Brännlund et al. 2009. 471-473).

Local *politicians' will* to influence people to participate also has an important role especially in communities where people lack the skill to organize participation themselves. A Mexican study has shown that the lack of consensus among the local politician affected the participation negatively (Kosoy et al. 2008 p. 2079-2080).

Many prior studies have also shown that the individual's *dependency* on natural resources like forests affect their willingness to participate in the conservation of the resource (Wietze 2000 p. 388, Dolisca et al. 2006 p. 325,329). Besides the dependency, also the *scarcity of the resource* affects the participation (Behera 2009 p. 183). It has been shown that people living close to a very scarce forest are more willing to participate in the conservation of that forest than those living close to a robust forest. This is also the case with the resource dependency; people that have a higher dependency on the resource are more willing to participate in the conservation as they feel the resource has a higher value (Wietze 2000 P. 388).

*Income* has been shown to have a positive influence on people's willingness to participate in resource conservation efforts. The higher the income a person has the higher the likelihood that he or she will participate. In a study conducted in Nepal, it was shown that two of three economic variables that was tested for, income and amount of land owned, had a significant effect on participation in the management of natural resources. The variable that did not have any significant effect was the amount of animal in possession (Agrawal and Gupta 2005 p. 1106 – 1107).

*Proximity* to the forest affects the willingness for people to participate as they feel that there is no need to get involved in saving the forest if they are not closely connected to it. The proximity to the forest is also connected to the dependency on it and the more distance from the forest the less willing the potential participators is to participate (Poteete and Ostrom 2004 p. 447).

### **3. Method**

A major part of the information gathered about participation and factors affecting it, was used to choose among the units (Areas) to be studied. Therefore a great part of the report will be dedicated to methodical discussions.

In order to study how the history of play affects participation in community forest management, a field study in the Kakamega rainforest in the western parts of Kenya was conducted.

The information was gathered during a visit to the Kakamega rainforest. The information is of two different types. The first one is *qualitative* information gathered through interviews with local experts in the field which constitutes the main basis for the results in the study. The second type of information is *quantitative* information obtained at the Kenyan National Bureau of statistics (KNBS). This information was mainly used to control for other variables that also could affect the participation in the forest management.

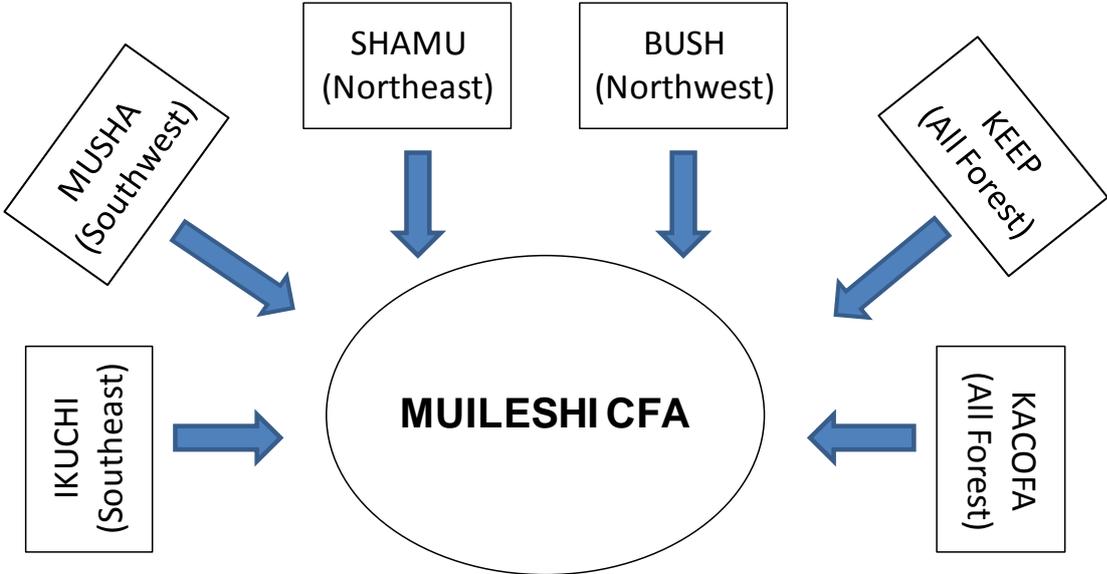
#### **3.1 Study Area and unit of analysis**

The biggest part of the study was to investigate the factors that affect participation and with that information choose the units that were to be studied.

The area that is studied is the Kakamega rainforest in the western parts of Kenya close to Lake Victoria. The forest is unique in that it is the last remainder of a once large rainforest. It is threatened from an overuse from a growing population around the forest (Bleher et al. 2006), a situation that is similar to many endangered renewable resources around the world. This is one of the reasons for choosing the Kakamega rainforest for this study as it represents a typical case of the state of renewable resources.

The Kakamega rainforest is situated in the Kakamega east district close to the town of Kakamega. The population is mainly rural and the district is home to the tribe of Louya and the main income comes from farming.

Prior to the implementation of the new Forest Act 2005, 3 community forest associations (CFA) existed in the region, MUILESHI, KACOFA (Kakamega Community Forest Association) and KEEP (Kakamega Environmental Education Program). KACOFA and KEEP merged into MUILESHI and became Community based organizations (CBO). Within the MUILESHI CFA there already were 4 CBOs that represented the northeast, northwest southeast and the southwest areas around the forest. Each CBO consists of members from two communities. Each community lies within one sub location<sup>2</sup> from which all citizens can be members of the CBO. These CBOs are BUSH in the northwest, SHAMU in the northeast, MUSHA in the southwest and IKUCHI in the southeast. These CBOs are only active in their specific areas and KACOFA and KEEP are active all around the forest (See Figure 3.1 and Table 3.1).



**Figure 3.1 Structure of the six CBOs (Community Based Organizations) forming MUILESHI CFA (Community Forest Association) in the Kakamega Forest Station – Kakamega Forest**

The forest itself is managed by two different national departments. The northern parts of the forest are managed by the Kenya wildlife service (KWS) because the forest is home to endangered monkeys. The southern parts of the forest are managed by the Kenya forest service (KFS) which manage all of Kenya’s forests. KFS uses the participatory forest

<sup>2</sup> Sub location is the lowest official administrative level in Kenya

management (PFM) method (Ongugo et al. 2008 p. 3-5) The BUSH and SHAMU CBOs border the KWS and the KFS parts of the forest and the MUSHHA and IKUCHI CBOs border only the KFS parts of the forest. Members of the CBOs are allowed to extract forest products from the KFS parts of the forest if they pay a monthly permit.

There are eight communities that could be compared, two for each area specific CBO (See Table 3.1). As both communities for each CBO represent citizens from the whole sub location where it is situated, it is not the communities as such but the sub locations that would be compared. The two sub locations for each CBO are situated very close and therefore it would not be fruitful to compare them as they would not differ very much. To make a comparison more fruitful both these sub locations will be treated as one. That means that there are four such “combined” sub locations that can be compared, one for each area specific CBO (See Table 3.1).

**Table 3.1 Villages and sub locations of the 4 area-specific community based organizations (CBO)**

<b>CBO</b>	<b>Villages</b>	<b>Sub locations</b>
BUSH	Bukhungu Shihingu	Buyanga Lubao
SHAMU	Shanderema Mukomari	Lukusi Ivakale
MUSHA	Musembe Shamiloli	Mukulusu Mukango
IKUCHI	Ikuywa Chirobani	Ikuywa Lunyu

It is in the CBOs and the areas surrounding them that all the projects are managed and all the members meet to discuss how to run the management. One could say that the CBOs are the organs that form the body (CFA), without the CBOs the CFA would die instantly.

**3.2. Collecting information**

**3.2.1 Interviews**

The interview method was the main method used in this study for collecting information. During the field trip to the Kakamega region several interviews were conducted ranging from 10 minutes up to 3 hours. Most of the interviews were conducted with only one person but some were group interviews which is a method also used in other studies (Eriksson Baaz and

[Stern 2009 p. 503-504](#)). All interviews were with experts with relevant expertise and ranged from community members, leaders within the CFA and CBOs, a professor who is an expert in the Kakamega rainforest, and the zonal manager of the Kakamega rainforest appointed by the KFS.

When performing a study based mainly on interviews it is important to remember that the people that are interviewed might have a “hidden agenda” or want to please (i.e. give answers they think the interviewer wants) and therefore will not always tell the truth. Source criticism is therefore crucial and it is important to have a good strategy to ensure the authenticity of the information ([Esaiasson et al. 2007 p. 318-323](#)). The strategy used in this study was to always have two independent sources telling the same facts before relying on it.

### **3.2.2 Statistics**

When collecting statistics needed to control for some of the variables in the study, statistics from KNBS was used. All the needed statistics were found in 2009 population and housing census volume 1A ([Kenya Census. 2009. Nipo! Natambulika!](#)). However, the bureau had so far only published statistics on the district level, while the CBOs in the Kakamega rainforest are active in the sub location level. At a meeting with Dr. Opiyo, Director of Population and Social Statistics, he released the needed statistics on the sub location level in an unofficial document based on the 2009 census. Statistics from the KNBS have been used in prior published studies and is therefore believed to be reliable ([Müller and Mburu 2009 p. 970](#)).

### **3.3 Operationalization**

When using interviews and statistics in a study it is important that the variables that are used are validated and capture the concepts that are studied. Without good operationalizations, the validity will be low. A widely accepted way to operationalize the variables is to use the same kind of operationalization that has previously been used by other researchers. To the highest extent possible, that is how the variables are operationalized also in the present study. The variables were operationalized to match either interview questions or available statistics.

In the present study, there are 9 variables that had to be operationalized, and those are participation, history of play, education, income, size of the village, migration, political will and dependency and proximity to the forest.

### ***3.3.1 Education, income and size of village***

Information regarding the variables education, income and size on village was gathered from KNBS. Therefore the operationalization of these variables was limited to those already performed by the researchers at the bureau. However, the operationalizations made by the KNBS are fairly standardized and identical for all the areas studied in this study. Therefore these operationalizations can be used.

For income the employment rate was used as an indicator. This might not capture all the potential incomes that an individual in Kenya have but it was the only available measure that could be accessed in the statistics.

For education the school attendance was used as this captures the variation in education levels among the rural population in Kenya.

For the size on the village the number of inhabitants in the sub location where the village is situated was used.

### ***3.3.2 Dependency on forest***

As mentioned before both dependency and scarcity of the forest resources affects the participation in the forest management (See Section 2.5).The scarcity is not relevant in the present study as all studied communities are situated next to the same forest. The dependency on the forest for livelihood, such as firewood collection and grazing for their cows, on the other hand could differ between the villages. The operationalization of the dependency of the forest was therefore the community's dependency on forest products like firewood collection, grazing for cows, herb collecting, and ecotourism. The type of livelihood in the area was also used to control for the dependency on the forest. If the people in the area mainly had incomes connected to the city (Kakamega) the dependency was regarded as low while it was regarded as high if the income was connected mainly to the forest and farming.

### ***3.3.3 Political will***

The political will of local leaders can have a big influence on the peoples' willingness to participate in the forest management. To be able to fully control for this variable it was necessary to investigate both the local leaders and decision makers. In the case of the Kakamega rainforest, the local leaders consist of different elders, district officers and members of the national parliament. In prior research, the local elders have been used as a

measurement of political will (Kosoy et al. 2008 p. 2079-2080). The operationalizations used in the present study were therefore:

Is the peoples' participation in the forest management supported by the:

- local elders in the community?
- district officer?
- representative in the national parliament<sup>3</sup> for the specific area?

### 3.3.4 *Proximity to the forest*

The proximity to the forest was operationalized as the proximity of the CBOs to the KFS parts of forest<sup>4</sup>.

### 3.3.5 *Migration*

The reason why migration might affect the participation in the forest management is as mentioned above that newly migrated inhabitants might feel less secure about their land rights. Migration was operationalized as the number of migrated inhabitants and also how long the area where the community is situated had been populated (Brännlund et al. 2009 p. 471-473).

### 3.3.6 *Participation*

To be able to operationalize the dependent variable participation, one has to define what is meant by participation. The definition used in the present study was the one used by the Food and Agriculture Organization of the United Nations (FAO)

*“Public participation is a voluntary process whereby people, **individually** or through **organized groups**, can exchange information, express opinions and articulate interests, and have the **potential to influence** decisions or the outcome of the matter at hand.” (FAO 2000 p. 9)*

As FAO is a United Nations organization, definitions made by them are widely accepted throughout the world. The core in FAO's definition of participation is that people should be active in some kind of activity that gives them access to information, express opinions and possibility to influence decisions within organized groups or individually.

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<sup>3</sup> Kenya uses the Majority, with simple majority vote, election system.

<sup>4</sup> This because it is in the KFS parts of the forest the participatory forest management (PFM) system is implemented.

A small focus group meeting was held with members and leaders from the different CBOs with the goal to find out what indicators that best described if a community had active members or not. The result from the meeting revealed that the number of members that the local CBO had, the number of members that participated in CBO officials elections and the percentage of users paying for forest service permits, were the main indicators (CBO/CFA members 2011-12/4). These indicators capture the potential to influence, articulate interests, express opinions but might not capture the potential to exchange information.

The operationalization of participation was therefore:

- The number of members the local CBO
- The number of active members in the local CBO
- The number of members participating in elections of local CBO officials
- The number of community members that pay for permits when extracting forest services.

### **3.3.7 History of play**

As history of play is the same as prior experience of a similar action, history of play can be different things depending on what is studied. In the present study participation was studied and therefore the history of play was operationalized as prior experience of participation. To be able to find the best indicators of history of play a focus group meeting was held with members from the communities around the rainforest (Community members around Kakamega rainforest 2011-12/4). An interview of an expert of the Kakamega rainforest at the Maseno Manlindi University was also performed (PhD. H.M. Tsingalia 2011-14/4). The interviews gave information on what kind of organizations and cooperations that exist in a typical village in the area. The major organizations and cooperations in the area were church organizations, age groups<sup>5</sup>, Umoja works<sup>6</sup>. Based on this information the operationalization of history of play was made. This operationalization was used to formulate the questions that were used for the interviews with knowledgeable persons from the different communities. The questions regarded the experience of the major organizations and cooperations in the community and if the community members were active in these organizations.

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<sup>5</sup> A group that meets regularly and which members consist of people that graduated the same year or got circumcised the same year etc.

<sup>6</sup> Umoja is a Swahili word for unity. Umoja work is when people come together and help each other to build a school, plow each other's fields, build up a burnt down house and doing other community works.

## **4. Mapping participation**

In the present study, two communities which were known to be similar except for one variable were to be compared. When determining which CBOs to compare, there are two options. Either one can base the choice on the independent variable history of play and search for the difference between the CBOs. Or one can base the choice on the dependent variable participation, holding all other independent factors except history of play constant (Esaiasson et al. 2007 p. 112-116). As it takes more time to investigate the history of play factor than the participation factor and it was important to determine which CBOs to compare and the time was limited, the second option was chosen.

One community with a low participation in the CBO was needed and one with a high participation. To be able to find this information the leader plus at least one member, often two, from every CBO were interviewed.

### **4.1 Participation**

When determining the level of participation in the different CBOs members and the leaders from each CBO were interviewed. Each CBO is represented by one area specific CBO and some also with KEEP and KACOFA (which are active in many places around the forest). The level of participation was determined based on these interviews.

#### **4.1.1 MUSHA CBO**

The MUSHA CBO representing the southwest area is classified to have a high level of participation in the forest management.

The MUSHA CBO has around 100 members. According to the members of the CBO it is about 80 to 90% of the members that shows up for the meetings and it can be up to 100% that comes for the elections held every fifth year (Sylvester Mambili, MUSHA chairman 2011-26/4, MUSHA CBO members 2011-26/4).

In addition to the MUSHA CBO, KEEP and KACOFA CBOs are also very active in the area, both from a couple hundred up to a thousand members (Anton Pinto, KEEP manager 2011-22/4, Joseph Lukalia, KACOFA chairman 2011-23/4).

When the chairman of IKUCHI CBO was asked about the participation in all the CBOs he declared that

*“MUSHA CBO is very active compared to the other CBOs, if you also take KEEP and KACOFA (as they are in the same area) the number of members will be very high as they are very many compared to us others.” (Sylvester Murwa, IKUCHI chairman 2011-28/4).*

That statement shows that the other leaders around the forest are aware of that the southwest area of the forest is more active than the other areas.

When it comes to paying for the permits for extracting forest products there is no exact number on how many that pays, but the chairman for MUSHA stated that it is a very high percentage of the population that pays, much higher than the IKUCHI area (Sylvester Mambili, MUSHA chairman 2011-28/4).

Based on this information the MUSHA CBO is regarded to have a high participation.

#### **4.1.2 BUSH CBO**

The BUSH CBO representing the northwest area is classified to have a low level of participation in the forest management.

The BUSH CBO have around 50-60 members and around 25 of them are active in the regular meetings held every month. The officials and the chairman of the CBO are elected every third year. Approximately 25 members participate in these elections (Kizito Ashiono, BUSH chairman 2011-21/4).

In addition to BUSH CBO, KEEP CBO has one station in the area which is the second most active of the four stations that KEEP has (Anton Pinto, KEEP manager 2011-22/4).

There is around 165 members in User groups, which you have to be a member of the be able to legally extract forest products from the forest, 110 of these members pay the monthly permits for extracting forest products (Kizito Ashiono, BUSH chairman 2011-21/4).

Due to the relative low level of active members in the CBO (25/60) in meetings and elections and that relatively few User group members pay for the permits that they need to legally extract forest products the participation, level in the BUSH CBO is regarded as low.

#### **4.1.3 SHAMU CBO**

The SHAMU CBO representing the northeast area is classified to have a low level of participation in the forest management.

The SHAMU CBO have 32 members, 28 of them are active in the regular meetings held each month. Approximately 28-30 members show up for the elections ([Seth Ligare, SHAMU chairman 2011-20/4](#), [SHAMU CBO members 2011-20/4](#)). Although most of the members are active in meetings and elections, the number of members in the CBO is low in relation to the population in the area (32/11375) (See Table 4.1).

According to Sylvester Murwa chairman for IKUCHI CBO and secretary of MUILESHI CFA SHAMU is the least active among the six CBOs in relation to the population in the area ([Sylvester Murwa, IKUCHI chairman 2011-28/4](#)).

The total number of members in the User groups is unclear due to lack of documentation, but the biggest User group in the area, the “grazers” have 158 members of which only about one third are active ([SHAMU CBO members 2011-20/4](#)).

Based on this information the level of participation in SHAMU CBO is regarded to be low.

#### **4.1.4 IKUCHI CBO**

The IKUCHI CBO representing the southeast area is classified to have a low level of participation in the forest management.

The IKUCHI CBO has 33 members. Of those members around 15 are active in the regular meetings every month. 18 are active when it comes to the elections held every third year. ([Sylvester Murwa, IKUCHI chairman 2011-28/4](#)).

In addition to IKUCHI CBO, KEEP CBO has one station in the south-eastern area. This is the least active station of the four that KEEP has. Anton Pinto, Manager in KEEP explains the reason;

*“What I could say is that people in Ikuywa (the sub location where KEEP has its station) are ignorant and that is why we started up a program there very slowly, to start the education and change from what they use to do.”* ([Anton Pinto, KEEP manager 2011-22/4](#)).

IKUCHI CBO have many User groups but most community members that use the forest services are not member of a User group and do not pay for the permits. Sylvester Murwa (Chairman IKUCHI) explains;

*“Let me say in terms of firewood collecting, my people do not pay for the permits they just go in the forest and take, they don’t mind if they are being caught. Even grass cutting they don’t pay.” (Sylvester Murwa, IKUCHI chairman 2011-28/4).*

According to the members of the IKUCHI CBO it is up to nine of ten users of the forest that do not pay for the services in the area. The community members say that the reason for this is that in the early days people did not have to pay for the forest services and they like it that way (IKUCHI CBO members, 2011-28/4).

Based on this information level of participation in the IKUCHI CBO is regarded as low.

#### **4.2 Determining which CBOs to compare**

The participation analysis showed that the MUSHHA CBO had a high participation in the forest management while the other CBOs had a low participation (See Table 4.1). To be able to study the history of play one CBO with a high participation and one with a low were needed. Therefore the MUSHHA CBO qualified as the CBO with a high participation. Among the CBOs with a low participation the IKUCHI CBO is the one most similar to the MUSHHA CBO regarding the controlling variables education, income and proximity to the forest (See Table 4.1). The number of inhabitants in the MUSHHA CBO is 3174 higher than that of the IKUCHI CBO. However this difference cannot explain the big difference in participation in the forest management. This makes IKUCHI CBO the best alternative to be compared with MUSHHA CBO.

**Table 4.1 Participation together with controlling variables collected from Kenyan national bureau of statistics (KNBS)**

CBO	Variables				
	Participation	Education (% never attended school)	Income (% employed)	Size (number of inhabitants > 3 years of age)	Proximity to the forest
<b>BUSH</b>	Low	10.8	50.1	9061	Far
<b>SHAMU</b>	Low	14.3	49.4	11375	Far
<b>MUSHHA</b>	High	17.6	59.2	13097	Close
<b>IKUCHI</b>	Low	16.7	56.0	9923	Close

Before comparing the two CBOs' levels of history of play we must first control for the variables migration, dependency on forest and political will to see if these variables could explain the differences in participation between the two CBOs.

The *migration* level does not differ among the two areas where the IKUCHI and MUSHA CBOs are active. The only difference is that the MUSHA area has been settled for a longer time. However, the IKUCHI area has been settled for at least 150 years (Sylvester Murwa, IKUCHI chairman 2011-28/4), and after such a long time the land rights should be equally secured as that of the MUSHA CBO despite the difference in time during which the areas have been settled.

As the whole Kakamega rainforest and all the CBOs lies within the same district and chair the same district officer and the same representative in the national parliament there should be no difference in *political will* at these levels. Nor is there a difference between the CBOs regarding the local leaders as both leaders and members of the CBOs state that the local leaders encourage the community members to get involved in the forest management (Sylvester Murwa, IKUCHI chairman. 2011-28/4).

Both the leaders and the members of each CBO claimed that their own area was most *dependent on the forest*. The area where MUSHA CBO is situated used to do a lot of charcoal burning and wood cutting, and therefore claimed that they are very dependent on the forest for other products now when these activities are illegal. The area where IKUCHI is situated has a few large scale sugarcane farmers but many small scale farmers that cannot support their families on their farming. Therefore they are very dependent on the forest for alternative source of income (Sylvester Murwa, IKUCHI chairman 2011-28/4, Sylvester Mambili, MUSHA chairman 2011-26/4).

To get a better understanding on what area that is the most dependent on the forest the Kakamega rainforest expert at the Masinde Muliro University, Mr. Tsingalia was consulted. According to him the people in the MUSHA area had better adjusted to the new situation after the new forest act and more people in this area had found an alternative source of income, like driving a motorcycle taxi. The people in the IKUCHI area on the other hand are surrounded by the forest and have found it harder to find an alternative source of income. Therefore the area where IKUCHI CBO is situated is more dependent on the forest according to Mr. Tsingalia (PhD. H.M. Tsingalia 2011-14/4).

Based on the members and leaders from the CBOs it is not possible to evaluate the relative dependency of the forest of the two areas. However, based on the statement of Mr. Tsingale, who can be assumed less biased than the others, it is reasonable to conclude that the IKUCHI area is somewhat more dependent on the forest compared to the MUSHA area.

*In summary*, the MUSHA and IKUCHI CBOs are very similar differing only in two controlling variables. MUSHA has a somewhat larger population that could affect the participation negatively. IKUCHI CBO on the other hand has a higher dependency on the forest that affects the participation positively. Taken together these differences would if anything have decreased the difference in participation between the two CBOs. Therefore the observed difference in participation must have another explanation.

## **5. Results**

The previous experience of participation in different kinds of organizations (history of play) in the two CBOs MUSHA and IKUCHI was analysed based on interviews with community members and members and leaders of the CBOs.

### **5.1. History of play in MUSHA CBO**

According to Pastor Solomon and social worker Shivoga there are a lot of organizations in the MUSHA CBO area. There are many local churches but the international ones are the ones with most members, everyone in the community is a member of a church. The churches have a lot of projects like schooling for orphans and women's groups where many community members get involved ([Pastor Solomon Chimwami and Social worker Shivoga Shitambasi Papa 2011-26/4](#)).

There are many age groups in the area. Most common are the circumcision groups in which almost every man is a member. The age groups in the area consist of people that have gone in the same class, been baptized at the same time or experienced other life changing experiences together. In this area these groups are very active and sometimes meet every month to do different types of activities ([Sylvester Mambili, MUSHA chairman 2011-26/4](#)).

Even companies and banks form organizations in this area, mostly for microfinance so that the local population can develop their small farms etc. These organizations are very popular. The church also has programs called "Mary goes around" for microfinance where people come together and collect money that later can be borrowed ([Joseph Lukalia, KACOFA chairman 2011-23/4](#)).

Although the area has many very active organizations of different sizes, it is the Umoja work that engages the community the most. According to Solomon, Shivogo and the chairman of MUSHA CBO, whenever there is a need for doing something collectively the community always comes together to do this and it is a very high attendance (Pastor Solomon Chimwami and Social worker Shivoga Shitambasi Papa 2011-26/4, Sylvester Mambili, MUSHA chairman 2011-26/4).

There are many examples of Umoja works in the area such as building a road, house, school, well, church, helping with money, contributing to funerals etc. The most common Umoja work is when farmers, in groups of ten to twenty, come together to do all the work on each other farms to make the work easier (Sylvester Mambili, MUSHA chairman 2011-26/4).

## **5.2. History of play in IKUCHI CBO**

According to an elderly woman called Koleta, the local Pastor Festo and the chairman of ICUCHI CBO there are some active organizations in the area where the IKUCHI CBO is situated (Koleta Shunza and Pastor Festo Muchesia 2011-28/4, Sylvester Murwa, IKUCHI chairman 2011-28/4).

The different types of age groups that exist in the MUSHA CBO area do not seem to exist in this area. But there are some organizations similar to the age groups, such as a family support organization that help women of different ages to develop their household skills. There is also an organization for widows and widowers. The area also has a youth organization that is similar both to the age group and the finance organization in the MUSHA CBO area. This organization supports the youth with loans and training. Although these organizations exist and are similar to organizations in the MUSHA CBO they are not as many and not as big (Sylvester Murwa, IKUCHI chairman 2011-28/4).

There are many churches in the area both local and international, and many of them are new. All community members are member of a church. These churches have many active projects especially for women (Koleta Shunza and Pastor Festo Muchesia 2011-28/4).

In contrast to the MUSHA area, the Umoja work does not exist in the ICUCHI area. There is no experience at all of building roads, helping with farm chores, building wells, schools, contributing with money and such.

*“No we have no experience of Umoja work. In the term of building a road and such it has never happened in our area. We totally rely on ourselves.”* (Sylvester Murwa, IKUCHI chairman 2011-28/4).

The reason for this is the lack of knowledge; people have never learned why they should come together and cooperate. (Koleta Shunza and Pastor Festo Muchesia 2011-28/4, Sylvester Murwa, IKUCHI chairman 2011-28/4).

### **5.3 Comparison**

Even though there are no exact numbers on how many organizations that exist in the two areas or how many individuals that participates, there is a clear difference among the two areas regarding the history of play. The MUSHHA CBO area has a high level of history of play regarding organizations and cooperations while IKUCHI CBO area has a much lower.

Both areas have big and active church organizations where many if not all community members are active. Both areas also have other active organizations like the age groups and the finance organizations. But even though these organizations exist in both areas they seem to be both bigger and more in the MUSHHA CBO area.

It is when it comes to the Umoja work the really big difference is evident. The Umoja work seems to be a natural part of the lives for the people in the MUSHHA CBO area, they have a lot of experience of it and it engages the whole community. In the IKUCHI area it does not even exist.

## **6. Discussion**

The aim of this study was to investigate if Elinor Ostrom's theories about how history of play affects players' decision to cooperate or not also is true in a real life setting in the Kakamega rainforest in Kenya. The results showed that the MUSHHA CBO with a higher level of participation in the forest management compared to the IKUCHI CBO clearly had a higher level of history of play. They had both more and bigger organizations in the MUSHHA CBO area which is a good indicator of history of play but the most striking thing is that the MUSHHA CBO area had a flourishing Umoja work compared to the IKUCHI CBO area that had no Umoja work at all. Since all other variables controlled for are very similar in both CBOs, except the population and the dependency on the forest which actually if anything would have decreased the difference in participation, there seems to be a clear connection between history of play and participation in the forest management. The results therefore verify the study hypothesis in that the history of play does have an effect on the willingness of local communities to participate in the forest management.

When it comes to how social capital is created it is harder to draw any conclusion, but as a good amount of trust to each other in the local communities is needed to be able to create and maintain a good cooperation in the management of common pool resources it is reasonable to assume that the CBO area with the higher participation in this management also should have a higher amount of social capital. As both CBOs are situated close to each other and are very similar to each other, come from the same tribe, share the same district officer, the same

member of the national parliament, it is unlikely that there should be any difference between the inhabitants' views on the government. However as shown there is a big difference among to two CBOs when it comes to the amount of history of cooperations and organizations. This result supports Putnam's explanation on how social capital is created. But as this was not the main objective of the study there is many uncertainties in these results and more research is needed in this field.

In summary this field study shows that Elinor Ostroms' theories about history of play and how it affects cooperation/participation also are valid in a real life setting. But more field studies are needed to confirm this conclusion.

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