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**APPROPRIATION OF SOCIO-TECHNICAL INNOVATION FOR LARGE  
SCALE AGRICULTURE:**

**CASE STUDY OF THE SHARED MECHANIZATION IN BENIN**

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*Poster on the occasion of the  
52<sup>nd</sup> GEWISOLA Annual Conference  
„Challenges of Global Change for Agricultural  
Development and World Food Security“  
Universität Hohenheim, September 26 – 28, 2012*

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# APPROPRIATION OF SOCIO-TECHNICAL INNOVATION FOR LARGE SCALE AGRICULTURE: CASE STUDY OF THE SHARED MECHANIZATION IN BENIN

## 1. Introduction

Many studies conducted on the mechanization of agriculture in developing countries mainly dealt with the impact of mechanization on the performance of agriculture, the reduction of the strenuousness of agricultural activities and the sustainability of agricultural systems. The shared mechanization is a socio-technical package, suggesting a certain type of organization in addition to the modern plowing technology. In a context where many new top-down agricultural technologies were rejected by farmers, the shared mechanization which apart from being also top-down is more complex was successful. The paper aims at analyzing different processes of appropriation leading to the sustainable adoption of the shared mechanization. Specifically, the paper analyzes (i) CUMA members' representations of the shared mechanization, (ii) the norm and principle negotiations within the CUMA, and (iii) the organizational stability and performance with regard to CUMA original objectives.

## 2. Theoretical and methodological frameworks

We conducted the study predominantly within the actor-oriented perspective seeking to provide a conceptual and methodological framework for understanding the processes by which particular social arrangements emerge and are consolidated or reworked in the everyday lives. This research was conducted in Bembereke district in Benin, where the shared mechanization approach was mostly successful. We selected one after the other three case studies. They are respectively the CUMA *Ankouamon* in Beroubouay village, *Nassara* in Guere village and *Besetindam* in Ina village. The data collected on the structure and functioning of the CUMA include the membership conditions, governance mechanisms, types of relationship between members, different services provided by the CUMA to members.

## 3. Results

Table 1 presents a comparison of the three types of CUMA with regard to their boundary delimitation factors, the dominant values and the monitoring and decision-making processes. To a given boundary delimitation factors are associated some specific values and a subsequent monitoring system. Beside the main formal criteria for membership which are the residence area and the payment of share, other factors such social values (individualism vs. collectivism), ideology (religion in this case), kinship and friendship influence the boundary of the CUMA. Boundaries setting negotiations permanently take place in CUMA which gather people from different opinions with regard to these factors.

**Table 2: Comparison of the three types of CUMA**

	<b>Boundary delimitation criteria</b>	<b>Values</b>	<b>Monitoring: Decision-making</b>
Ideological CUMA	Religion	Trust	More democratic decision making and monitoring but highly influenced by the president and the equipment manager
Patriarchal CUMA	Kinship and friendship	Respect to authority Low of primogeniture	More autocratic decision making and monitoring by the head of the household who is also the president
Bipolar CUMA	Residence area	Rationality vs. Collectivism	Decisions are deals between both groups or imposed by one group

The functioning of CUMA was expected to align with common principles of cooperative governance structures. Our results show that negotiations of norms and principles take place within CUMA, based on the values and CUMA representations of the members. While some people emphasize the social function of CUMA, other people stress the technical function of CUMA. Accordingly, the cooperative is seen as a sphere of mutual help and solidarity by the ones and as a space giving opportunity to improve agricultural production by the others. Between both extreme representations of CUMA, there is a large range of possibilities.

#### **4. Discussion and conclusion**

All the CUMA we investigated recorded interesting performance records with regard to the evolution of members which did not go down, the maintenance of machineries and the increase of the extent of land cultivated by the members. However they experience difficulty controlling the observance of the boundaries and the machineries utilization rules.

*Rules observance, boundaries and power relationships:* The boundaries of CUMA are usually challenged by its own members divided into subgroups according to their representations of the CUMA, that is, social solidarity or economic rationality. Collective action is influenced by cultural norms (BEYENE, 2009). All the CUMA faced frequent attempts for power usurpation. The existence of clear rules is required for collective action to be successful (KRUIJSSEN et al. 2009). Beyond the existence of clear rules, the intern capacity of cooperatives to ensure the observance of shared rules seems to be from far the biggest challenge.

*Rules application and social dilemma:* Many CUMA members plow extent of land which is from far more than what they declare, with the complicity of tractor drivers. The equipments of the CUMA are often used without authorization of the leaders to plow in farms of non members. The study area is characterized by strong parental and friend relationships based on social values such as solidarity. CUMA members get caught in a trap of their social obligations. The leaders can then hardly establish violation of operational rules for regulation or sanction purposes. Even in CUMA built on mutual trust, members must deal with dilemma (HECKATHORN, 1996; KOLLOCK, 1998).

#### **6. Conclusion**

This paper shows that prescribed cooperative principles are then considered as suggestions by the stakeholders. Boundaries, rules and principles of cooperatives, far from being gained in advance, are permanently negotiated within the cooperatives to make collective action successful. The real and practical principles which are applied result from the confrontation between modern cooperative rules and local socio-cultural norms. The equilibrium point can be found out of the common guidelines that should govern the functioning of a cooperative.

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