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CoS-SIS Convergence of Sciences  
Strengthening Agricultural Innovation Systems  
Programme

# Promoting African Smallholder Agricultural production systems through Institutional Innovation

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Elmina Ghana October 22 - 26, 2012

Editors  
Arnold van Huis, Niels Röling  
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## **How institutions shape human-crocodile interactions: a framing analysis for improving agro-pastoral dam management in northern Benin**

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## Introduction

In Northern Benin, the agro-pastoral dams (APDs) are waterholes used for various purposes such as providing drinking water for livestock and people, fish production, vegetable production, swimming, bathing, washing, house construction, food cropping and cotton farming (Kpéra et al., 2012). The APDs are also the main habitat for crocodiles. All the practices in the APDs involve various stakeholders including crocodiles, which can also be considered as key stakeholders (Kpéra et al., 2012). Because of the involvement of several stakeholders with different interests, backgrounds, knowledge, opportunities and sometimes differential perspectives to bringing about change in view of perceived challenges, the APDs have complex problem situations (Aarts and Woerkum, 2006, Leeuwis and Aarts, 2011; van Lieshout, 2011). In addition to this complexity, crocodiles make agro-pastoral dams their home where they share space and resources (ecosystem services) with humans. Thus changes that allow humans to live in peace with crocodiles and improve their livelihood are needed. The perspectives to bringing about change imply specific interpretations of realities, constructed by stakeholders when interacting, accordingly to their background and interests (Idrissou et al., 2011; Aarts and Woerkum, 2006). In this study, the following research questions have been addressed; (a) how do stakeholders frame the presence of crocodiles in Nikki, Sakabansi and Fombawi dams in terms of problems, causes and solutions? (b) How do stakeholders in Nikki, Sakabansi and Fombawi dams frame formal and informal institutions related to human-crocodile interactions? (c) What contexts have stakeholders constructed that help in justifying their opinions and behaviors in relation to crocodiles?

## Conceptual framework

The research is grounded in three main concepts, namely i. frame and framing, ii. institutions and iii. change

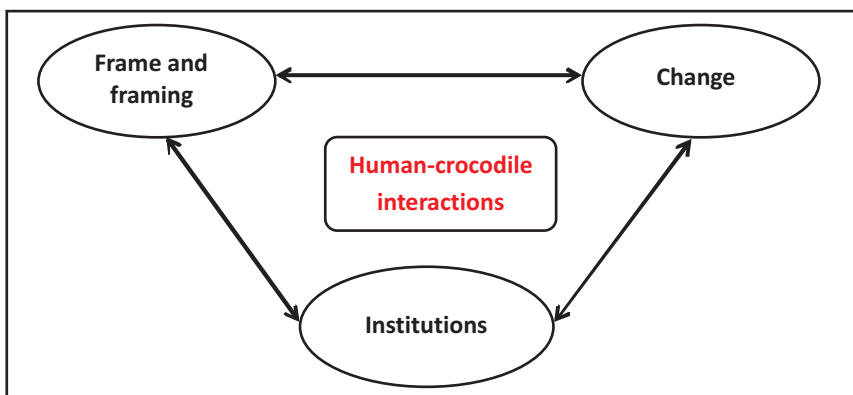


Figure 1. Frames and framing, Institutions and change interplaying in human-crocodile interactions

### ***Frame and framing***

The concept of frame is used to understand the 'rules' which govern our appreciation of our world and allows us to differentiate between different sorts of 'reality' (Goffman, 1974). According to Goffman, frames are social institutions, 'organizational premises', 'not something cognition creates or generates', but which nonetheless constitute 'schemata of interpretation'. Then, framing has to do with making sense, interpreting, and giving meaning to what happens in the ongoing world. In this research, the interactional approach of framing corresponds to what Entman said: "To frame is to select some aspects of a perceived reality and make them more salient in a communicating text".

### ***Institutions and change***

Institutions are informal and formal rules and regulations that govern human action (Hounkonnou et al., 2012; North, 1990; Douglas, 1986). In constructing realities in interaction, we assume that institutional change will be shaped in daily conversations of people. Incentives may or may not result in changing behaviours depending on the way people discuss these in their daily conversations (Aarts & Van Woerkum, 2006; Ford, 1999).

## **Methodology**

### ***Research area***

The research setting covers the local communities around three dams (Nikki, Sakabansi and Fombawi) in Nikki District that lies in the Borgou Department located in north-eastern Benin. We opt for the case study approach as the overarching research design. Case study methods involve an in-depth, longitudinal examination of a single instance or event: a case (Yin, 1994, Yin, 1984). The three dams are very different in terms of the volume of water, priorities in the use of the dam and, the number of crocodiles and the relationship between humans and crocodiles (see table 1).

Table 1. Characteristics of the three cases: Nikki, Sakabansi and Fombawi

<b>Agro-pastoral dams</b>	<b>Capacity (m<sup>3</sup>)</b>	<b>Main uses</b>	<b>Number of crocodiles</b>	<b>Human-crocodile relationship</b>
<b>Sakabansi</b>	200,000	Livestock, fish production, Household use (washing + cleaning), Vegetable production	> 100	Conflict
<b>Fombawi</b>	170,000	Livestock, household use, Fish production	> 300	Collaboration
<b>Nikki</b>	257,000	Fish production, Vegetable production, Livestock, Household use	< 20	In between

## ***Data collection and analysis***

Data were collected over time from 2009 to 2012 using semi-structured interview guide and informal interviews with 112 stakeholders (that belong to the 15 various stakeholders involved in the dams) and 12 focus group discussions. Two meetings with key stakeholders involved in the three APDS were organized in Nikki to increase people's awareness on how their framing affects the way they interact with crocodiles and on how space for change could be created to reach a sustainable use and management of the dams taking into account the interests of all the stakeholders. All the conversations during the interviews and meetings were tape-recorded, transcribed and analysed using discourse analysis methods (Dewulf et al., 2009) by paying attention to the way stakeholders construct the meaning of the issues that they are discussing (Idrissou et al., 2011). The different types of issue frames were then identified: problem, cause and solution frames.

## **Results and analysis**

We mainly describe the **dominant** problems; causes and solutions **frames** in the three villages vis-a vis human-crocodile relationships and explore the way stakeholders interactively construct the meaning of the issue.

### ***Problem frames related to the presence of crocodiles***

In Nikki and Sakabansi, when we asked the neutral question related to people's personal experiences in living with crocodiles, they were all willing to share their experiences and always started by negative frames which regard crocodiles as pests or a constraint hampering their activities. "We fear them. Six people died in the dam when they were swimming and their death has been attributed to crocodiles that may have drowned their victims. However, no woman has been attacked or bitten by crocodiles" (Kora Lamatou, Housewife, Nikki, 2010). While women's problems with crocodiles are limited to anxiety, fishermen always complain about crocodiles that adversely affect their livelihoods: "Crocodiles that live in the dam are a major constraint to fish production. They destroy our fishing materials and eat large size fish species. They eat the bodies of the fish and leave the heads for us. Besides they dig holes into the dyke destabilizing the dam's infrastructures" (Seini, fisherman, Nikki 2010). As regards to local herders, they uttered having concerns with crocodiles: "I have some concerns about the way the number of crocodiles is increasing in the APDs. They attack village dogs and sheep. I suppose that the next step will be the attack of our cattle and why not the herders. We need to find together solutions otherwise livestock farming in the whole district will be put in danger". (Djaouga Jabbar, Secretary of UCOPER, Nikki, 2010).

Scrutinising these utterances, stakeholders frame crocodiles as problematic since they make them fear, predate fish species, attack dogs, sheep and goats, damage fishing



materials, destruction of the dam infrastructures, they are presumed killers of humans, and a threat for livestock production.

In Fombawi, there are more crocodiles than at Nikki and Sakabansi. The best frame of women cleaning shea butter nuts at the water bank is the following: “Crocodiles have been living in this village for many generations. Our grand-father told us that their own grand-father was not able to tell her when they came in the village. They roamed in the village like sheep and goat and they never attacked people or livestock and in turn people did not kill them because they are sacred animals. Today although crocodile remains holy they attack village dogs, sheep and goat that come to drench in the dam. Crocodiles also bite children when they are swimming. They become aggressive because people do not respect the traditional rules related to sacred crocodiles (Focus group discussion, daily users of the APD, Fombawi, 2010).

A fishermen's utterance regarding fishing is the following: “In Fombawi, there are more crocodiles compared to Nikki and Sakabansi. However, fishing parties are easy for us because of the collaboration of the local community and the crocodiles. Before we start fishing, the head of the village prays and requests the holy crocodiles to allow us to fish. After the prayer, crocodiles live the dam and run into their holes located in the vegetation and into the dyke. Then we start fishing. However, young crocodiles are caught in our nets and we return them into the water after fishing” (Seini, fisherman, Fombawi 2011).

Compared to Nikki and Fombawi, fishing does not seem to be confronted with any problems with crocodiles thanks to the local institutions related to them.

### **Cause frames and solution frames related to the presence of crocodiles**

The stakeholders frame a problem between them and crocodiles; they also expressed their ideas on what is at the grassroots of the issue.

In Nikki and Sakabansi, 90% of the women interviewed stated their fear. The reason behind this anxiety is stated as following: “Fifteen year ago, there were many crocodiles in this dam. Nowadays, we cannot count more than ten because people kill them for meat. As the population grows, people destroy the vegetation around the dam to establish food crops and cotton farms. The dam water becomes more and more polluted and this environment is unsuitable for crocodiles; which is why they become aggressive. (Bata Amina, housewife, Nikki, 2011).

Even if crocodile is not a big problem, they explain the cause of their aggressiveness: “If crocodile become aggressive, it is because there are more and more people and strangers in the village who don't respect the rules established by our grandparents and start killing the animal. In turn the animal changes its behaviour for self-defence “if it was you, how will you react? Some children throw stones and harm them. Other ethnic group such as Fulani and Gando children for whom crocodiles are not holy beat the

animal while they are basking on the bank. This makes them very angry and aggressive (Fombawi, 2011).

Nikki and Sakabansi daily users attributed the aggressiveness of crocodiles to the nature of the animal, their diet and illegal hunter's attitude. In Fombawi, although crocodiles cause damages, daily users are less afraid of crocodiles and ascribe crocodile negative behaviour to the increase of the local population and the disobedience to traditional rules related crocodiles and to the use of the dam.

### **Solution frames related to the presence of crocodiles**

Stakeholders usually provide solutions to deal with problems caused by crocodiles. We present the different solutions proposed by internal and external stakeholders.

In Nikki, several women that wash to the dam suggested: "To avoid any attack and fear caused by crocodiles, it is necessary to have only one entrance to the dam and this place should not be used by crocodiles. The employment of security guard changes many things here. He controls the users of the dam and forbids swimming" (Kora Lamatou, Housewife, Nikki, 2010).

Fishermen's solution frames are related to crocodile predation on fish: "PADPPA offered two floating cages and 5000 small fish for Nikki and we experienced that they are productive. If you can find a project that will help us to install a floating cage in Sakabansi, we will avoid crocodile predation on fish species" (Imorou, Fisherman, Sakabansi 2011).

In Sakabansi, several daily users suggested to find a guard to keep the dam and usually refresh users' mind about the rules relative to the dam. "You may see in Nikki, the dam users are more disciplined than here because of the presence of a security guard. The council of Nikki should also employ a security guard to keep this dam"

However, they presented hidden solution as stated: "In Sakabansi, we can reduce their number by killing big specimens" (Imorou, Sakabansi, 2011)

### **Conclusion and suggestions**

In Nikki and Sakabansi, stakeholders involved in the agro-pastoral dams deconstruct formal institutions that say crocodiles are protected species while they construct informal institutions for fulfilling their needs according to the way they frame the situation. The following interventions were suggested at the end of the stakeholders meetings:

- Continuation of facilitating meetings of key stakeholders of the three villages;
- Supporting the exchange of frames and institutions related to human-crocodile interactions;

- Reconstructing approaches for peaceful sharing the dams with the crocodiles

## **Questions and Comments**

**Leo Stroosnyder:** You mentioned that there are different frames in the three different villages but you did not say why or what caused the differences across villages?

**Response:** The different framing exists because the situations are not the same. Even when activities are the same, priorities are not the same so they cannot have the same frame. Also people's frames depend on their realities and experiences, so they cannot have the same frames.

**George Essegbey:** So far you have explained the human crocodile interactions from the human perspectives in the communities. Is it possible to explain the differences from the angle of the crocodiles? Have you looked at the crocodiles themselves? Eg. If there are different species, the aggressive species or others could be separated and discussed differently in the villages?

**Response:** In Benin there are 9 species and they have different behaviours.

**George Essegbey:** And Ecology?

**Response:** mainly the environment for reproduction, agropastoral dams fit the home range for the crocodiles so the animals are in the best place.

**Todd Crane:** Given that your research is about framing? Have you considered the crocodile as a stakeholder? In terms of framing your own research, what are the implications of NOT framing crocs as stakeholders?

**Response:** Crocodiles are non-human stakeholders. Framing has to do with humans, framing allows communities to express their behaviors. There is no framing for crocodiles.

**Janice Jiggins:** I understand that in Fanbawi, the crocodiles are recognized by the traditional people as stakeholders with an “agency and voice,” rights and that the people have ways of “talking” with them but this is not the case in the other two communities. What means or processes can be developed so that people in these 2 cases can also “talk” with crocodiles or so that their interactions become less aggressive and hostile?

**Response:** The goal of this research is to help the people accept to live with the crocodiles, not to pray to the crocodiles but to help them live together because of different situations and beliefs in the different villages so the goal is to help the people frame their own beliefs and understand their relationships with the crocodiles as stakeholders better.

**Comment by Sietze:** You should think about what explains the changes in behavior of crocodiles. Your data is strongly based on interviews. You say framing happens in daily conversations. What were you able to document about how people “talk” about in for example churches, mosques, shops, schools, etc.?

**G. A. Mensah:** A meeting between the people of the three villages show that people from Nikki and Sakabanti give the impression to live with the crocodiles without killing them. Have the communities visited each other?

**Response:** Yes.

**Bara Ouloguem:** What is the density of population around the dam? At what time during the day do the people visit the dam? Maybe the population or level of visits can also make the crocodiles more aggressive?

**Response:** The dam is about 3km from the village. Only livestock go to the dam during the dry season. The villagers themselves explain the aggressiveness of the crocs in the dry season as due to the lack of fish in the dam at this time. There are usually no attacks in the rainy season.