

Landscape-level institutional assessment of Baobolong, Kaffrine, Senegal



RESEARCH PROGRAM ON
Climate Change,
Agriculture and
Food Security

ILRI PROJECT REPORT



Institut Sénégalais de Recherches Agricoles

Landscape–level institutional assessment of Baobolong, Kaffrine, Senegal

Astou Diao Camara¹ and Mamadou Fall²

1. Institut Sénégalais de Recherches Agricoles (ISRA)

2. Cheikh Anta Diop University

December 2015

© 2015 International Livestock Research Institute (ILRI)



This publication is copyrighted by the International Livestock Research Institute (ILRI). It is licensed for use under the Creative Commons Attribution-Noncommercial-Share Alike 3.0 Unported Licence. To view this licence, visit <http://creativecommons.org/licenses/by-nc-sa/3.0/>. Unless otherwise noted, you are free to copy, duplicate or reproduce, and distribute, display, or transmit any part of this publication or portions thereof without permission, and to make translations, adaptations, or other derivative works under the following conditions:

- Ⓘ **ATTRIBUTION.** The work must be attributed, but not in any way that suggests endorsement by ILRI or the author(s).
- Ⓝ **NON-COMMERCIAL.** This work may not be used for commercial purposes.
- Ⓓ **SHARE ALIKE.** If this work is altered, transformed, or built upon, the resulting work must be distributed only under the same or similar licence to this one.

NOTICE:

For any reuse or distribution, the licence terms of this work must be made clear to others.

Any of the above conditions can be waived if permission is obtained from the copyright holder.

Nothing in this licence impairs or restricts the author's moral rights.

Fair dealing and other rights are in no way affected by the above.

The parts used must not misrepresent the meaning of the publication.

ILRI would appreciate being sent a copy of any materials in which text, photos etc. have been used.

Editing, formatting, design and layout—ILRI Editorial and Publishing Services, Addis Ababa, Ethiopia

Cover picture: ILRI/Jo Cadilhon

ISBN 92-9146-455-4

Citation: Camara, A.D. and Fall, M. 2015. *Landscape-level institutional assessment of Baobolong, Kaffrine, Senegal*. ILRI Project Report. Nairobi, Kenya: International Livestock Research Institute.

ilri.org

Better lives through livestock

ILRI is a member of the CGIAR Consortium

Box 30709, Nairobi 00100, Kenya
Phone: + 254 20 422 3000
Fax: +254 20 422 3001
Email: ILRI-Kenya@cgiar.org

Box 5689, Addis Ababa, Ethiopia
Phone: +251 11 617 2000
Fax: +251 11 617 2001
Email: ILRI-Ethiopia@cgiar.org

Contents

Tables	v
Executive summary	vi
Acknowledgements and Foreword	vii
Abbreviations and acronyms	viii
Introduction	1
Methodology	2
Description of the Baobolong socio-ecosystem	3
Institutional dimensions of climate change adaptation in the Baobolong ecosystem	5
Salt harvesting: a case of survival rather than a vocation	5
Adaptation issues at the level of riparian villages of Baobolong	5
Underlying governance issues	8
Assessment of the governance mechanism	9
Legitimacy	9
Direction	10
Performance	10
Accountability	11
Fairness	12
An overview of the mechanism	12
Assessment of the institutional system	15
Learning capacity	17
Room for autonomous change	19
Leadership	19
Institutional linkages	19
Resources	19

Fair governance	21
Effectiveness of the decision-making process	22
An overview of the governance system	22
Discussion	24
Conclusion	26
References	27

Tables

Table 1:	Environmental problems by village group	6
Table 2:	Challenges by actors	6
Table 3:	Adaptation and governance issues identified in Baobolong area	8
Table 4:	Details of scores by criterion of the governance mechanism	13

Executive summary

Climate change has implications for agriculture and the livelihoods of communities. These communities develop adaptation strategies by mobilizing resources and knowledge. This case study covers the flooded parts of the Baobolong ecosystem in the Kaffrine region. A rural village, comprising communities highly dependent on water resources, the forest and land, is faced with degradation due to environmental changes. This reflection highlights the adaptation challenges and governance issues, and identifies institutional mechanisms operating in response.

Salt build-up in Baobolong, degradation of the forest, water and wind erosion, and irregular rainfall among others, are the greatest challenges facing local stakeholders. In the face of these challenges, governance issues are mainly related to inherent problems either in public institutions or in community behaviour. These include the inability of public policies to offer solutions to environmental problems as most interventions are based on the duration of projects, the time-bound nature of mechanisms put in place, and a lack of awareness on the part of some resource users. The adaptation capacities of local communities to environmental challenges depend on their own capacity to take full advantage of opportunities that come their way. This situation led to the creation of a local association, *Association des Villages Riverains du Bao Bolong (AVRB)*, which is also the main actor in all the cited challenges. AVRB brings together 14 riparian villages in Baobolong and operates on the basis of a combination of legal rules and 'traditional' norms; it is an institution divided between universal standards of governance and socially constructed rules. As a social actor, it manages more or less to cover a diverse number of issues, but as an environmental governance mechanism, it is limited in terms of resources and strategies.

The entire institutional system has obvious gaps in as far as supporting communities to adapt to climate change is concerned. In the Baobolong area, the communities seem to have been left on their own. The institutions responsible for the management of resources are hindered by lack of resources and coordination of their actions. Their discourse is promising, but their actions are miserable. NGOs and programs financed by foreign donors offer sectorial solutions which need to be coordinated amongst themselves and better managed.

Acknowledgements and Foreword

This research was financed by the CGIAR Research program on Climate Change, Agriculture and Food Security (CCAFS) through the International Livestock Research Institute (ILRI).

We thank the communities living on the banks of Baobolong for allowing us to conduct this study. This study could not have been realised without their support. We would like to make a special mention of the residents of Ndio Bambaly for warmly welcoming us into their homes, particularly the chief of Ndio village, Mr Matar Cissé, and Mr Sow, an eminent personality and headmaster.

We also thank Mr Jean Coly for his unfailing support. He represents the institutional memory of AVRBS and is an important person in the Baobolong area.

Lastly, we would like to thank the administrative and project officers of Kaffrine region (in the Direction Régionale du Développement Rural, Agence Régionale de développement, Projet d'Appui à la Sécurité Alimentaire dans les régions de Louga, Matam et Kaffrine, etc.) for accepting to meet us.

Analyses and comments made in this report are the sole responsibility of the authors and should not be taken to reflect the official opinions of ILRI, the CGIAR or Future Earth.

Abbreviations and acronyms

ASPRODEB	Association Sénégalaise pour la Promotion du Développement à la Base
ANCAR	Agence Nationale de Conseil Agricole et Rural
ARD	Agence Régionale de Développement
AVRB	Association des Villages Riverains du Bao Bolong
CC	Climate change
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CGIAR	Consultative Group on International Agricultural Research
COMI	Coopération pour le monde en voie de développement
CR	Communauté Rurale
DRDR	Direction Régionale du Développement Rural
GDT	Gestion Durable des Terres
GIE	Groupement d'Intérêt Économique
GIEC	Groupe Intergouvernemental d'Experts sur l'évolution du Climat
ILRI	International Livestock Research Institute
ISRA	Institut Sénégalais de Recherche Agronomique
NGO	Non-governmental organization
PAGERNA	Projet d'Auto-promotion et Gestion des Ressources Naturelles au Sine Saloum
PASALOUMAKAF	Projet d'Appui à la Sécurité Alimentaire dans les régions de Louga, Matam et Kaffrine
PLD	Plan Local de Développement
POGV	Programme d'Organisation et de Gestion Villageois
PROGEDE	Programme de Gestion Durable et Participative des Énergies Traditionnelles et de Substitution
USE	L'Union pour la Solidarité et l'Entraide

Introduction

Rural African societies have from time immemorial been adapting to difficult living conditions while engaging in production activities. Governments have been forced to mediate between competing interests related to the actors involved. In addition to these economic challenges, there have been environmental challenges over the last few decades, which further complicate the direction of public policy. Since the 1992 Rio summit, these policies have increasingly integrated sustainable development, thereby touching on climate change.

Moreover, in the face of structural problems facing agriculture, rural communities do not at first glance consider climate change as being the most critical factor of their vulnerability. Abundant research literature, both theoretical and empirical, shows how climate change affects production resources and weakens the capacities of local communities. The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), is involved in offering research-based solutions in different areas of action research. The current study is part of the research on the integration of institutional dimensions of adaptation to climate change.

Governance, a polysemic term, gives room to the participation of the citizens in the management of the affairs of their locality. This means that there is consensus on the need to obtain political, economic and social solutions to problems through the inclusion of collective action. Since environmental problems involve communities and institutions, the analysis of the institutional dimensions of climate change adaptation provides an opportunity to learn how power is shared among actors, and how the interactions between these actors affect adaptation capacities. This is what we will attempt to do in this case study.

Methodology

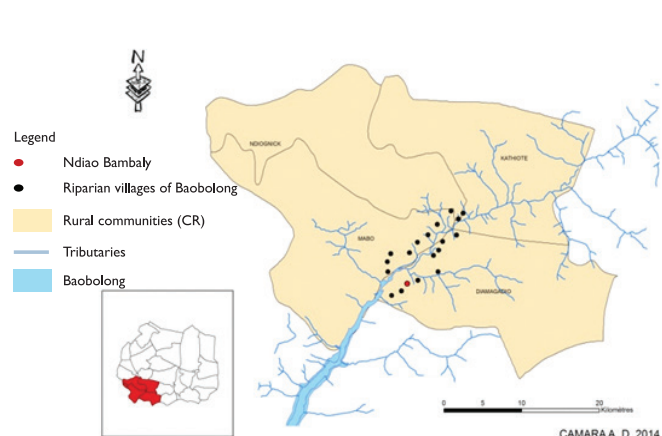
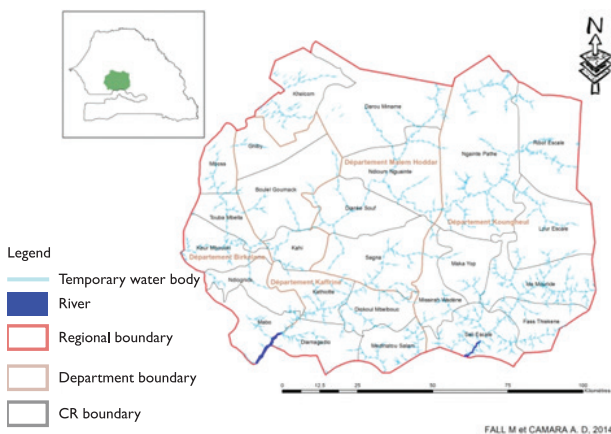
The methodological framework adopted in this report has been provided by Robinson et al. (2013, 2014). It defines the key research steps in assessing governance mechanisms across a larger governance system (also to be defined as part of an assessment). These key steps help to identify the stakeholders, the environmental challenges, the adaptation strategies, and the related aspects of governance. In the Baobolong socio-ecosystem, this methodology was slightly modified to suit the realities of relationships between the different actors. Preliminary inquiries and meetings were held with local stakeholders, revealing a relatively isolated natural ecological space that was invisible to development interventions. Institutional actors (government, local authorities and projects) are only partially present. We faced the challenge of 'the absence of the state' on environmental issues in the Baobolong area of influence, and deliberately chose to assess the existing situation with the actors present on the ground.

In addition, an internship by a Masters student made it possible to accomplish considerable work on the local actors and their interests, and on the challenges of climate change. This work was complemented by workshops, focus group discussions and interviews conducted by a team of two researchers assisted by a facilitator from the NGO COMI. This work probed into governance issues and assessed the governance mechanism and system.

Description of the Baobolong socio-ecosystem

An analysis of governance only becomes interesting once the relevant level, hosting one or several resources and mobilizing actors, has been well defined. In the case of Kaffrine, the CCAFS site in Senegal, the level at which the governance assessment is taking place is a rural area comprising several villages that use the resources of a waterbody and its ecosystem. This waterbody called Baobolong is seasonal and is a tributary of the River Gambia. It feeds several villages in Senegal. In the Kaffrine region, it is at Ndiao Bambaly (the rural authority of Diamagadio) that the river is most permanent and voluminous. (Fall, unpublished 2014).

The two maps below present the Kaffrine region (in the centre of Senegal) and the rural communities (CR) adjacent to the Baobolong.



The Baobolong in the Kaffrine region of Senegal.

The CRs in the riparian villages of Baobolong, Kaffrine.

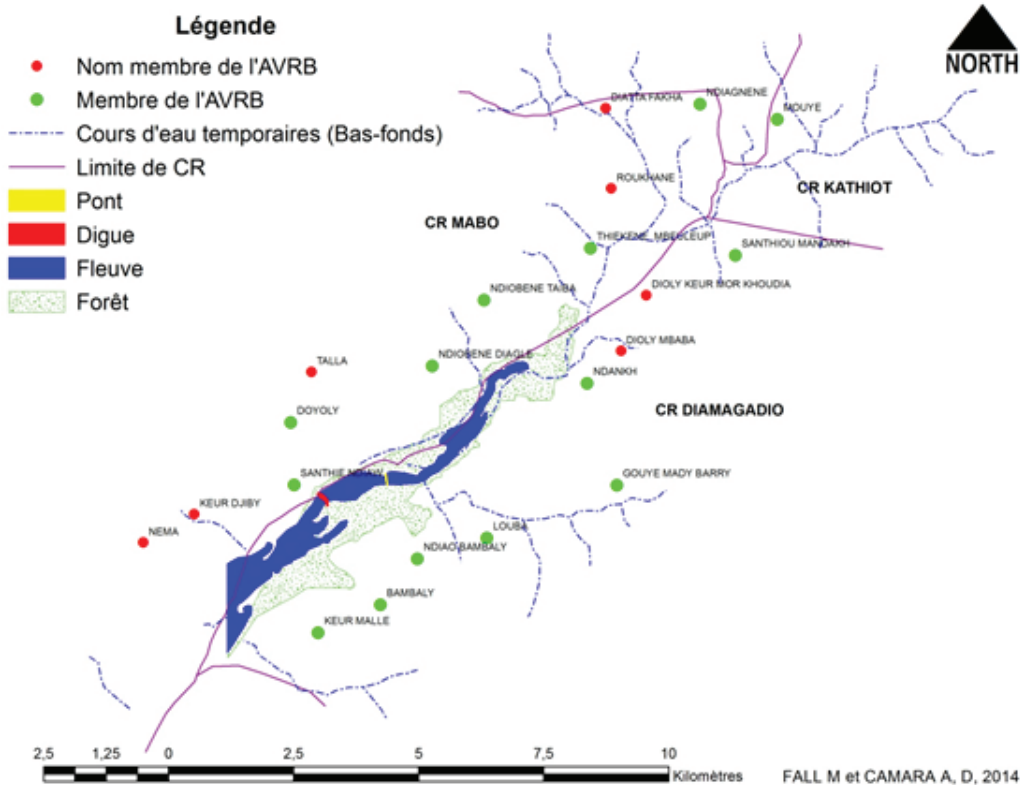
The black dots are the villages covered in the case study

The ecological system of Baobolong and its social environment were chosen following discussions with resource persons and based on a reading of the literature. An on-going dissertation research¹ in the area played a major role in directing our perspective of the area where challenges of adaptation to environmental change have led local actors to organise themselves to take the place of the government, which though present in the area, is limited in its development interventions.

This entailed great ambition on the part of local actors mobilized around an association. To confirm the appropriateness of this level of intervention, we organised meetings with local authorities of villages surrounding the waterbodies and the members of the association. The discussions enabled us to learn that the association covered an area polarised by the presence of a waterbody and that the association was created to manage the water resource, the adjacent forest and the banks upon which villagers grow rice.

¹FALL M. 2014, «Hydraulique rurale et territorialisation. Étude des Communautés rurales riveraines du Baobolong dans la Région de Kaffrine. Université Cheikh Anta Diop de Dakar, (unpublished)

The Baobolong therefore mobilizes riparian villages around l'Association des Villages Riverains du Baobolong (AVRB), which covers three different administrative entities namely, the *communauté rurale* (CR) of Diamagadio, Kathiot and Mabo. Thanks to the presence of Baobolong, Ndiao Bambaly, the headquarters of the said association hosts the headquarters of an association of 14 villages belonging to three different CRs.



The village of Ndiao Bambaly is situated in the extreme west of Damagio CR, in the south of Kaffrine Department.

Since 1996, the CR in Senegal has been the organ of governance for rural development. The CR is a local authority, a financially autonomous statutory body. It is made up of a number of villages belonging to the same rural environment, united by solidarity based on proximity. Sharing common interests, they are able collectively to obtain resources necessary for their development.

The map below shows the location of villages in relation to Baobolong. Initially, the association had 11 villages. Later, four other villages expressed an interest in joining the association.

In the early stages of the life of AVRB, the membership criterion was the proximity of the village to the waterbody. Today, the criterion has evolved because the association has broadened its scope. In addition to the protection of water and the forest, AVRB is also involved in development. It is for this reason that the geographical spread of villages in relation to Baobolong and membership to AVRB has raised questions.

The survey conducted in 14 villages identified primarily agricultural activities in this ecosystem as follows: Rice farming on the river banks and river beds, cereal and groundnut farming on the plateaus, horticulture on the river beds, livestock keeping, harvesting of forest resources (bee-keeping and fruit gathering), fishing, and to a small extent salt harvesting.

In the valley, there is a forest surrounding the river. In this area, natural resources constitute the livelihood base and source of revenue for the majority of the surrounding rural communities (sale of fruits, harvesting of firewood, gathering of medicinal herbs, livestock keeping, sale of wood, hunting, etc.).

Institutional dimensions of climate change adaptation in the Baobolong ecosystem

Once our level of analysis of adaptation governance was established, the study proceeded to probe into the typology of local actors and other interest groups. In conformity with the analytical framework for institutional assessment, a workshop was held to broach the subject of climate change and its consequences on activities. During this workshop, the salt build-up in Baobolong² emerged as a major environmental challenge. As suggested by the methodology, focus group discussions of interest groups were organised to provide more details on the challenges. Five focus group discussions (male farmers, female farmers, pastoralists, forest users, fishermen and salt harvesters) made it possible to prioritise the challenges related to climate change. The discussions began with the drawing of a map by the actors themselves with the help of the facilitators. The map helped to locate the resources used by each group and in relation to Baobolong. They were then asked to identify local challenges and those related to climate change. They were also asked for criteria that would make it possible to assess the seriousness of these challenges. The challenges related to climate change were then noted and ranked. In addition, an initial discussion on governance challenges was broached.

Salt harvesting: a case of survival rather than a vocation

In the course of discussions, we reconsidered the inclusion of salt harvesters as an interest group as during the discussions they made us understand that they did not want salt to be harvested or highlighted in Baobolong, given that it is an alternative activity taken up due to lack of choice. They would rather reclaim the riverbanks for rice farming and avoid the extension of salt into other farmlands and the forest. Neither they nor other actors wanted salt harvesting mentioned as a relevant activity for communities even though it provides some income to the women who practise it. The salt is sold at Ndiao market for a paltry price of 100 CFA for two kilos. During the focus group discussion with the women who harvest salt, the debate focused more on the disadvantages of salt harvesting rather than its advantages. The women listed the following problems: disappearance of trees that they consider useful to them, decline in rice farming, disappearance of fish, damage to iron fixtures on the bridge due to rusting etc.

Adaptation issues at the level of riparian villages of Baobolong

The surveys conducted resulted in the following typology of the most salient environmental problems faced by the village group.

²The Baobolong is a tributary of River Gambia. It is also fed by rain water. A decline in rainfall in the last few years has resulted in a decline in fresh water and the advancement of the salty inlet which is gaining ground and colonizing the hinterland of Kaffrine region.

Table 1: Environmental problems by village group

Baobolong Villages	Environmental problems
Louba	Water erosion, silting and salt build-up
Dioben Taïba, Mouye, Ndianene, Thieken, Ndakh, Santhie Mandakh	Water and wind erosion, sand build-up in river-beds
Keur Male, Dioben Diagl� Ndiao Bambaly	Water and wind erosion and salt build-up
Bambaly, Ndowly, Santhie Ndiao, Gouye	Water and wind erosion, salt build-up

The following table captures the problems affecting the group were identified and ranked by the focus group.

Table 2: Challenges by actors

Male farmers	Female farmers	Forest resource harvesters and fishermen	Indigenous pastoralists
Salt build-up	Wind erosion	Salt build-up	Reduction of food resources
Water erosion	Reduction in soil fertility	Deforestation	New diseases
Wind erosion	Striga invasion	Misuse	Build-up of salt in water
Build-up of sand in riverbeds	Irregular rainfall	Poor techniques of harvesting resources	Deforestation
Reduction in soil fertility	Attack by insects		Theft of cattle
Striga invasion	Deforestation		Irregular rainfall
Irregular rainfall	Salt build-up		Transhumance (pressure on available resources)
	Water erosion		
	Transhumance (straying of animals)		

Salt build-up was the challenge identified by all groups but was not prioritised in the same way. Deforestation and erosion problems were also cited to varying degrees.

Another workshop was organised to prioritise the challenges and reach a compromise between the actors. At the end of each focus group, we asked the participants to choose two representatives for a multi-actor workshop to merge the challenges identified by each group, to probe into governance issues, and to discuss the AVRBS mechanism and the governance system. For all groups (male farmers, fishermen, forest users, indigenous pastoralists) except the female farmers, the choice was easy. In the case of the female farmers, we had to select names by random balloting as they were unable to make a choice from among themselves.

The following list (in order of importance) was arrived at after long discussion. The research team asked the participants to draw an impact diagram to determine the cause and effect relationships and establish the criterion for determining the seriousness of each phenomenon.

- Salt build-up
- Deforestation
- Water erosion
- Irregular rainfall
- Attack by insects
- Invasion of striga hermonthica 'ndouxoum'³
- Emergence of new animal pathologies

Box 1 captures the actors' account of the challenges and their effects as explained during the workshops and surveys.

3. Ndouxoum is the name in Wolof.

Box I

- Salt build-up in the waterbody is the only unanimously agreed challenge facing the actors of all the villages whether or not they were members of AVRB, even though those living close to Baobolong were most affected. Horticulture and rice farming on the banks of the waterbody were made possible due to the presence of an anti-salt dam upstream of Ndiao Bambaly. However, the dilapidated state of the dam, coupled with its non-functionality, leads to a situation where salt is increasingly invading farmlands meant for horticulture and rice farming. From year to year, salt is advancing and causing anxiety among all communities.
- Deforestation/land degradation: A forest measuring 25 ha lines the villages of AVRB but the Baobolong forest measures 60 ha. The gathering of baobab and jujube and other fruits sold at Kaffrine, and as far away as Dakar, made it possible for women to earn extra income. The men practised hunting and collected honey there. "We used to move around the forest using a torch in broad daylight and did not dare cross alone because of wild animals; now the trees are no longer dense and there are no animals, meaning there is no longer a forest" (Chairman AVRB forest management commission). The gradual degradation of the forest reduces food resources for animals.
- Water and wind erosion cause three types of problems: The land on the plateau is losing sand which is carried away by wind and rain. This sand finds its way into the riverbeds and makes horticulture difficult for the women. The flow of water from the plateaus towards Baobolong creates torrents of water which causes damage, carries away houses and cracks roads by creating gullies. The gullies cut across farmlands, destroy crops and reduce the area of arable land year on year. The water and sand also carry away nutrients from the soil. During the discussions, the issue of reduced returns from millet and groundnut farming came out strongly and the farmers identified erosion as a major cause, all the more because they do not have the means to obtain the necessary fertilizer for their land.
- Irregular rainfall manifests itself in the form of strong variations that they are unable to manage. Other than causing loss of harvest in the area surrounding Baobolong, heavy rains cause flooding almost every year. The Baobolong fills up and the bridge is submerged. Local communities live in fear of drowning as many deaths have been reported in the past, such as in 2009 for instance.
- Attack by insects mainly affects horticultural crops. The women, the main users of riverbeds, report losing a large portion of their crops due to pests attacking vegetables. They speak of a type of spider which weaves a web on the vegetables and eats them away. Further research in entomology would make it possible to identify this pest and fight against it as horticulture is currently the most advanced strategy in this region where groundnut farming, the main source of revenue, is on the decline.
- Striga invasion. This plant attacks millet. According to the farmers, this intrusive and destructive plant is brought by transhumant pastoralists through animal droppings. While the existence of the invasion has been verified, we are uncertain of the cause advanced by indigenous pastoralists during the focus group discussion on transhumance of animals from Ferlo.
- Emergence of new animal pathologies: For pastoralists, apart from all the problems of feeding and watering, exacerbated by the salinity of Baobolong, and the advancement of farmlands into grazing land, their animals are infected by new diseases. According to them, these changes are related to changes in the environment.

Conversely, it is necessary to note that apart from climate change, other divergences have been noted in the prioritization of other adaptation challenges to environmental changes. During the focus group discussion, we were confronted by the fact that apart from salinity and erosion (formation of gullies), actors did not consider climate change as the main challenge that they should tackle. They consider shortages of financial resources and a lack of technologies (seeds, fertilizer, and agricultural material) as the main constraints facing agriculture. During the focus group and workshop discussions, it was often difficult to distinguish climate change from concrete problems related to resources and government support.

Underlying governance issues

Following the prioritization exercise, salt build-up, deforestation and erosion emerged as the most important climate change problems that needed to be tackled. These were discussed in terms of adaptation and governance strategies.

Gaps in public development interventions weaken the capacities of farmers, pastoralists, fishermen and harvesters of forest resources to adapt to climate change. In the environs of Baobolong, an important governance issue is the fragmentation of the problem into several administrative and devolved entities. The governance of adaptation to the salinity of the waterbody and land can only be managed in collaboration with the CRs which have the mandate of planning interventions in their areas of jurisdiction. They are the contacts of the central government, NGOs and development projects. We did not however feel their presence in the problems raised by the riparian communities of Baobolong.

All mechanisms of governance of these adaptation issues were from time-bound institutions. These are either NGOs such as Coopération pour le monde en développement (COMI), USE, World Vision or development projects such as Progède, GDT, which all have short intervention periods. In 2014, all of these projects ended and new ones were starting (PASALOUMAKAF, PENC). Only the Water and Forest service is still operating, albeit in a sporadic manner on reforestation, by providing seedlings to AVRB. Consequently, the only permanent institution which makes an attempt to respond positively to any gesture of goodwill is AVRB. In this study, we assessed AVRB as a governance mechanism, since it is the constant in terms of meeting the challenges raised.

Continued degradation of the forest around this ecosystem forced the villages under AVRB to take regulatory measures, to implement a policy of sustainable natural resource management based on a participatory approach. It attempted several mechanisms as follows:

- A major reforestation of the forest in 2002 with the support of the NGO COMI and the participation of the Water and Forest service. The replanted section covers a total area of 9200m², (0.92ha) and comprises 3510 plants. Today, this forest is at an advanced state of degradation.
- The creation of a local agreement that aims at allowing rural communities to use forest products in a manner that safeguards and protects the forest.
- The organization of an information forum inviting NGOs to raise awareness about the problems facing the forest (ANCAR, PDIC, ASPRODEB, USE).

Table 3: Adaptation and governance issues identified in Baobolong area

Challenges	Governance issues
Salinization	<p>Withdrawal of the state and transfer of jurisdiction to the 'collectivités local' which are unable to respond to certain environmental problems</p> <p>A lack of financial resources for the different mechanisms</p> <p>A failure on the part of the CRs and the local government to recognise the seriousness of salinization (the issue of salinity hardly appears in local development plans of the three CRs)</p> <p>A lack of maintenance of the current dam.</p> <p>A lack of resource sharing between the various entities.</p>
Deforestation	<p>An absence of a policing and supervisory authority over resources.</p> <p>A lack of enforcement of the local forest management agreement.</p> <p>A lack of measures deterring bad resource use practices.</p> <p>A lack of awareness on the part of certain members of the community.</p>
Erosion	<p>Weakness of the measures advocated by actors in the struggle against erosion.</p> <p>A lack of capacity among communities in anti-erosion techniques</p> <p>Negligence of communities.</p> <p>A delay in mobilizing local actors.</p>

Assessment of the governance mechanism

The assessment of the governance mechanism chosen by the research team was mainly conducted by observation during workshops and through interviews with actors key to the mechanism. We also referred to an AVRB resource person⁴, an important informant, to provide an objective view of the operations of AVRB. An interview guide was prepared based on criteria for assessment of a governance mechanism (legitimacy, direction, performance, accountability and fairness) as suggested by the conceptual framework advanced by Robinson (2014).

Legitimacy

The legitimacy of AVRB should be measured from two angles: First, in terms of legality. As a group of actors, does AVRB conform to legal standards? Secondly, in terms of local legitimacy, is AVRB recognised by its members and other institutions in the region?

As an association, it conforms to the requirements of the constitution as it pertains to an association, under Act n° 68-08 of 26th March 1968. It has internal rules and regulations. However, these documents, written in French are only accessible to a minority of literate members of the community. We were unable to see these documents despite asking for them several times from members of the association. Of all the actors interviewed, only the officials spoke of these documents and declared to have read them. The operations of the association are, therefore, not based on these documents. However, AVRB can be said to be known and recognised by the inhabitants of the 14 member villages. All respondents to the question on the strengths and weaknesses of the association declared that the primary strength of ARVB was its capacity to mobilize the community. When ARVB calls a meeting, everyone attends. This survey revealed the attractiveness and popularity of AVRB to the villages of Baobolong area, with non-riparian villages also interested in joining the association. The number of villages has increased from the initial 11 to 14, with more waiting to join. The tension we noted during the listing of member villages during the first workshop confirms the recognition that this mechanism has. The visibility that it has—due to the fact that it incorporates respectable, well known personalities—is responsible for this image.

On the other hand, AVRB is less known among stakeholders of the governance system. This study revealed that in Kaffrine, where most government actors and development projects have their headquarters—including the Conseil Régional, the focal point of climate change which represents the state and the UNDP climate change program, project officials such as PASA LOUMAKAF, World Vision, Agence régionale de développement—knowledge of AVRB is hazy. Existence of the association is known, but there is no collaboration with it. AVRB is from time to time called upon to convene meetings at its headquarters, but when it comes to implementing developmental actions, it is the CR which is usually the accredited contact.

Legitimacy

“In all matters related to reforestation, water and forests works with us and not with Communautés Rurales, that means that we are considered important here”

Chairperson AVRB, Interview by Astou and Fall

4. Jean Coly was a facilitator with COMI, an Italian NGO, which helped the establishment of AVRB. Today, he has been hired by AVRB as technical support person helping revamp the association following a two-year lull after the departure of COMI.

Otherwise, for all forest related interventions, ARVB partners with the Water and Forest Service, a state department which has worked with the association since its inception on matters of reforestation. The environmental commission of AVRVB contacts this service whenever necessary.

Direction

AVRB cannot be said to have defined a clear direction. Members of the local community certainly have the shared vision that AVRVB is there to support development but this direction remains vague. Created as a GIE (economic interest group), AVRVB changed status to become an association. This change of status made it possible to position itself as an associative movement by putting less emphasis on profit-making, but above all to benefit from state and local authority grants as stipulated by law. Consequently, AVRVB presents itself as an association which solving all problems with limited resources. COMI, the NGO which had supported it, provided AVRVB with help in accordance with its available resources and viewpoint. Initially, the objective was to save the forest and manage the environment surrounding Baobolong. Subsequently, the objectives of the association spread to areas normally devolved to the CR and to the state (central government). Two years after the departure of COMI, AVRVB still has no action plan, but has a lot of ambition to participate in all development plans. Instead of a strategy that responds to established objectives, several commissions have been established, each one at the time the need presented. There is, therefore, a health commission, a forest management committee, a credit commission, a commission for the management of the grain store, a committee to manage a tourist campsite constructed and handed over by COMI. The system operates on the basis of management by sight, by directing its interventions towards opportunities as they arise.

Performance

To its credit, AVRVB has visible achievements recognised by local communities. They are not happy with these few achievements, but admit that the association replaces the government. “All that you see here is AVRVB. We do everything without the support of CRs (...). The former chairperson of the CR of Diamagadio was attentive to our call, but the new mayor ignores us” (Headmaster Ndiao Bambaly school, Member of AVRVB).

Members of AVRVB engaged in agriculture released part of their farmland to extend the forest where they planted trees. The degraded state of the forest slightly negates the effectiveness of AVRVB actions, but it has made several efforts. The local agreement was conceived and implemented by local actors, presented to administrative authorities and authorised by the latter. The failure to enforce this agreement is not only the responsibility of the AVRVB authorities, but is also due to lack of policing on the part of state services. AVRVB has no authority to punish wrongful users. This would only create conflict between the users of resources as is the case between villagers and young transhumant shepherds who are less aware of the need to replenish the trees they cut. In spite of all this, the association tries to ensure a minimum amount of policing of the forest by its environmental commission which issues warnings in cases of forest fires and makes rounds to deter certain environmentally unfriendly users.

The construction of the bridge across Baobolong is part of the achievements of AVRVB in partnership with COMI. While the latter provided some of the financial resources, the association helped mobilize the entire community and through a strong commitment to maintaining this infrastructure. At the beginning of every rainy season, this bridge comes under threat from water and salt, causing the iron fixtures to rust. ARVB is constantly looking for support to renovate the bridge. Therefore, as far as performance is concerned, if judged by how it meets environmental challenges, AVRVB would not score highly. Although it is driven by a great ambition, ARVB has problems responding to all these challenges.

Performance

“A tutor should just show the right way to go. He should be able to stop and let the main actor continue on his or her way. COMI was a tutor for AVRVB, it performed its mandate well. We should now fly on our own; otherwise we had no reason to exist and will not be considered effective”

Vice-chair, AVRVB, Interview Astou

The organization of an information forum in 2009, inviting NGOs and the state made it possible to communicate with potential donors. This idea reveals a certain level of intelligence which needs to be supported by administrative authorities. The actions of AVRB had mainly been supported by COMI. Now that this NGO has withdrawn and left the association to continue on its own, it will not be possible to ascertain the real effectiveness of AVRB for a few years after the withdrawal of its patron. This raises the question of the resources necessary to tackle the multiple challenges in this area. In terms of human resources, AVRB is ill-equipped. Training has been conducted on erosion-prevention and management techniques, accounting management procedures, nursery techniques, but that is not enough. On financial resources, apart from members' contributions, AVRB depends on income-generating activities, such as earnings from the tourist camp which receives Italian tourists every year, the sale of honey by the forest management committee and the rare grants from the state. It is also expected that the law on devolution will have provisions recommending that local authorities support development initiatives undertaken by communities. Unfortunately, CRs have a hard time mobilizing resources and only provide support in education and health for paltry amounts.

Accountability

The obligation to give account of one's exercise of responsibility is increasingly becoming a criterion for good governance. It has never been more relevant to AVRB, not for the sake of this study but for its members who are demanding greater transparency. In AVRB, accountability can be measured at two levels: first, at the level of the executive office, examining the processes and procedures of accountability and reporting; and secondly at the level of the members of the association, where assessment considers the members' respect for rules and responsibility for their commitments.

AVRB is governed by the association's rules. It has to organise regular meetings and an annual general meeting (AGM) to report on management, and office holders must alternate every two years. In practice, the AVRB office holders have only changed once, five years after its establishment. This change was triggered by COMI which suggested a performance evaluation of the association. Since then, no general meetings had been held until COMI allocated a vehicle to the association upon leaving Senegal. This new piece of machinery has whetted people's appetites for a meeting, and they are now demanding an AGM which has been scheduled for January 2015. The current team has been in office for nine years. Despite this, activities continue as before. One-off meetings are held when an external actor contacts the association. This lethargy causes some members to doubt the governance of the office holders. However, when questioned, they blame both the office holders and the members themselves.

This leads us to the next level of analysis of accountability. During the interview, the AVRB chairperson argued that all community members owe money to the association as they all borrowed money which has not been repaid. The credit committee advanced loans to members to enable them prepare for the farming season, but repayment has been delayed. In all villages with active association members, the community members owe money. He considers this an impediment to good practice—both in terms of accounting and holding effective meetings—as most people 'boycott' meetings to avoid being reminded of their debts. The association has little authority to recover the money, the only alternative they have is to file complaints with the police. This strong-arm tactic is not appreciated by the actors we met, as it worsens conflict between individuals and families.

This climate of confidence crisis does not facilitate mutual respect between AVRB stakeholders. However, the current office holders, especially the chairperson, enjoy a level of credibility which protect them from certain considerations. His image of a respected eminent person is untouched by the management problems. He feels that he has occupied this position long enough and is preparing to hand over to a successor.

AVRB recently hired a facilitator provided by COMI. This resource person is not from the region, and is from a different ethnic and religious group. She is very much appreciated and, as a result, has the necessary objectivity to put in place a more responsible management structure.

Moreover, a communication strategy needs to be considered. Information does not flow as it should. Today, even though the distance between villages is big, mobile telephones exist and should be used to fill communication gaps. Failures in information flows reinforce distrust between ordinary members based in faraway villages and the AVRБ office holders. For instance, at the beginning of our research, we went through the chairman or the village chief to inform actors of our meetings and visits. We noticed that the information arrived late or not at all. When we made the calls ourselves, things became easier.

Fairness

The AVRБ governance mechanism could do better at reinforcing inter-generational and gender equity, as well as equity between socio-professional groups. At a glance, one sees the participation of all groups: men, women, youth and elderly persons. The current political and economic context in Senegal is favourable to the integration of equity, as public policies as a whole encourage the reduction of inequalities. Absolute gender parity was instituted in Senegal by act n° 2010-11 in all totally or partially elective institutions. Thus, on gender equity, in rural councils, women sit in the same capacity as men. However, these legal texts are hindered by traditional institutions and the low level of literacy among women. As for young people, the problem is different. The issue of their integration is less problematic. It has more to do with their presence. They have all left the village to live in the cities. As for women, their participation is limited to domestic management duties allocated to them. They do not feature in decision-making organs. Only one woman is in the committees and she is responsible for domestic management activities of the tourist inn. The integration of women seems to be a mere response to NGO requirements. That is why their participation is minimal after the withdrawal of the NGO. During the discussion with the women, they referred to COMI, but rarely to AVRБ. It would be interesting to know if in the near future, and in the absence of COMI, women will be involved in these processes.

Fairness

Yes, at the very beginning, they were there when it all started but after that, when the money has to be spent, they have no right to see or know what is happening (...) When COMI was there, they attended decision-making sessions; but since its departure, they no longer attend. When there was work to be done, the women came and participated but since the departure of COMI, they are no longer aware of what is happening, of what has been harvested. Even at the campsite, during the rainy season, if maize was prepared inside, but since then, we do not even know what's been harvested.

Female farmer and harvester of forest resources, Ndiao Bambaly

Survey conducted by Julien Meunier

In practice, not all groups enjoy the same freedoms. The farmers and indigenous pastoralists are more visible in all initiatives compared to transhumant pastoralists. The law allows pastoralists to practise transhumance. Each year, the Kaffrine governor signs a decree allowing these northern pastoralists to come and settle in the region's grazing land. However, the local communities do not recognise their presence in their fields granted by official law. Only those with social agreements are allowed stay. At Ndiao Bambaly, the village chief convenes a meeting to welcome the transhumant pastoralists as a way of avoiding conflict. During the workshops, we expressed the need to meet them, but we did not obtain the consent of village authorities.

An overview of the mechanism

This graph shows the lack of clear direction and fairness of the mechanism. On the other hand, legitimacy and performance have been positively rated. Does that mean that a mechanism can momentarily perform well without being fair or having clear objectives? This would doubtlessly diminish its performance.

This table presents the average of three scores by the research team and the resource person. The opinion of the latter is very important to us as she knows the mechanism well and in our opinion is neutral.

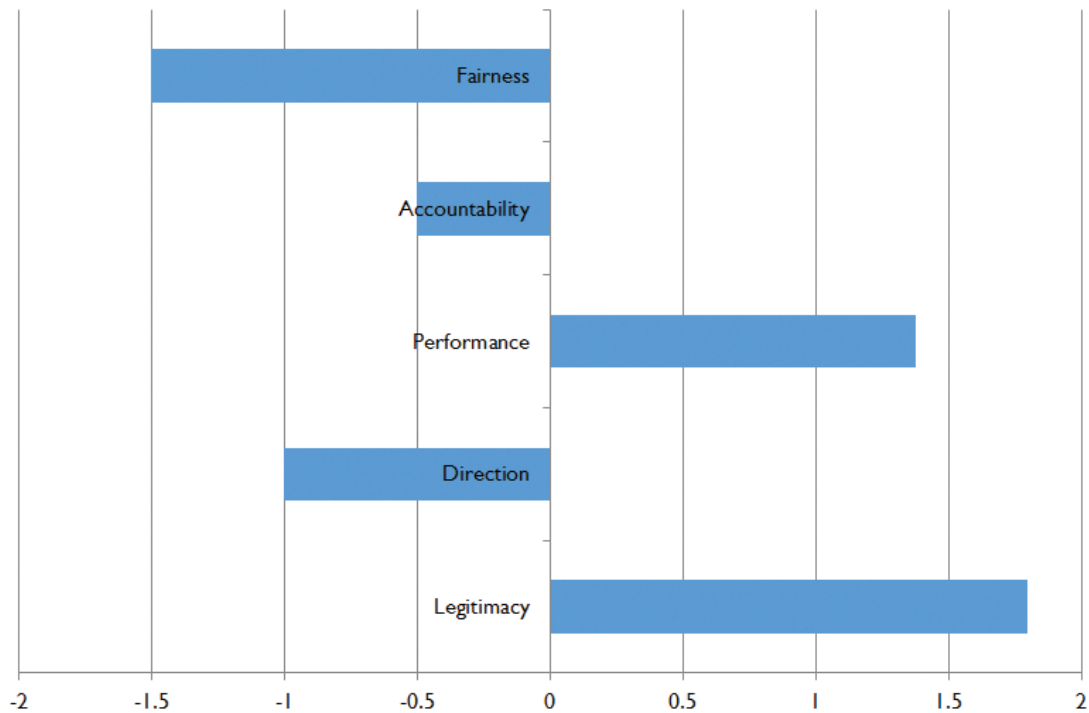


Table 4: Details of scores by criterion of the governance mechanism

Criteria		Assessment	
		Score (-2 to 2)	Comments
Legitimacy	Is the mechanism widely understood and accepted by stakeholders?	1	The mechanism is relatively well understood by local actors
	Is the mechanism relevant to stakeholders' needs and appropriate to local cultural norms and practices?	2	The mechanism is relevant to the needs of stakeholders.
	Does the mechanism have a clearly defined and appropriate legal foundation?	2	The mechanism has a clearly defined and documented legal basis.
	How could the legitimacy of the mechanism be improved?		The mechanism could be enhanced by better communication with stakeholders.
Direction	Are the roles and functions of the mechanism in supporting climate change adaptation and building adaptive capacity clear?	-1	The roles in relation to climate change are not clear
	Does the mechanism provide useful guidance in the day-to-day decision-making of relevant stakeholders?	-1	The mechanism's objectives are broad and do not provide guidance for decision-making on climate change adaptation
	What can be done to improve the direction of the mechanism?		Redefine clear and realistic objectives based on available resources. Raise awareness among the authorities of the need for concerted action

Criteria		Assessment	
		Score (-2 to 2)	Comments
Performance	Is the mechanism effective and efficient?	1	The mechanism is fairly efficient
	Is it easy for community members and stakeholders to access and use the mechanism?	2	It is easy for community members to mobilize the mechanism
	Is the mechanism responsive to stakeholders' needs and opinions	1	The mechanisms' responsiveness to adaptation is barely average, but good with respect to other needs (credit...)
	What can be done to improve the performance of the mechanism?		Align interventions with climate change challenges and mobilize financial resources
Accountability	Is the mechanism transparent and open to stakeholders?	1	Stakeholders can obtain information
	Do stakeholders understand their rights with regards to the mechanism and are they empowered to assert those rights	-2	No, stakeholders do not understand their rights and are not empowered in relation to the mechanism.
	What can be done to improve the accountability of the mechanism?		Respect procedures for managing an association (regular meetings, change of office holders every two years, keeping stakeholders informed Improve transparency Increase awareness among stakeholders
Fairness	Is the mechanism inclusive, i.e. equally accessible to all stakeholders? (e.g. different groups, youth, women, minorities)?	-1	The mechanism is not fair to all groups.
	Is the mechanism impartial (i.e. are the mechanism's benefits and costs shared equally between different stakeholders)?	-2	The mechanism is not impartial. Only male farmers benefit significantly from the mechanism.
	What can be done to improve the fairness of the mechanism?		Respect women's rights, inform and involve them in decision-making
Summary	Overall, does this mechanism play a valuable role in promoting climate change adaptation?		The mechanism plays an average role in adaptation to climate change. It is positioned to meet general objectives of climate change adaption, but does not have the necessary competences, resources or the commitment of different actors. This governance mechanism has an over-stretched ambition that it cannot attain, given its resources (financial, management competence, mode of operation and communication).

Assessment of the institutional system

Issues of governance are located at the crossroads of interactions between public policies, behaviour of actors and actions of economic agents (Milot and Lepage 2009). Public policies are challenged by the complexity of environmental problems which bring into play several dimensions of development.

Senegal is engaged in administrative reforms which accord the right to govern to its citizens, through the election of rural (*conseil rural*) or municipal councils (*conseil municipal*). This devolution, as defined in official texts, seems to be a good means of governance that is possible in a context of multiple actors and views. However, there is a significant gap between the documented situation and the reality in terms of concrete action on the ground.

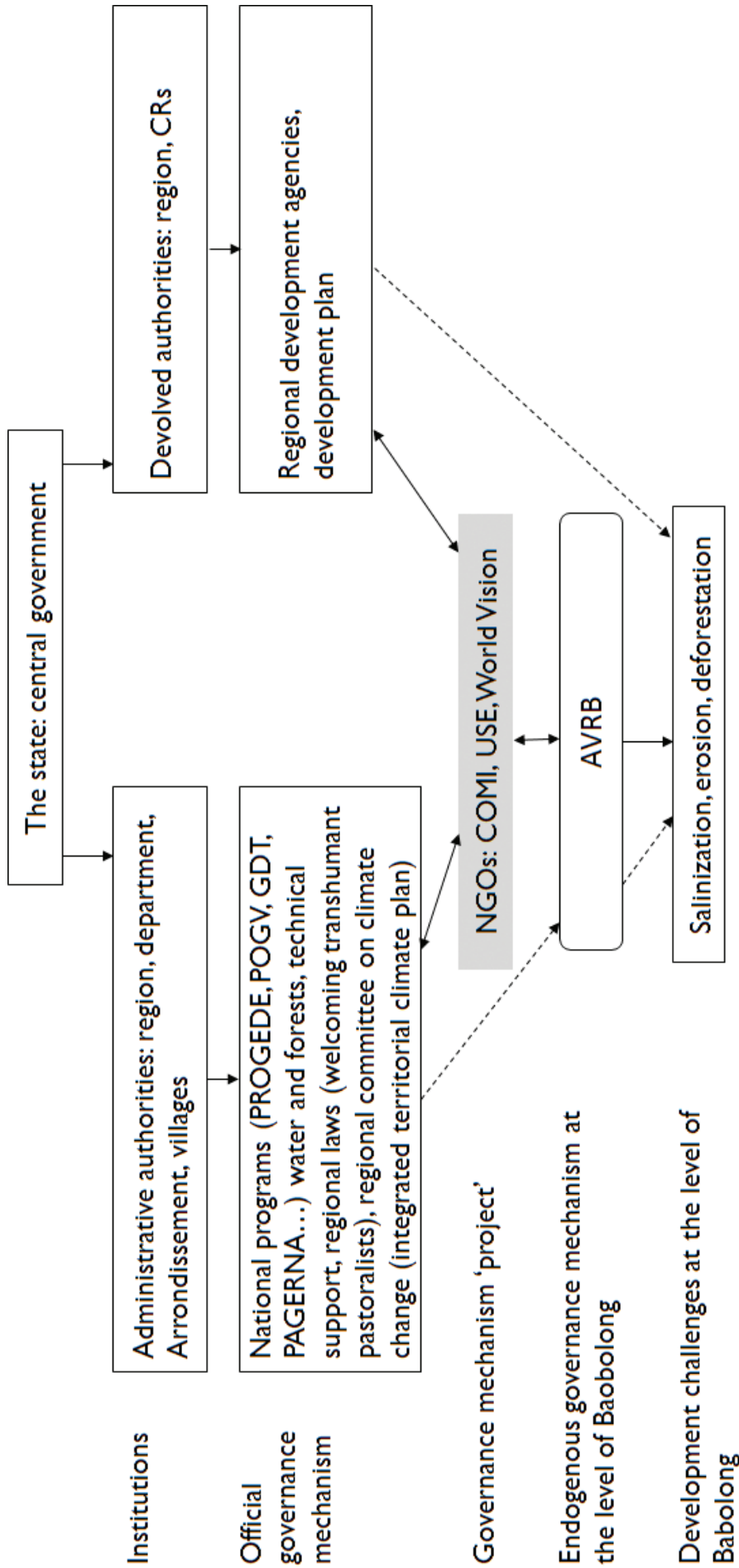
Based on this study, the assessment of the institutional system necessitates a consideration of two dimensions:

- The first relates to the official system of governance structured around a territorial administration, devolved local authorities, development partners (development projects, NGOs, etc.) and organised groups (GIE, associations etc.). These institutions operate, according to these texts, in conformity with standards that demand respect for democracy and fairness. However, it is evident that significant gaps will emerge when these documents are measured against the objective reality on the ground.
- The second dimension involves determining how this idealised model takes shape in the context of insufficient resource mobilization capacities, over-politicization of development, poor support by state officers due to inadequate human resources, lethargy on the part of associations and power struggles between elected leaders (Alissoutin 2008). All these plagues are present in the Baobolong socio-ecosystem.

In the context of assessing the institutional system at the level of Baobolong and its flooded areas, a comparative study between national public directives and real practices was conducted by interviews and observation, based on eight governance criteria. A description of this system would also clarify the level of appreciation of the effectiveness of these criteria. The preliminary study⁵ describes the institutional system, its strengths and weaknesses in a detailed and interesting manner.

On the diagram below, we recapture the different institutions present and the linkages between them. This diagram presents the institutional set-up that existed until June 2014. The third devolution reform eliminates the region as a local authority and retains it as an administrative division. The governor therefore remains the head of the region, while the regional council together with its chairperson are eliminated. The rural communities become communes with a mayor, instead of a chairperson. This reform is meant to reinforce territorial coherence and the powers of the authorities, but is far from being effective. Consequently, for the purpose of our assessment, we will use the old set-up.

5. Masters thesis by Menier, J. 2014. Gouvernance et adaptation au changement climatique: le cas des villages riverains du baobolong (Sénégal), Muséum national d'histoire naturelle.



On the diagram above, linkages between AVRB and regional decision-making organs are distant. Our interview respondents in Kaffrine know little about AVRB. They have heard about this association but have never had to work with it. This is because their interventions are channelled through the CRs which are the organs recognised as relevant to governance. Consequently, an assessment of the system considers AVRB, NGOs and the CR to a lesser extent as actors of the governance system of the Baobolong socio-ecosystem. NGOs partially replace the state and occupy the development arena. The temporary nature of their interventions puts into question the coherence of strategies and creates a dependence of communities on development aid. This governance system set-up shows limited consideration of the environmental challenges by central and local governments, despite official texts and speeches.

Learning capacity

Deliberation

Devolution, which gives power to local communities, makes provisions for debate, analysis and dialogue. One of the official reasons behind the creation of CRs is the promotion of local management as a means of managing local social demands. In the case of Baobolong, the riparian villages are attached to three CRs.

Local authorities, CRs and the region operate on the basis of the principle of citizen participation. The citizens have the right to demand accountability and the opportunity to attend and participate in forums constructing social demands. The budget orientation debate (DOB) is the institutional proof of deliberation forums. It must take place every year and involves all rural authority actors. The rural or regional council presents the proposed interventions to the public and moderates budget discussion. The debate is public which means each person is free to air his or her opinion and contribute to the debate, but ordinary citizens do not participate in the final deliberations. This system guarantees transparency in budget moderation and that makes it important. However, citizens do not take advantage of this opportunity. In the riparian village CRs of Baobolong, the DOB took place without the presence of civil society groups. Only the councillors, development officers and technical services participated. A significant number of rural citizens do not know that they have this right and those who do know do not seem interested in attending.

Space for debate exists but is not functional. It has been reduced to unscheduled, one-off diagnostic workshops for projects whose representatives are chosen from the political class and prominent personalities in the village. In the context of this study, to avoid only seeing prominent people, we asked the village chiefs to facilitate our meeting with ordinary people who we had been identified during the study.

Governance organs do not facilitate respect for the governance rules of devolution which give importance to citizen participation. Local development plans (PLDs) are developed with educated people and project officers, excluding village communities. There is no system of information and therefore no chance of citizen participation for the majority of illiterate people.

Trust

Assessing trust between AVRB and other institutions—outside the Water and Forest Service which partners with the association—is difficult; when linkages are weak, there is no room for trust. This is the case here. Unfortunately, the CR which is the main organ uniting an entire village; CRs are responsible for development planning and taking corrective measures in relation to the environment, a logic which partially excludes the riparian villages of Baobolong. An analysis of the three PLDs of the CRs reveals that salinization, the major challenge facing riparian villages of the waterbody, hardly features or is only mentioned marginally. The interviews revealed that there was an attempt by AVRB leaders to constitute another CR which would be more responsive to the needs of the Baobolong locality. This attempt did not succeed and created an atmosphere of rivalry between some CR leaders and those of AVRB to the point that the latter described the former as incompetent: “how can a mayor who does not know how to read or write

understand procedures....? (AVRB member and former rural councillor)”. It is necessary to mention that several AVRB office holders were also rural councillors at the same time. They were not re-elected at the last elections and harshly criticize the current leadership team of the commune.

An atmosphere of trust existed between AVRB and COMI, just like it did with previous mechanisms and will supposedly exist with future mechanisms as AVRB responds favourably to new development initiatives, seeing them as opportunities. However, when one looks at the weak adaptation capacities of this society, one can question the long-term effectiveness of specific mechanisms and the capacities of actors to learn from these experience.

Trust between citizens and the CR is weak due to politicization of relations. The community members fear being politically manipulated by elected leaders.

Use of diverse types and sources of knowledge

Under normal circumstances, diversity of knowledge should be a positive value in this context as multiple types of knowledge can be mobilized by each actor. The central authority authorises multiple interventions, seeking activities and funding opportunities to strengthen the insufficient actions taken by the state. NGOs, irrespective of their sphere of activity, are encouraged to participate; but the problem facing Baobolong is that none of the actors involved have plans to tackle the salinization challenge, as this requires a huge amount of money. Each institution undertakes a diagnosis, makes plans, and brings in experts, but there is no common vision on the direction to take. AVRB does not benefit from all the knowledge available. This knowledge is not coordinated. The farmers, pastoralists and users of forest resources with whom we talked spoke of local knowledge regarding climate change adaptation. This knowledge is not documented, but is vaguely mentioned in discussions.

For example, the feasibility study conducted by AVRB generated a cost that no organization, public or private was ready to cover. One informant spoke in this manner “ (...), we had proposed 300 million, but they said that 300 million was not enough to construct the dam, to construct this dam, a maximum of 700 million would be required.” It would have been more effective if the central authority urged the different actors to consolidate their resources and visions, and work together. A project by known as ‘*Gestion Durable des Terres*’ had intended to participate, but its actions were not sufficient to counteract the salt encroachment. During recent surveys, some informants at Kaffrine mentioned that in the coming months, they were going to work to stimulate the development of a consensus on the dam and the resources needed for it. However, the actor the most poised to trigger this change of direction is from PASALOUKAKAF, but he did not want to admit that it was for the anti-salt bridge. The diversity of initiatives is possible, but it is not currently beneficial to adapt to some environmental challenges, such as the salt encroachment.

In a context of uncoordinated actions in the same locality, a convergence of knowledge is not encouraged and consequently, although it is a possibility to rely on different opinions, it does not facilitate social learning.

Institutional memory

Institutional memory refers to the capacity of the system to capitalize on a succession of previous actions. With weak institutional linkages, one cannot claim to have a concerted documentation of the process. In the Baobolong area, time-bound and targeted interventions by institutions produce ‘private’ memories per actor. The local development plan is the only planning document at CR-level where diagnosis is made and plans for corrective measures are envisaged based on opportunities. For some time now, since the arrival of Agences régionales de développement (ARD) and the advent of IT tools, this plan has been available on ARDs’ websites. At the level of Baobolong, there are three local development plans, but the implementation mechanisms have come and gone in succession. Some have been wound up, while others continue on without necessarily learning any lessons from their predecessors.

Room for autonomous change

This dimension will be mitigated, as it is possible in some matters and not in others. The withdrawal of the state from some public services has left space for initiatives to spring up in many areas. However, this freedom to take initiatives is very much controlled by administrative authorities which sometimes inhibit innovations. Any public or local action must be authorised by the governor or the deputy police chief who are represented by village chiefs. AVRB has experienced this. It had the vision of redefining territorial coherence by proposing the Baobolong locality as a CR. This move by citizens was blocked by the central authority at the time when the territorial divisions in the whole country were being rethought. The AVRB leaders said they did not understand why the proposal was refused as it was not explained.

Leadership

The governance system does not encourage the emergence of leaders as those who are there do not enjoy the full support of the central authority. The positioning of an actor as an active and model citizen more often than not ends up in political strategy. Consequently, local political authorities, in this case, chairpersons and CR councillors fear these new charismatic actors. The rivalry that is created does not allow the emergence of leaders. The founding members of AVRB are also politicians. Inter-party conflicts have created an atmosphere of distrust between them and the current authorities. On the other hand, the presence of NGOs and big projects create the conditions for the emergence of leaders, especially among women and youth people. However, these supported women have a hard time asserting themselves locally. A young man in the community who is very active in AVRB and in other initiatives is very visible to external actors, but he seems to be the only one who understands all the dynamics. The interview with him illustrates this in its best light. He refers to many actions and organizations, but what he says is more theoretical than practical. He is the coordinator of a new organization by the name PENC which will be the new contact for a new program PASALOUMAKAF. But this organization is not known locally. None of the interviewees mentioned PENC. Perhaps it has not had enough time to establish itself properly.

Institutional linkages

The linkages between the CRs, state officers, projects and NGOs are strong, but of no benefit to climate change adaptation in the riparian villages of Baobolong. Consequently, practical linkages between them and AVRBs are weak, almost non-existent. Only the Water and Forest Service recognises the credibility of AVRB on interventions related to forest protection. There were once relations between AVRB and the CR of Diamagio at a time when there was a CR chairperson who was sensitive to the needs of Baobolong. This person was not re-elected. The current mayor is not interested in the association.

Resources

Authority

Does the distribution of legitimate authority within the system fit local conditions?

Authority

“The governor decrees the beginning of the arrival of transhumant pastoralists without caring about the progress of the harvest. At this time, nobody has finished collecting groundnuts, and yet the decree is effective. The village chief can do nothing about it, and neither can the CR. AVRB is powerless in the face of armed shepherds”

ARVB member, Interview by Astou and Fall

The governance system has limited authority as the institutions in it do not have the power of enforcement. The rural council does not have the power of policing, depending on the decentralised administrative authority which represents the executive. Here, the governor of Kaffrine region is represented by the deputy police chief (sous-préfet) of the arrondissement.

Knowing this weakness of the mechanisms in the system, some actors do not hesitate to contravene rules with complete impunity. Moreover, the central authority, which has this power, is so far removed from the reality on the ground that its decisions are sometimes untimely.

Human resources

The governance system has no capacity to mobilize the necessary human resources. The problem lies in the fact that the state cannot provide all state organs with personnel in sufficient quantity. The technical support service practically lacks everything: Staff, equipment, and an adequate budget to respond to all these requests. In vain, AVRБ solicits the support from the state and the CR in enforcing the agreement on the use of the forest. In reality, only one officer of the Water and Forest Service is responsible for guarding all the forests in the arrondissement. Voluntary initiatives are unable to play an important role as even when engaged people want to intervene, they lack the necessary competences in terms of education and training levels.

Several capacity-building forums for local actors have been organised in the CRs and should complement the competences required to meet local needs; but, as we indicated above, those selected to participate in such training courses are always the same people, and are not the ones who should receive the training. The same elite participate in decision-making forums and meetings, thereby reducing distribution of benefits to the community. Corruption in development hinders the emergence of responsible citizenry.

Financial resources

At the regional level, international competition on climate change creates opportunities for funding. The region is thus a recipient of big climate change programs, such as Programme Territorial Climat Intégré (PTCI) funded by devolved cooperation, the United Nations-government TAC Program etc. The Baobolong governance system could not however benefit much from this funding.

Financial resources

“Baobolong is not included in the TAC program as in my opinion, it is not the most vulnerable area when one thinks of climate change in terms of the Ferlo agreement.”

Focal point TAC program

Interview Astou and Fall

The NGOs that are currently active in the riparian villages of Baobolong have limited budgets. They support small women- and farmer-led activities, but are powerless in the face of the main challenge, water salinity. AVRБ has completed a feasibility document on the dam which was conducted with the support of a national farmers' organization (ASPRODEB). The projected cost of this dam cannot at the moment be borne by any of the NGOs on the ground.

The CRs receive grant funds from the state which they mobilize with difficulty and which do not meet the budget. They receive very little in terms of local taxes due to the low level of taxable economic activities in this rural area. They can benefit from resources of devolved cooperation. However, we note that the implementation of the PLD action plans is a struggle, due to insufficient financial resources.

Fair governance

Legitimacy

The question of the legitimacy of the governance system should not arise as all the institutions are elective. The legitimacy of the CRs is institutionalised through elections supervised by the central government and civil society. But this legitimacy is weakened by their capacity to take action and mobilize actors around major challenges. It is also largely dependent on the satisfaction of community members with how their problems are handled because the appointment of rural councillors is politicized. This boils down to a contractual relationship between elected individuals and community members, and implies legitimacy based on results. Yet the lack of resources limits the extent of actions and erodes the legitimacy capital. In most of the villages of Baobolong, community members ignore the CR and deny its existence. AVR B is their preferred point of contact.

Fairness

The rules of the institutions in the system of governance are enacted by law. Gender parity is enshrined in the Senegalese constitution but the letter of the law is not respected. National and local civil society groups monitor its application, but within the limits of their resources.

In the Baobolong ecosystem, the effectiveness of the rules is hindered by a lack of regulatory bodies and the establishment of agreements between social categories. The law was adopted without a public awareness campaign in the rural areas. Only one association of educated women went to meet the authorities and the marabouts to have this law accepted. Nonetheless, in the heart of remote village communities, such as Ndiao Bambaly and neighbouring villages, communication was poorly undertaken. The televised debates were not accessible. Within rural families, traditional rules still operate. It is only when it comes to distribution of land at CR level that the rule is somewhat respected. Such cases are rare as women do not easily present issues before the arbitration courts. They fear being reprimanded by their husbands, brothers and sons. In the face of this vacuum, orders come from above, undoing traditional structures and 'legalizing' abuse of power.

Accountability

There are accountability mechanisms for each type of institution in the governance system. But when those who are supposed to demand accountability are not aware of this right, accountability becomes solely dependent on the morals of the leaders. In this context, AVR B members are ill-equipped to demand activity reports. This results in absenteeism from assessment forums. And as we mentioned above, minutes of meetings are very rare.

At the CR level, central authorities conduct ex-post management audits within the framework of the control of the use of public funds. This procedure is, however, not known by the general public. Only actors at the centre of the official system of management understand it. This creates a lack of trust of local elected officials by community members.

As far as the NGOs and projects present in the area are concerned, they are required to submit reports explaining the choices they have made, their activities and expenses, in conformity with a regulated calendar. These reports are not made public and are, therefore, inaccessible to other actors.

There are no agreements or procedures between the different actors on the ground (CR, AVR B, NGOs and projects) which would make their sporadic collaboration transparent.

Responsiveness

The governance system’s responsiveness to community members’ needs is weak in terms of reinforcing capacities to adapt to climate change. In a context of poverty and lack of opportunities to support living conditions, institutions allocate the few resources they possess to support families. No direct connection is made to environmental challenges. The responsibilities transferred to the CRs over the last ten years involve the environment in a general way, among others. The perception of climate change as a specific challenge is still in its infancy in this institution. Consequently, acting on communities’ adaptation capacities is often relegated to a secondary position after more immediate and easily perceptible problems such as agricultural inputs, production chains and health.

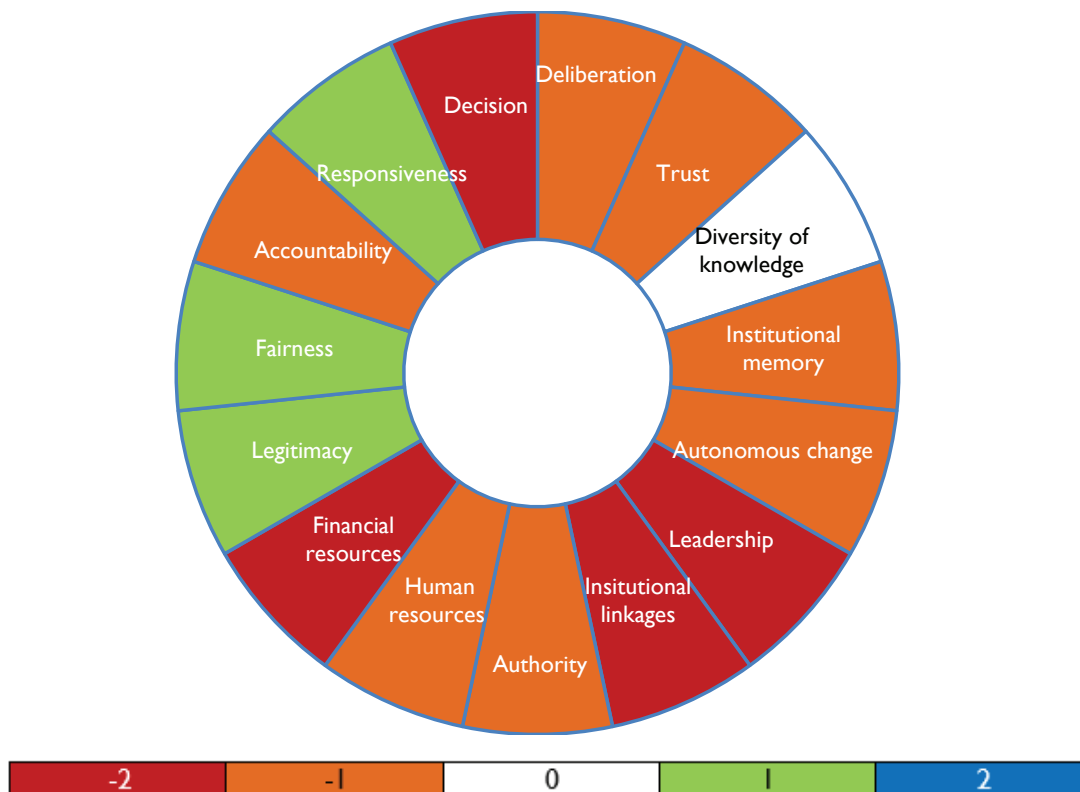
As a result, community members,—and AVRBS together with sporadic partners involved in the struggle against salt encroachment, forest degradation and erosion problems, among others—find themselves these challenges.

Effectiveness of the decision-making process

The decision-making process could function better. The necessary lobbying capacity that the governance mechanism at Baobolong should have is too weak to affect decisions made by the central authority. The latter is far removed from these actors in terms of the physical isolation of the villages and in institutional terms. Its procedures—too bureaucratic and interventionist—operate too slowly. In relation to institutional linkages, the weakness of interactions between the different actors inhibit effective decision-making. A deeper analysis reveals that effectiveness in decision-making depends on other dimensions of the governance system. This institutional system is weak which has a negative effect on decision-making. Another factor inhibiting effective decision making is overdependence on donors, especially foreign donors. All institutions—public and private—depend on donor funds which subsequently dictate policy direction and reduce the capacity to define clear goals. This is the reason why CRs develop PLDs which do not achieve half of their objectives and why AVRBS remains powerless in the face of certain challenges.

An overview of the governance system

This figure shows the scores obtained following an analysis of the governance system.



The governance system at the level of the Baobolong ecosystem does not meet the needs of stakeholders concerned with regards to resources. The governance criteria are almost all in the negative apart from legitimacy, fairness and responsiveness which received average scores. The dimensions that are positive today may become negative if the system continues this way.

Institutional linkages should be reinforced to help consolidate the sharing of resources, institutional memory and social learning.

Discussion

This study has highlighted climate change adaptation issues concealed under structural difficulties facing farmers, agro-pastoralists and users of forest resources and other actors of Baobolong. Working on environmental challenges is not a simple matter in a precarious situation. The groundnut basin, the area in which of study was conducted, was built around the cultivation of a single cash crop. Poor soil and climate variability make the problems worse, leaving the farmers vulnerable. This plunges them into uncertainty as far as rainfall and the community's ability to adapt are concerned. The ecosystem defined by a waterbody, which in the past was a source of opportunity for rice cultivation, fishing and biodiversity, has become a source of problems. Salt has invaded the waterbody following a decline in rainfall. Arable land in the area surrounding this waterbody has been reached by salt and is becoming increasingly unsuitable for farming. What is worrying to the farmers is the speed at which this scourge is progressing. Alongside this more or less natural phenomenon, the ways of exploiting natural resources raise questions about sustainability. These resources are put under pressure by forest fires, erosion, grazing and wrongful use of wood products for medicinal purposes. The study of governance in the Baobolong ecosystem revealed how climate change affects the lives of communities and how institutions respond to them.

Local communities supported by an NGO have attempted to respond with some commendable initiatives. AVR—chosen as a governance mechanism for climate change adaptation—manifests strengths and weakness in the way it conducts its activities. The achievements made since its inception are the result of a combination of multiple resources. Its local legitimacy at the level of 14 villages could make it a key actor in any intervention on climate change on condition that the organization conforms to operating standards of a community association (by reporting to its members and setting priorities together with them). Above all, it needs to adopt a communication plan and undertake aggressive advocacy on environmental challenges facing its area. However, the mechanism does not have clear objectives. It is involved in several fields in which it has neither the competence nor sufficient resources. This results in a situation where it spreads itself too thin, and reduces effectiveness in matters of adaptation to environmental changes. Actions are not linked to a common program. Decision-making processes are not transparent and the participation of different actors is not appropriately distributed. Positions of responsibility are occupied by prominent personalities in the village to the detriment of women.

The assessment of the governance system at the level of Baobolong reveals some incoherence between the territorial division of CRs and the coherence of the area occupied by riparian villages of Baobolong. In theory, with devolution one would expect environmental matters to be handled by each CR, but the possibility of CRs taking joint actions is not articulated. Moreover, political competition should not be underestimated as actors seek to be the sole winner, while none has the required resources. The main environmental challenges are currently taken on by a number of actors in a disjointed manner which instead of solving the problem suffocates the social arena through uncoordinated, haphazard actions. Institutional relations should be established at different levels, first between AVR and CRs which share the Baobolong to help consider the adaptation needs of riparian villages. The CRs should then find the means to coordinate all initiatives operating in their territories.

The logic of harnessing resources leads the central authority to accept all financed initiatives without demanding coherence of actions and a pooling of resources. The increasingly complex nature of public action in environmental matters necessitates the invention and coordination of new tools (Lascoumes 2004).

What should particularly be captured in this analysis is that some dimensions of governance play a determining role in the effectiveness of a governance system. The resource mobilization capacity and institutional relations are paramount in ensuring that the system supports climate change adaption.

Conclusion

This study in Kaffrine leads to the conclusion that the establishment of a governance mechanism for resources related to Baobolong exposes the weakness of the current institutional system in handling environmental problems at the level of the waterbody. The magnitude of environmental problems in the face of ineffective governmental and local authority initiatives leaves local actors discouraged. The lethargy of collective community action is a clear sign of this phenomena.

The analysis of institutional dimensions to climate change in the Baobolong ecosystem raises questions primarily of central governance which are particular to almost all CRs in Senegal and which need to be probed.

On a larger scale, the reform which transfers power and management of resources from the state to local authorities needs to be assessed to see the problem posed by its application and the way local communities receive it. Another problem that needs to be probed further is the level of community awareness of environmental issues and the need for them to become development actors capable of influencing political decisions.

On the one hand, this case study reveals the inability of the central authority to use its authority and vision to act, and on the other hand, the inability of rural authorities to acquire exogenous management practices. Despite this, the third reform (Act III on devolution) in operation since July 2014 gives more powers to the CRs, without drawing any lessons from failures of the second reform.

References

- Alissoutin, R.L. 2008. *Les défis du développement local au Sénégal*, Conseil pour le développement de la recherche en sciences sociales en Afrique (CODESRIA).
- Fall, M. 2014. *Hydraulique rurale et territorialisation. Étude des Communautés rurales riveraines du Baobolong dans la Région de Kaffrine*. Université Cheikh Anta Diop de Dakar, Ecole doctorale EDEQUE (unpublished).
- Gupta, J., Termeer, C., Klostermann, J. et al. 2010. The Adaptive Capacity Wheel: A method to assess the inherent characteristics of institutions to enable the adaptive capacity of society. *Environmental Science & Policy*, 13(6), 459–471. doi:10.1016/j.envsci.2010.05.006
- Lascoumes, P. and Le Gales, P. 2004. *Gouverner par les instruments sous la dir*. De Presses de Sciences Po, Collection académique, 370 pages.
- Meunier, J. 2014. *Gouvernance et adaptation au changement climatique : Le cas des villages riverains du Bao Bolong (Sénégal)*, Mémoire de master 2, Muséum national d'histoire naturelle Agro Paris Tech, Paris : France
- Nicolas M. 2012. La gouvernance à l'épreuve des enjeux environnementaux et des exigences démocratiques, *VertigO - la revue électronique en sciences de l'environnement* [Online], Lectures, Online since 15 December 2012, accessed on 17 December 2014. URL: <http://vertigo.revues.org/12722>
- Robinson, L.W. 2013. *Mt Marsabit, Kenya: An assessment of the governance system*. Landscape level Ecosystem Based Management Working paper no. 2 (online) URL: <http://www.viu.ca/landscapelevel/>.
- Robinson, L.W. 2014. *Governance Dimensions of Climate Change Adaptation; Methodology for Landscape-Level Institutional Assessments; DRAFT—10 January 2014*.
- Site internet: Agence Régionale de Développement de Kaffrine: <http://www.ardkaffrine.org/>

ISBN: 92-9146-455-4



The International Livestock Research Institute (ILRI) works to improve food security and reduce poverty in developing countries through research for better and more sustainable use of livestock. ILRI is a member of the CGIAR Consortium, a global research partnership of 15 centres working with many partners for a food-secure future. ILRI has two main campuses in East Africa and other hubs in East, West and Southern Africa and South, Southeast and East Asia. ilri.org



CGIAR is a global agricultural research partnership for a food-secure future. Its science is carried out by 15 research centres that are members of the CGIAR Consortium in collaboration with hundreds of partner organizations. cgiar.org