

Draft of 25.4.2006

Changes in Relative Prices, Open Access, and the State: A comparative Analysis of Institutional Change of CPR Management in African Floodplain Wetlands

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This is a draft, please do not cite without permission, some of the data still have to be cleared

In the *Drama of the Commons* (Ostrom et al 2002) one of the key issues addressed was how generalised information on the institutional setting of the commons can be compared. One can draw on a large number of empirical studies. However, these are not based on the same outline making comparison a difficult task. Attempts at quantitative comparisons have been presented (see Ruttan at IASCP 2004) but they suffer from the same problems mentioned above. We argue that a qualitative comparison could be the key for further work. Therefore our department has started the African Floodplain Wetlands Project (AFWeP). We analyse differences and similarities in institutional change that CPR-management systems (fisheries, pasture, wildlife etc.) face in ecologically comparable settings – floodplains in semi-arid regions in Africa. Eight researchers from Swiss and African Universities conducted the fieldwork based on the same outline in Mali, Cameroon, Tanzania, Zambia and Botswana. As theoretical basis, the New Institutionalism (North 1990), most elaborated in Anthropology by Jean Ensminger (Ensminger 1992, Ensminger and Knight 1997) and the early work of Elinor Ostrom on institutional design (Ostrom 1992) was used. The hypothesis was that external changes (global and national economy, socio-political, demographic and technological) affect relative prices of goods and services, making floodplain-CPRs more or less attractive and having a major effect on local level bargaining power and institutional change. One finding is that the state, which is taking over the management of the CPRs, creates de facto open access because it lacks the financial means to enforce laws and is not able to exclude immigrant foreign users. At the same time, local rules are eroded, weakened or transformed by local powerful people. But our results go much beyond this generally known finding:

A) *Not all traditional rules are completely eroded.* Some of them remain and form a legal pluralism because they enable access to tradable CPR-goods for powerful local actors and administrators alike: We argue that rules which pay are going to stay. But this does not contribute to a sustainable use of CPR resources.

B) *De facto open access by an inadequately operating state is not the only problem.* The problem is that the state in many of the examples studied is paradoxically present and absent at the same time. Seasonal immigrants see themselves as citizens of the state under often decentralised, democratic systems. Local stakeholders are not empowered or backed by the state to exclude these users.

C) One of the *key independent variables* for sustainable use is not only robust local institutions but the *economic situation of the state* having an impact on changes in relative prices. In our sample only Botswana has favourable economic conditions (diamond export) and does not face the same crisis as the other countries do, where CPRs are attractive livelihoods for many people.

The paper contributes to the debate of robustness and resilience of local as well as state institutions depending on the economic condition of the state and raises the question how and who shall craft local institutions in the context of the state.

Introduction:

African floodplain wetlands are important regions for local livelihoods and are of special interest for conservation organisations such as the World Conservation Union (IUCN) (see Hughes and

Hughes 1992, Dugan et al 1992, Acreman 1996, Loth et al 2004). These ecosystems are interesting because the inundation patterns in an otherwise semi-arid environment make them resource-rich pockets, in which availability of resources varies during and between seasons. Most of the time these areas become resource rich after the water recedes. Most of the resources are common pool resources (CPR) such as fish, wildlife, pasture, forests and water, which are managed through common property regimes and local institutions (rules, norms, and regulations). These institutions have been developed in pre-colonial times and were operating partly still during colonial times. Today, however, CPRs are managed by different regimes in the form of legal pluralism but mostly controlled by the state, which has partly dismantled local rules and regulations. In many, but not all of these floodplains, CPRs are under pressure and there are signs of degradation. Pasture areas show signs of erosion, fish and wildlife stock are declining, and forests and water resources are less available (ibid).

At the same time, conflicts over access to resources occur in these areas, which become more and more attractive for seasonal immigrants, who are interested in the commercial use of the CPRs and who feel legitimised as citizens of the state to get access to these national resources. In order to analyse if there is a general trend in CPR management and the manner, in which it is related to institutional change in Africa, a comparative research project was initiated at the Department of Social Anthropology, University of Zurich, called *African Floodplain Wetlands Project* (AFWeP) in 2002. Eight researchers from this department and from two African Universities (University of Yaoundé and University of Dar es Salaam) did fieldwork in similar floodplain ecosystems with a major research design developed at the University of Zurich. Research concept and co-supervision of the different PhDs and MAs, together with the three Universities, was done by the author.

Theoretical basis and hypothesis

As a theoretical guideline, we were using the New Institutionalism in economics, anthropology and political sciences (North 1990, Ostrom 1990, Becker and Ostrom 1995, Ensminger 1992, 1998, Ensminger and Knight 1997, Acheson 1989, 1994). Institutions (rules, norms, values, laws and regulations) are seen as important for they structure access and use of CPRs between different actors because they make resource users and resource use predictable. The institutional approach of Elinor Ostrom (1990), served as a tool for data collection and discussion of CPR-use in the very similar ecosystems of the African floodplains. These similar ecosystems and the common-property-institutions that developed, are interesting cases for a re-evaluation of the common property theory, on the basis of a comparative study. Such an approach is supported in the new CPR-literature (see for example Ostrom et al 2002). In addition, a historical approach was adopted in order to analyse the changes in local institutions and the conflicts which are characteristic of these areas today. The research group tried to investigate how institutional change contributes to the degradation of CPRs that is taking place in many of the areas studied. Institutional changes stemming from the relations between external (economic, demographic, socio-political and technological) and internal factors of a local setting were analysed in order to determine strategies of the different actors and actor groups. We also focused on bargaining power stemming from political, economic and demographic (immigration) factors and on the question of which ideologies are used in conflict situations in order to legitimise access and use of CPR. This approach is based on the work of Jean Ensminger (Ensminger 1992, 1998, Ensminger and Knight 1997).

Based on this theoretical framework, our major hypothesis was that external changes (global and national economy, socio-political, demographic and technological) affect relative prices for goods and services making floodplain-CPRs more or less attractive and having a major effect on

local level bargaining power and institutional change. We argue that the state, which is taking over the management of the CPRs, creates de facto open access because it lacks the financial means to enforce its laws and is not able to exclude immigrant foreign users. At the same time, local rules are eroded, weakened or transformed by local powerful people. But our results go much beyond this generally known finding:

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Research set up, research settings (areas and people involved) and methods

On the following floodplains and ethnic groups research was conducted between 2001 and 2005 (see Table 1).

Table 1: Overview of floodplains, ethnic groups, researchers/departments and main funds:

<p>- Mali: Internal Niger Delta, Bozo and Somono Fishermen (Sabrina Beeler (MA-Student) and Karin Frei (MA-Student), Dep.of Social Anthropology, Zurich, Funds: Dep.of Social Anthropology, Zurich</p> <p>- Cameroon: Waza-Logone, Kotoko and div. Pastoralists (Gilbert Fokou (PhD-student), Uni Yaounde, Gabriela Landolt (MA-Student), Dep.of Social Anthropology, Zurich.) Funds: NCCR North South, IP6</p> <p>- Tanzania: Pangani River Basin, Pare and Maasai (Gimbage Mbeyale (PhD-student) Uni Dar es Salaam) Rufiji Floodplain, WaRufiji (Patrick Meroka (PhD-student), Dep.of Social Anthropology, Zurich), Funds: NCCR North South, IP6</p> <p>- Zambia: Kafue Flats, Ila, Tonga and Batwa (Tobias Haller (Post doc), Dep.of Social Anthropology, Zurich.) Funds: Swiss National Science Foundation</p> <p>- Botswana: Okavango Delta, Hambukushu and Bayai (R. Saum MA-student) Dep.of Social Anthropology, Zurich.Funds: Dep.of Social Anthropology, Zurich</p>
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The paper is based on the data collected by the research group. If not stated otherwise, data mentioned in the text stems from MA, PhD or Post-doctoral work of the respective researchers and of the papers presented at an international conference held in 2005 in Zurich.

Because this is a comparative research project, qualitative comparative methodology was used. By this method, the concept of the comparative framework is central. It is a systemic process, in which empirical data is collected along core themes and is analysed this way (Richie and Spencer 1994). Ostrom's DPs (Ostrom 1990) provide the core themes for this framework, which was developed by Haller (2001) and adapted to each of the research settings. Apart from participant

observation, the use of structured and semi-structured interviews and the gathering of primary household-data in a community or village (household surveys including household budgets) were the most important methods used. The issues raised in this project also required the gathering of historical data by interviewing older people (oral history). During such interviews, we were also able to ask specific questions regarding the state of the environment in the past compared to the present situation in a very detailed way (environmentally related oral history). This method demanded knowledge on the indigenous way of coding and classifying the natural environment by the local people (indigenous local knowledge). Questions on sustainability in the past can be gathered this way, too. The current state of the ecosystem can be determined by data on climate, soil, flora and fauna collected by the IUCN and environmental scientists. Nevertheless, the local emic view of the actual environmental situation can be very interesting and insightful. (for duration of fieldwork by each person see table 1).

Characteristics of African Floodplain Ecosystems

Several authors and NGOs such as IUCN regard African wetlands as ecosystems of major importance for protection and conservation as well as for the support for local livelihoods (Adams 1990, Hughes and Hughes 1992, Acreman 1996). This is especially the case for floodplains in the semi-arid areas of Africa, where these are seen as resource rich pockets in an otherwise unfavourable environment (Hughes and Hughes 1992, Stevenson and Frazier 1999, Haller 2002, Loth 2004). In the AFWeP project we were focusing especially on semi-arid areas in order to have a comparable similar ecological setting, which is the following (see Table 2):

Table 2: Basic characteristics of the chosen African Floodplains

Country	Name	Km2 of flooded area	mm local annual rainfall
Mali	Inland Niger Delta	40'000	200-600
Cameroon	Waza-Logone	12'000	500-700
Tanzania	Pangani River Basin	1000	500-800
	Pangani Mountains		3000
	Rufiji Floodplain	10'000	1000
Zambia	Kafue Flats	6'500	800
Botswana	Okavango Delta	16'000	400-600

Source: research team, Hughes and Hughes 1992, Acreman 1996,

All the floodplains have locally very low and erratic annual rainfall of between 500 and 1,000 mm. The flooding in these areas only partly stems from local rain in a rather flat area but especially from rains falling in areas further away, mostly in mountain areas. Most of these floodplains are therefore part of a larger river basin-system and vulnerable to changes up and downstream of these systems. The annual cycle is as follows (see also Marchand and Drijver 1985, Chooye and Drijver 1995 for Kafue Flats in Zambia, Loth et al for the Waza-Logone). After the dry seasons the local rains start, leading only to small inundations and to first waters in the tributaries, which often do not yet reach the main river bed, which still carries water. But some month later, larger amounts of water originating in mountain areas reach the floodplains and the main river canals are fully covered and leave the main riverbed. It is often then that water from tributaries and ponds and lagoons carrying still water will meet. As a consequence, big areas adjacent to the rivers are inundated towards the end of the local rainy season. This inundation is different in magnitude between the different areas chosen. It is rather small in the Pangani area or rather large in Mali or in Botswana (Inland Niger Delta or Okavango Delta). After the floods the water recedes again, leaving fertile moist areas, which are well suited for the growth of grasses

for rich pastures (such as *Echinochloa* or *vussia* species). Some of the grass species are annual, others per-annual and have adapted to the high floods. But only seldom do we find trees in such areas because the regular inundation prohibits the growths of trees. Topographically, one can distinguish between the main riverbed and adjacent flat areas with certain level of depressions. This feature is one of the important environmental components characterising these types of ecosystem. In the depressions the water remains and these are then important areas for fishing and watering animals, domestic and wild animals. There are however differences in the chosen floodplains. Some of them are more like deltas (Okavango (Botswana) and Inland Niger Delta (Mali), also Logone area (Cameroon)) where the water movements are slower and where depressions in the topography have little to do with the main river and river areas such as the Kafue Flats, Pangani or Rufiji River, where the main river meanders and creates oxbows and lagoons. However, in all the cases even small depressions in the topography are important for in the dry season they are the additional bodies carrying water apart from the main riverbed. These water movements have an impact on the vegetation, as we have seen. Therefore we will only find woodlands adjacent to floodplains but seldom inside floodplains. In an intermediary zone there are often many termite hills, indicating a zone, which is not so long inundated as the others. More then towards the dry areas one finds a lot of scrubs (*Acacia*), before woodlands are found. Due to the movement of the water over the area, there are following resources, which are important. First, we have rich grass cover which attracts wildlife and predators, especially in semi-arid zones. Second, we have migration of water species such as fish, water related animals and predators (crocodiles), which also move with the cycle of flood and recession. In the times of high flood most fish species (*Tilapia*, *Oreochromis*, *Alestes* etc) move out of the main river-bed and move into the plain for spawning or to special areas to set up their nests under water. Some of the fish migrate more than others and move up the tributaries in order to spawn. After the water recedes these fish try to move back to the main riverbed, many get stuck in ponds, depressions and other water bodies where they can be caught easily (ibid, see also Handlos 1982, Ellenbroek 1987, Chabwela 1992, Adams 1990). Predators such as crocodiles and snakes also follow this movement in the search for fish. Floodplains are also attractive areas for a high number of primary consumers such as elephants, antelopes, buffaloes, zebras, gnus etc as well as predators such as lions, hyenas etc. In some areas such as the Kafue Flats one finds especially adapted antelopes (*lechwe kafuensis*), which partly feed on water plants. However, they also move in smaller or larger groups from the floodplain away and back according to the water level. Last but not least, floodplains are the habitat of a large number of birds, some of them that come from Europe during the European winter in order to go back after the temperatures in Europe have risen again. But also a large number of water birds finds its habitat in floodplains and makes it valuable for conservationists. As a matter of fact, one of the most important conventions for the protection of wetlands is based on the impression that birds and their habitat should be protected, especially floodplains. In two of researches conducted in Tanzania forest in higher sometimes mountain zones are of important for timber production and related to the floodplain.

In addition, there is a whole cycle in floodplains (see Marchand and Drijver 1985). While animals in the water and on land follow the movements of flooding and recession, they are feeding on primary and secondary production. Especially plant eaters such as antelopes leave their excrements in the water, which provides nutrients for water plants and other plants, which are fed on by the different animals. With the exceptions of elephants and hippopotamus, most of these animals are, in turn, followed by the predators. The influence of man in the floodplain is so important that we have to speak of cultural landscapes. Especially in the use of pastures areas as well as hunting and fishing activities as well as logging, use of fire and enlarging farming on previously reserved ground have altered the cycles and composition of floodplain species

considerably. Although zebras and antelopes seem to eat some of the same grass species, for example in the Kafue Flats, mostly they also consume different plants. Changes in the use of these animals will have an impact on the ecosystem later on with regard to the composition of grasses, fish species etc. and nutrients cycled in the ecosystem again.

There are not many differences between the ecosystems, which was also intended in the study setup. Nevertheless, there are differences between river-basin based systems (Logone, Pangani, Rufiji, Kafue Flats) and deltas (Okavango and Mali). In the first type of floodplains, rivers structure the topography in a big way and form the relief by meandering whereas in the deltas the main river splits up into many different smaller rivers, which often are organised in a parallel, often not going anywhere but just leaving their water into the desert. We would therefore conclude that inundation in deltas does not include so many large-scale changes and animal movement whereas in single river floodplains, animals move over larger distances. In addition, flooding seems to follow a much more regular pattern in the deltas than in the floodplains.

Characteristics of traditional CPR institutions

These floods as well as their recession give the local peoples different access to renewable natural resources such as fish, pastures, wildlife, gathering products, fertile soils and water for irrigation. Accessibility to these resources, which are held as common property by a local group, can vary from year to year and this is the ecological framework to which local resource users have to adapt. Ethnic groups have developed institutions to manage the CPRs in these areas such as the Inland Niger Delta (Moorehead 1989). Depending on the seasons, there are rules through which decisions are made. Who can have access to what CPRs is mostly regulated, as is who is excluded (rules of access). It is often rules of membership which play an important role. Those who are allowed access are able to use CPRs, at a certain time and under certain circumstances (rules of use). These rules were developed long before the time of the Fulbe ethnic group's hegemony in the 19th century, although they were formalised by them. Central to the issue of who is allowed to use these CPRs, is the question, which indigenous to an area and to whom it is possible to give or to deny resource access (ibid. 263). Still, today the first users of these areas are said to be the masters of the earth or the masters of the water. Apart from conducting rituals for local spirits of the land and the water, they have the duty to organise the resource allocation of different user groups and individuals. This often happens in co-operation with a council of elders (ibid.: 264f.).

Due to the seasonal variability of the resources in these regions, different tenure systems governing the use of resources are important. As mentioned above, often these resources are held in common and their use is regulated by a local community through common property institutions. But there are situations – like the flooding of a very large area in the rainy season – when resources such as fish are open access. In this situation, all users can fish without restriction. It is only when the floods recede and the water returns to the riverbed and only remains in ponds, little lakes and swamps, that the fish are again a CPR of neighbouring villages. Those wetlands that are too small and dry up, become private property. The same is the case with individually owned fish traps such as differently sized baskets (Thomas 1996).

These different tenure systems, which match the seasonal variation and the accessibility of the resources, can be best explained by the so-called “economic defendability” model developed by Dyson–Hudson and Smith (1978) and revised by Smith (1988). This model predicts that resources are used in an open access tenure, which cannot be defended or do not have to be defended because they are a) too scarce or b) too abundant to be monopolised by a group of people collectively. But if the resources can be found locally in a more concentrated form, they

get scarcer and so it is possible to restrain the access of other users (ibid). Therefore, CPRs are resources with a specific accessibility that make more economic sense for local actors to bear the defence costs collectively, than to leave them in private property tenure. Private property would be too expensive due to defence costs. This tenure only makes sense if the resources are available in very high concentration. But rules of tenure must also be seen in respect of risk and insecurity. Risks in a hazardous ecosystem can be addressed by local communities with a CPR-tenure system. These systems offer the members of a local group a wide range of access to resources, which can minimise the risk of being without resources (so called minimax-strategy, in which profit is not maximised, but instead a secure level of food production for subsistence needs). Moreover, rules governing the access of foreign user groups can be seen as a minimax-strategy in order to reduce risk - these rules offer access to CPRs on the bases of reciprocity for some foreign groups. If in times of disaster, foreign groups can gain access to a local user group's CPRs, profiting from the CPRs of the former host in times of need (Thomas 1996).

All ethnic groups studied in our project have developed institutions for the use of CPRs such as pasture, fish, wildlife and timber as well as water which show the features mentioned but there are several aspects which are new and characterise the traditional institutions:

Membership, ethno-professional groups and asymmetric power: Our data show that in all areas local first-comer groups have developed rules and regulations regarding the use of CPRs, which correspond to the seasonal cycle and the rule of economic defendability. However, there are groups that differ in their use of topographic zones and their specialisation regarding a specific resource. We are therefore speaking of ethno-professional groups. In the Niger Delta (Mali) we have different Bozo groups traditionally controlling the fisheries in the sections further away from the main river using special nets while another group called Somono – being set up later by powerful ethnic groups in order to have secure river transport – controlled the fisheries in the main river. Similarly in the Waza-Logone area, Northern Cameroon, the indigenous Kotoko groups control the fisheries as first-comers and identify themselves as the noble fishermen in order to set aside other “inferior” activities such as cattle herding by Arab Choa and Fulbe as well as agro-pastoralism of the Mousgoum. The same is true in Pangani River Basin with the division of the Pare peasants in mountain areas, who use parts of the plains for agriculture and who see forest watershed areas a important resource they control whereas in the plains itself nomadic pastoralists such as the Maasai or the Barabaig see floodplain pasture as an important reserve for their cattle. Similarly, in the Rufiji area, Southern Tanzania, ethno-professional groups in the floodplain were highly specialised before Ujamaa collectivism. Before Ujamaa as well as during colonial times, the Rufiji peoples included specific ethnic-professional groups with separate names. Agriculturalists, fishermen, hunters and honey collectors had their specific ethnic identity and membership which did structure their access to the CPRs, respectively. The same is true for Botswana case where the first users, like the San hunter-gatherers such as the Baiai see themselves as users of wildlife and fish while the late-comers, the Hambukush are more oriented towards cattle herding and agriculture. In the Kafue Flats in Zambia the situation is somewhat different. On the one hand, we also have ethno-professional groups. There are the first-comers, the Batwa, as hunter-gatherers and as fishermen, who settled close to the main river and are recognised as river people whereas the later arriving Ila and Balundwe base their livelihoods on cattle and in pre-colonial times to a lesser extent on agriculture. But these pastoralists differ from other pastoralists in the other cases insofar as they had a kind of peculiar regulated transhumant movement between clear points of settlement and cattle camps and therefore occupied a clear regulated space. On the other hand, it is wrong to regard them as pure pastoralists because fish

and wildlife had been of crucial importance for the livelihoods and many institutions existed to regulate the use of these CPRs.

Membership to these different ethno-professional groups give access to specially defined spaces where resources such as fish, wildlife, pasture etc. can be found, which gives a sense of territoriality related to a group. This in turn gives the possibility of inclusion and exclusion mechanisms. This can be seen in all the groups, which have more or less clearly defined boundaries regarding space and social groups. Being a member of such a group or a village or a band gives the right to use the CPRs as well as defines the space and territory to be used at a particular season. This is the basis of the institutional set up in all the cases studies. Interestingly, however, we are dealing with a large set of user groups and political systems. The case studies include hunter-gatherers including non-centralised fishermen groups (Botswana, Zambia, Tanzania), more or less centralised fishermen groups (Mali less centralised, Bozo and Somono master of the water and ritual masters, Cameroon, much centralised Kotoko sultanat), segmentary nomadic pastoralists (Tanzania: Maasai, Cameroon: Fulbe and Arab Choa) and transhumant pastoralists with big-men structure (Zambia: Ila/Balundwe), agro-pastoral groups (Mousgoum) and agricultural groups not centralised (different groups in Rufiji area, Pangani). So, there are in one part of the setting considerable asymmetries of power with regard to the control of the CPRs. In the most extreme case, the Kotoko in Waza-Logone area see themselves as the noblemen among fishermen and they submit themselves to the rules of a central figure, the Sultan. The latter however can be referred to an Islamic hegemonic system which also in Mali gave way to a stronger hierarchical social structure and to a larger set formalisation of user rights and duties (see the Dina-System in Mali). In attempting to summarise the examples, we are faced with a great variety of political systems but there are two major features. Groups with a low degree of power asymmetries in the hunter-gatherers and related fishermen groups (Botswana, Zambia) and groups who are facing a more or less centralised power structure ranging from clearly centralised power (Kotoko, Cameroon) over big men-systems (Ila and Balundwe, Zambia) to systems of ritual/master specialists (Bozo, Somono, Rufiji groups). The latter cases all show a certain degree of power asymmetries in the management of the CPRs in so far as there are ritual specialists or other kinds of masters who are seen as the first-comers and have the right and the incentive to manage the CPRs for all the households. Therefore they hold privileges such as gaining from the catches of others. In addition, in most cases there are agreements of reciprocal access with other groups, even rules with other resources users, which helps buffer the risk of complete failure.

In all cases there are rules and regulations regarding gear and timing of use of fish, pasture and wildlife but not regarding the amount of resource to be extracted. In Mali and in Cameroon the regulation includes co-ordination by powerful groups and individuals for collective fisheries among the Bozo, Somono and Kotoko. In these cases the type of gear is defined as well as the time when they shall be used. For example, specific nets are forbidden among the Bozo and the Kotoko and the time for fishing is clearly defined but not the amount taken. The same is true with the Ila/Balundwe and Batwa (Zambia) well as with some of the Rufiji fishery groups (Tanzania). In the other setting in Tanzania, people in the Pangani River Basin have clear rules regarding how and when to use forests for plantations as well as water for irrigation. The Maasai, on the other hand, were especially in the dry seasons oriented to water holes and nice pasture.

Cultural embeddedness: By this term we do not refer to culture as a black box but to certain elements of how life is organised and how worldviews such as religion are linked with the institutional set-up. CPR-institutions in floodplains often refer to a larger set than just the local knowledge of a CPR. This becomes clear by central concepts such territoriality. In most cases justification of local groups or individuals to be the “masters of land and water” and the resources connected with this claim is linked to the religious worldview and makes the ideological

justification for the control of CPR. Kotoko rule in northern Cameroon is based on the relation with water spirits, the same is true with Bozo and Somono people in Mali. Similarly, the Pare people in the mountains adjacent to the Pangani floodplains see a supreme being in the watershed forests controlling that area, while in some sacred forests ancestral spirits are worshiped. Fishing and hunting activities of special ethno-professional groups among the Warufiji groups link their resource territories with spiritual beings, often ancestral spirits. For the Ila, Balundwe and Batwa ancestral spirits give first-comers the right to control an area. A difference here with other examples is that apart from the Batwa, the Ila/Balundwe have an inclusive land tenure system, which includes rights to pasture, wildlife and fisheries within the territory of a village leader. In Botswana, among the Baiai, fishing and hunting rights are related to totemic systems.

Often, there is a special relation to spirits and ancestral spirits, which is made reference to and these special relations are illustrated in numerous ritual activities performed by ritual masters. These are not the same as the rulers themselves as in Mali, Cameroon, Tanzania and Zambia. They are the ones that have a special relationship with the spiritual world and conduct rituals in order to appease these spirits. If this is not done, there can be harsh reactions as illustrated in the case of the Ila/Balundwe. Here ritual masters called *utamba* are the ones organising for a local leader of a village group territory the collective fishing activities in ponds within the village area. They prepare food for the ancestral spirits and perform first a secret ritual before the collective fishery is announced to a large set of people, not only the village but as well as neighbouring villages and groups. Before this takes place, the tributaries are monitored in order to ensure that nobody is free riding. Monitoring is organised by the *utamba*, who then calls later on, after the permission from the head of the village, for collective fishing. They set a date on which people have again to wait for the *utamba* to conduct what is called *kupa ila*, a ritual performed to appease ancestral spirits. The *utamba* has to go into the water first and spit water into the pond, talk to the spirits and throw the first spear. If these rituals are not done, people fear attacks from crocodiles and snakes, who are said to act on behalf of the spirits. Similarly, moving to the pasture area and collective hunting activities are organised this way, involving ritual masters and co-ordination by the first-comer group, because all these activities are supposed to be done with the involvement of a lot of people and need clear co-ordination.

The link to the spiritual world is not there in order to protect the resources but makes reference to an already existing religious system. However, this system can be used perfectly for monitoring and sanctioning purposes. Of course, the system does not rely only on these religious terms but has other monitoring and sanctioning devices. However, these are strengthened by making a reference to the spiritual world.

Similarly, we can see activities of ritual masters in Mali and in Cameroon as well as in Tanzania. In Mali the master of the water has ritual masters who renew the contract with the water spirits annually in order to ensure good catches and to prevent accidents. Also, the Kotoko rely on ritual activities in order to enable good fishing catches. Even more, they see themselves as masters of the land and therefore in a hierarchical system have, after Islamisation, the sultan controlling all such activities, despite Islam being against such kind of religious activities. Access to pasture is here, based on the first-comer right to control the land, given to a nobleman called *ngalway*, who co-ordinates the interaction between fishermen and pastoralists. This is important because if nomadic pastoralists come too early, they destroy fishing canals and ponds, which would cause severe conflicts. Among the Rufiji people, as they are fishermen groups, a ritual master controls collective fisheries in lakes, which are part of the floodplain system. They perform a ritual called *tambiko*, which also appeases spirits and especially a supreme spiritual being, who renews the fish and could also attack by using crocodiles if regulations such as waiting for the announcement

of collective fisheries, are violated. By these means, people internalise rules based on already existing religious systems.

Rules of reciprocal access: risk reduction, compensation for co-ordination and prestige: Another aspect is of great importance. In many of the areas studied, access is granted not only to locals but to outsiders as well, as long as they follow the local rules. This has to be done with reciprocal arrangements found in other floodplain areas as well (see Thomas for northern Nigeria 1996). Therefore when a village is able to access a pond, it will also invite a former host village to the collective fishing. One main argument goes that by such arrangements, risks of complete failure of catch can be buffered. But there is another aspect related to this. Often collective fishing, hunting and pasture sharing activities are linked to profit of the locally powerful people claiming spiritual ownership. We make reference to two examples here. In Mali the Master of the Water gets the third part of the catch called *manga ji*. Among the Ila, one hindleg and 50% of all the skins go to a main Ila headman controlling the collective hunting areas. The same group receives a head of cattle in order to give out usufruct rights to other villages for cattle camps. One could argue that this is paid as a compensation for the costs these groups of people have for the management of a collective good, meaning co-ordinated access to a CPR in a socially just way: Of course, they get more than the others but they ensure that from the other users, everybody gets access to CPRs. However, there is another gain from such activities. Collective resource uses in many parts of African floodplains are like social happenings where a large body of people gather. The people responsible for its organisation get a lot of prestige from organising such activities. This is most evident among the Ila and Balundwe as well as among Bozo and Somono and, to some extent, also for the Kotoko and the Warufiji groups responsible for such activities. The same kind of gain cannot be found among the Pare and the Maasai in Tanzania or among the two groups studied in Botswana. The latter has got to do with the hunting-gathering type of society.

Summary: To summarise the findings, we can say that most of the institutions have not been crafted for sustainable use but follow what Ruttan has labelled, restraint for gain (Ruttan 1998). Linking the rules to basic religious systems gives more control often at low costs because it is internalised. The evolution of some of the institutions goes back to conflict resolution mechanisms, which have been formalised as resource rule. But granting access to others is based not only on lowering costs for management and direct material gains but as well on prestige for the powerful groups involved. Although asymmetrical relations exist, access is given to a large number of actors in a co-ordinated and controlled way and there is trust and security of access. We linked the existing old institutions with Ostrom's Design Principles and found that most of them were matching. The only aspect which is different in the floodplains compared to other cases of so-called robust institutions Ostrom discusses, is clear boundaries. In the floodplain context, boundaries exist but they are more flexible according to seasonality. However, despite reciprocal access, rules for access are based on membership and the notion of whether a group is invited or not, exists. But one important aspect has to be linked with the cycle of the floodplains. Often resources are open access during high floods while there are different levels of communal, collective or private property arrangements after water recedes, similar to what Dysen-Hudsen and Smith (1978) as well as later on Smith (1988), in a self critique, have labelled the economic defendibility model (see also Thomas 1996).

External change and change in relative prices in floodplain CPR-systems

The most serious change in the cases discussed stems from colonial and post-colonial times and changes in economy, political and institutional systems, which alter the way CPRs are perceived and used. Following the framework of Jean Ensmigner, we discuss how external changes shape

prices for CPRs and therefore internally, local institutions, organisation, bargaining power and ideology in the cases we studied.

Colonial times: Change in most of the studied floodplain CPR-institutions stem from colonial control by the British and French directly or by the protectorate or company rules set out by the British (for example Zambia). One of the main features is the way local systems have been perceived by the new masters and integrated. We cannot speak of a major break between the pre-colonial settings and the colonial times in the beginning of colonial times in these areas because control in the first part of colonial times has been weak and sometimes erratic. Only later on, in the 1930s can we see stronger control by the colonial state. The British and the French administrations differ on the ideology of indirect vs. direct rule. However, both systems have to rely on local power systems for control. One of the first major impacts has been pacification and collection of taxes in all the cases. There are however some differences in Western Africa compared to Eastern and Southern African areas. While in such countries as Mali and to a less extent in Cameroon, the Fulbe have established a more formalised control system (the Dina in Mali, in Cameroon there was only for a short period Fulbe control because of colonial attacks), most of these CPR-systems have been influenced by Islam and by strong states looking for slaves in adjacent areas. On the one hand, this posed a permanent threat of slave raiding or tributes to be paid in slaves, but at the same time, a greater formalisation of local institutions, especially in Mali. The main difference to the colonial system was that it really based itself on local structures. In Eastern and Southern Africa, on the other hand, we seldom have such centralised power structures before colonial times with the exception of the Lozi kingdom in Zambia, which held some of the local Ila/Balundwe groups in tribute and which did slave raiding in the areas we studied. However, less formalisation of local resource use took place based on this power in pre-colonial times. Colonial times, by contrast, did on the one hand pacify all the regions, where the Germans (Cameroon and Tanzania, later on controlled by the French and the British), French or British, integrated the local rules by transforming them or creating new leaders and used them in order to demand taxes to be paid in cash. In British colonial areas, we have to distinguish between countries which were controlled by company rule (British South African Company in Zambia) or with the direct government rule (other areas controlled by the British) as control was stricter in the latter situation, while in the former, rentability aspects (rights to minerals etc) were of greater importance. However the main aspects concern similarities. The ideology of indirect rule pushed administrators to select among local people collaborators and despite having the idea of using local power structures, the British often erred in who were powerful people and how the political process took place. In Zambia, for example, the idea to have local so-called chiefs evolved, leading involuntarily to the selection of sometimes a totally different set of people, who gained power over a large area and structurally different from the powerful people who were executing before. Still, today traditional local chiefs among the Ila and Balundwe go back to this colonial selection, in which village leaders were misinterpreted as chiefs on a large scale while the Ila power system is a kind of big-men system, in which different leaders compete over leadership. A kind of paramount leader however did not exist and chiefs as well as the notion of chieftdom were introduced by the British South African Company. They then had new functions and new powers as the more segmented kind or organisation people had before. In Zambia as well as in Tanzania the most important aspect was the giving away of land to white settlers, which indirectly or directly affected local people, who lost their land. Local people were also forced to enter into tax-payment systems and to produce cash crops such as the Pare or the Rufiji people. However, the latter were located in more remote areas difficult to reach than the former. In order to have people producing coffee and other cash crops, the Germans and later on the British, forced the people to produce coffee and come down from the mountains into the

floodplain. In other areas such as Zambia, people resisted on the strength of their wealth of cattle. Therefore the strategy pushed by the British in other parts of Africa, to produce cash needs that had to be met with cash crop production and labour migration did not work well among the Ila and Balundwe. In order to meet monetarised tax demands, the French did try to push people into the production of peanuts and cotton in Mali and Cameroon. Local powers were changed in order to meet these needs, while some of the structures remained (such as the Sultan in Northern Cameroon) but severely weakened. However, major leading groups also in minority status did remain in power such as the Kotoko in Cameroon or leading groups within the Bozo and Somono in Mali. Especially the latter did try to capture power during these times. Major technological and economic changes related to this kind of control were introduced with the aim of making the colonies self-sufficient in terms of money because the colonial powers wanted to profit and not to invest money in the colonies, which was sometimes a difficult task. In order to improve harvests and livestock, we find first attempts of agricultural extension services, mostly promoting cash crops and a first kind of veterinary service. Although these services were only efficient towards the end of colonial times, there was a major change in the basic institutional and economic setting. Institutional so far as new laws for the use of land, livestock and wildlife (often including fish) were set in place, which often formally out ruled the local institutions.

Because of the sometimes ineffective control, local systems persisted or remained in a transformed version. In one area however colonial powers were important regarding the past: They started opening the floodplains for a much larger set than before. In order to meet urban needs, resources not so intensively used such as fish in the Kafue Flats, Zambia, were seen to be used more intensively by external users. Similarly, pastures in Cameroon were seen to be underused and therefore to be open for outsiders. Also in area such as Botswana, other ethnic groups who did not have the possibilities to come to these resource rich areas now have the opportunity to do so. The same is true for the other areas of study, where mobility of people increased during colonial control. Institutionally, we are faced with a weakening of local control but not in all the areas at the same time and not with the same intensity. While in Zambia fisheries at the main river and hunting was totally in the hands of the colonial powers on the eve of independence, the cases in Mali show that still powerful people among the Bozo and Somono had fisheries much under their control. In Tanzania it is different according to regions whereas changes are strong among the Pare and the Maasai in Pangani River Basin, we do not have the same changes in the Rufiji area, which was seen as more remote and economically much less interesting. As a general rule, local institutions in more remote areas did change to a much less extent than institutions in areas closer to colonial control and interests.

Changes during independence: There is a severe difference after independence. On the political level most of the countries gained independence between 1960 and 1964. We have after this two broad political changes: One going more into African capitalism (Mali, Cameroon), the others moving to African socialism (Tanzania and Zambia). Botswana was still for many years under the colonial control of South Africa. The difference between the two systems is to be found in the way in which development goals and path dependent development programmes have been pushed. Tanzania with the Ujamaa system of Nyerere and Zambia with Kaunda's humanism were trying to modernise their countries based on state controlled systems of agrarian production. The Ujamaa system clearly disrupted pre- and colonial control systems and institutions existing before because people were newly organised in villages in Tanzania or were incorporated in the so-called agrarian co-operatives in Zambia. In Tanzania this meant the disrupting of ethno-professional groups in Rufiji area and the breaking of resource entities in Pangani River Basin among the Pare and the Maasai, meaning that mountain slopes and watershed areas as well as pastures were cut into different village areas not corresponding to ecological zones anymore. The

basic ideology was against ethnic identity and the state socialist identity being pushed on all levels. In the other two countries, this was not the case and ethnically defined groups were the basis for political actions. This meant that political power was based on the ethnic groups and their allies and after political changes the positions of minority groups as well as majority groups could change again. One case in point is Cameroon, where the Kotoko have been allies of the first President Ahidjo but lost power to other groups in the Logone floodplain, especially to Arab Choa, Mousgoum and others after Paul Biya took over in the 1980s. In Botswana the Tswana groups in the southern part of the country who then moved into the area of the Okavango Delta, where they became politically dominant over former hunting-gathering groups as well as nomadic pastoral groups. Villages today do not have an old history but stem from control and cattle posts set up in the 1970s or 1980s. Similar to all the political systems was the fact that certain aspects of resource use were now formally under state control and a couple of laws were based on the colonial laws (see for example Zambian law of fish and wildlife use) or newly set (see Tanzania laws regarding Ujamaa villagisation programmes). But also in the other countries the 1970s were times when CPR use was to be controlled by formal laws established by the state, either directly regarding the use of such resources or related to agricultural extension and veterinary services (see Cameroon and Mali). Land acts were crucial in all the areas. In socialist countries land could not be sold or bought such as in Tanzania and Zambia. Land belonged ultimately to the president of the state or was in the hands of so-called traditional authorities (tribal land or chief lands in Zambia). In capitalist countries there was already the possibility of getting private land titles such as in Mali and in Cameroon in the 1970s. The basic change however was that land not intensively used could be regarded as not used at all and therefore was regarded as state land pastoral lands or lands only used seasonally might fall under this rubric, which is a major problem especially for nomadic peoples. But the states did not only alienate land in this way. In many of the areas studied protected areas were installed after independence. In Zambia three parks in the area of the Kafue Flats have been established, causing troubles for former users of pasture, fisheries and wildlife. In Tanzania in the Rufiji floodplain one old protected area goes back to colonial times (Selous Game Reserve in Rufiji), while in the second setting in the Pangani river Basin a new park was set up the 1980s called Mkomazi, which received strong support from foreign NGOs but caused the eviction of Maasai pastoralists (see also Brookington and Homewood 1999). Two parks were established in Northern Cameroon (Waza Logone and Kamlanjam Park) limiting pastoralist movements and use of other CPR. All these parks symbolise statehood protection and all of them had a fortress kind of approach in the beginning. They were taking land and therefore CPRs out of use of local people, which had been managed through local institutions before. Protected areas became and still are part of a legal system, prohibiting the use of pasture, wildlife and fish by local people in the protected areas. For the use of all these resources, the governments set up laws including high barriers for legal hunting and fishing in adjacent areas based on modern techniques and licences difficult and expensive to obtain, thereby mostly excluding local people. Last but not least, in many of the areas studied the state was pushing large scale development schemes with and without external aid. While Mali and Botswana were not in the focus of such developments, all the other areas were strongly hit by such schemes directly or indirectly: In Cameroon a kind of green revolution was set up for irrigated rice production with SEMIRY I to III, which demanded the construction of a large dam and a lake at Maga. Similarly, in Tanzania, Pangani River Basin, there are several large-scale irrigation projects set up with the aid of Japanese development schemes feeding irrigated fields with water largely used upstream in these river systems and creating problems downstream. Also in Rufiji area a large-scale irrigation scheme was set up, attracting many people to scarcely populated areas. In Zambia one of the most important changes has been the

setting up of a large-scale sugar cane plantation in the eastern part of the flats in previously rich pasture areas as well as the construction of two dams, one for power production, the other for regulating the flooding of water. All these dams and irrigation schemes have disrupted considerably the ecological water cycles of these floodplains and have led to a reduction of fish and pasture.

One of the basic political and social changes affecting CPR institutions has been the social changes and the mobility of people into the floodplain area. Already after independence the notion of citizenship had been of great importance to the new governments although there has been much ethnicity in politics. Already during colonial times but much more after independence, people were allowed to move and use resources wherever they went. In reality this was not made easy by local groups in power but as this power weakened, the possibility to exclude outside users from a CPR got less possible. This can be illustrated with the Kotoko in Northern Cameroon. As earlier masters of the land, they were able to put the other groups, who had to use the CPRs such as fish and pasture, under their rule. This meant that they were not totally excluded but had to wait for Kotoko leaders to take decisions and co-ordinate the catches. This was especially unbearable for the majority of the newly immigrated Mousgoum group as well as for the Arab Choa and other groups. However, they were forced to accept this during the first part of the post-colonial times up to the 1980s. Here already the power began to weaken under the regime of Paul Biya but broke down after the democratisation process in the 1990s. The ruling people in Cameroon tried to save their power base by issuing a multi-party and democratic system as well as free elections. Profiting from the new changes in politics were the Mousgoum, who challenged the power of the Kotoko, precisely regarding the control of pastures and of fisheries. But also in other countries such as Mali, Tanzania and Zambia decentralisation schemes and democratisation led to the free movement of people and capital in these countries. Especially in the formally socialist countries this led positively to more local control and more political involvement with new land acts enabling more local control. On the other hand, however, all these changes included the danger that local people paradoxically were not supported by the state, if they wanted to set limits to free mobility based on the notion of citizenship and therefore as well also open access to CPRs. Therefore we have new settings locally where some people and groups gain more bargaining power based on the new political setting than local groups, who used to control the CPRs before, partly based on old traditions, partly on people in government or backed up by government schemes. Botswana was up to 1966 the British Protectorate Bechuanaland. Before 1950 land was regarded as tribal land and given to installed chiefs. After independence the country's economy was based on its diamonds early on being regarded as the best case of development in Africa. It is therefore also not surprising that more grass-root level control of CPRs in community based and participatory schemes such as the CBNRM have been formally possible in this country. Economically the changes have been very difficult for the four out of five countries studied. There are countries such as Zambia whose economy was based on copper as the only export possibility. Zambia under President Kaunda had great development plans and started to build up infrastructure, agricultural production based on subsidies and an import substituting industries. After the decline of copper prices in 1975 the government had to struggle with massive income losses and was no longer able to hold the level of expenditures. Nevertheless, coupled with high oil prices, the state became heavily indebted and was no longer able to employ that many people and finance government services such as the agricultural, fisheries and wildlife protection sectors. Zambia dropped economically and is now one of the poorest countries in the world. Tanzania had similar problems although its economy was not based on minerals but on cash crops such as coffee. Also here, the decline of prices led to a major crisis for the state, although it had other items of export such as sisal etc. Similar to Zambia,

Tanzania had to face the problem of indebtedness and experienced cuts in the state budget from which agricultural as well as wildlife and forestry sectors suffered as well as numerous coffee producers. Cameroon had problems with its oil revenues, which became smaller due to reduced production. One of the substituting strategies had been sale of timber in the south but in the northern part this was not seen in the policy of the state to pay regular salaries. These were not paid at all sometimes. In the northern area cotton and groundnuts had been the major cash crops but prices as well as droughts made cotton production less valuable for the government and local people. Mali also suffered from lowered production in cotton and generally bad export possibilities. Similarly, here state salaries for administrators to manage the CPRs were often not paid regularly. The only country, which was developing in a positive way was Botswana. Income from diamonds was, in fact, stable and even rising, giving the government the possibility of a relatively high income compared to all the other countries in which many people profited through jobs, even in the remote villages by remittance or by receiving money directly from the state especially old aged people. Table 3 shows the average income in all the countries indicating that the overall income in Botswana is between 18 to three times higher than in three of the other countries.

Table 3: Average income in US\$ in 2002-3

Country	Average annual income in US\$
Botswana	4736
Cameroon	560
Zambia	300
Tanzania	270
Mali	250

One of the major levels of discussion regarding the problems of CPR management is demography because high demographic development is linked to problems of sustainable resource use. It has to be indicated, that the increase in all areas was between 2 to 4 % annually. It remains often unclear, if local immigration is also counted, as the data available are extremely poor to give a clear picture. Nevertheless, realises that there is a decline in the increase, perhaps due to AIDS and therefore higher death rates among males and especially females in the reproductive age. In addition, population densities in the floodplains are not extremely high, ranging from 40 km² in Pangani (in Pangani Mountains densities are 200), 33 in the Inland Niger Delta, 13 in Kafue Flats, 14 in Rufiji, 5 in Waza Logone and to 1 in Botswana. In all areas however we have seasonal immigration, which is very important and which is often not registered anywhere. It is especially these resources users who are not accountable and who have a high demand on CPR. In Zambia for example, the most part of the annually 6 MT fish is caught by seasonal commercial fishermen. 70% of them are not local fishermen but seasonal immigrants. So we are faced with an important part of CPR users who are highly mobile. The same is true in Mali, where nowadays commercial fishermen move all over the Inland Niger Delta and in Cameroon, where the democratic system allows everybody as a Cameroonian to use resources freely within the limits of the state territory. In the same way Tanzania, especially Rujiji area faces massive influx of commercial fishermen and hunters due to the opening of the area by infrastructure and by the closure of agricultural schemes. On the contrary, people in the Pare mountains in the Pangani River Basis have to look for alternatives to coffee income and some of them switch to other crops, others ignore this and move to the plain themselves, where they get into conflict with pastoralists because they convert the dry season pastures into irrigated fields. Another negative aspect is logging which now happens even in the former holy forests, which have become open access resource for the timber lobby. Botswana, on the contrary, does not show the phenomenon

of external resource users. The only people visiting the area are tourists but (for the moment), nobody would be interested to use CPRs for sale.

Changes in relative prices: There is a qualitative and a quantitative level to analyse changes in relative prices. On the qualitative level, Ensminger argues in her model that socio-political, environmental, demographic and technological changes influence relative prices (Ensminger 1992). We see that by political changes, CPR management by the state and, later on, levels of democratisation and decentralisation (participation) lowered the costs of entry considerably often undermining local level control paradoxically than being able to strengthen it. The link to this problem is also that the state is not present as it should be and that dismantling local control opens up CPRs easily for new users. At the same time, technological changes such as dams or irrigation schemes as well as protected areas were reducing CPR areas considerably. Most of the areas studied are nowadays better accessible than before the major changes. At the same time, natural and man-made ecological changes occur lowering income based on these resources but pushing up the prices of CPR compared to other goods. Although we have a rise of population in all the areas, the most important rise in people coming seasonally is often not well understood and difficult to quantify.

On a quantitative level we have data on how prices for CPR-goods have changed compared to other prices such as basic agricultural production, income from minerals and cash crops as well as salaries of mid-level state officials (teachers, local fishery or other department staff). From the comparison of prices, Table 4 below shows that CPRs in most of the area have gained a higher value than compared to other goods. If we take the example of Zambia, we can show that prices for CPRs and CPR-related goods such as cattle have risen considerably (between 80 and 17 times) compared with agricultural products (only 9 times). At the same time, price for copper has dropped and salaries of administrators are stagnant or decreasing. In Mali and Cameroon we also see prices for fish and for cattle rising while other products and salaries are not high. The problem with the latter is that they are mostly not paid in time. In addition, both countries suffer from losses of income from low cotton prices and low oil production. However, Cameroon can fill parts of the gap by exporting timber but not much of this money reaches the northern part of the country. Also Tanzania suffers from cuts in coffee prices and prices for timber, cattle, fish and wildlife are rising much more than prices for agricultural goods as well as salaries. As we have seen that on a qualitative analysis, external variables such as political, social, institutional as well as demographic and technological changes push up the prices of CPRs considerably. The political-institutional changes open up the resources for new users while lowering institutional constraints and therefore costs. New technologies make for easier access to CPRs but ecological changes on the other hand, make the CPRs more vulnerable and help increase the prices. Less fish available leads to higher prices for fish than for other goods, less food available for pasture raises the prices for cattle etc.

Table 4: Changes of prices for CPRs, minerals and cash crops and salaries (administrators) in Zambia, Mali, Cameroon, Tanzania and Botswana between 1980-2 and 2000 (numbers indicate how many times prices from 1980 have increased up to the period 2000-2003)*

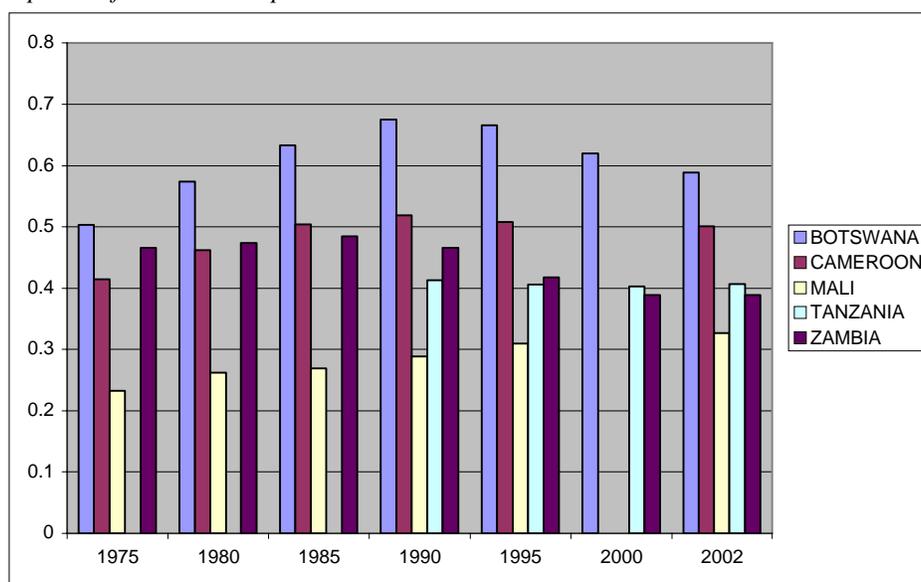
Country (Floodplain)	Cattle (bull),	fish	wildlife	timber	staple food	Minerals (relevant for area, not from area)	cash crops	salaries
Zambia (Kafue Flats)	80	17	20	-	9 (maize)	-1	-	-2
Tanzania Pangani	7.5	6.8	6.6	22	12 (rice, irrigation)	-	-2	-2

Tanzania Rufiji	6.5	90	6.5	32	6.5	-	-2	-2
Cameroon Waza Logone	1.3	2.4	1.5	-	-	- 2	-1.5	-1.25
Mali Inland Niger Delta	3	6	-	-	2	-	-1.5	-2
Botswana Okavango Delta	-	-	-	-	3	10	-	5

Source: Research and papers Haller, Meroka, Mbeyale, Fokou, Saum, Beeler, Frei, Landolt 2002-2005, Nohlen 2002, *Example: The price for a unit of fish in Zambia was in 2003 was 17 times higher than in 1980 compared to maize (9 times), copper-1, salaries -2).

The major difference we find in Botswana where there is an interest in cattle but not in other goods, is that it has up to now a stable income from diamonds exports. There is enough money available for jobs and people are well paid. Interest in CPRs is not high and there are also no markets where one can sell or where there is a demand. If we have a look at the Human Development Index, the picture gets even clearer regarding livelihoods of the different countries.

Graph 1: Development of HDI in Floodplain countries



As the HDI measures different variables and not only per capita income but also life expectancy, education, purchasing power. Only Botswana has an index, which is higher than 0.5, which would mean medium development while all the other countries are below that mark. Botswana has the highest index with a considerable rise, followed by Cameroon, which sometimes touches that mark. Zambia was on the same level but has decreased considerably. Tanzania and Mali are on the lowest level, although Tanzania has overrun Zambia since 2000 (Based on UNDP data, compiled by NCCR North South 2006).

Dismantling the commons: de facto open access, privatisation and legal pluralism

We have seen that due to changes in relative prices in all the areas of study with the exception of Botswana, there is an increasing price level for CPRs and due to institutional changes an increasing possibility to get access to CPRs. In the following chapter we would like to highlight this development in the areas studied.

State control and inadequate CPR-management: One of the striking features of CPR management under state rule is the inefficiency with which this is taking place. If we take Zambia and fisheries as an example, there it is obvious that local fishery administrators who were well paid in the 1970s are lacking the financial means to carry on their work. As illustrated above, fishing was under a clear set of local institutions by the Ila, Balundwe and Batwa. But since the colonial state considered fish an important resource, the fishery laws opened up for foreign users. As the state was issuing management rules regarding mesh size and closing times, however, it was lacking time, personnel and money for the monitoring at the main river and in the lagoons. Today, one or two fishery officers have to monitor a sector of 80 km of river without transport facilities.

These are all broken because there is no money for repair. In addition, a fish trader is able to earn three to four times what a fishery officer receives from the state, if it is paid in time. But this is not the only change happening: More and more foreign and local people are interested in fish resources for commercial purposes in the tributary areas. Ponds are fished out by young men, violating ritual activities, men take up women's fishing baskets in order to sell fish and seasonal commercial fishermen even move to the villages where they fish in the tributaries during the start of the rainy season. At bridges over some of local tributaries, large temporal market places develop. At the same time, the management of wildlife is in a severe crisis. While some participatory measures were taken by the Zambian Wildlife Service to manage the Lochinvar Park and the surrounding GMA, levels of poaching are still quite high, especially by foreign but also by local poachers, who are part of poaching network. Game scouts are said to be also part of that system and, if true, it is no surprise in view of the salaries these people get and the fact that the salaries are often not paid in time. Departments such as the wildlife section are being more and more privatised and have to look for financial support from donors and NGOs. Although the government takes up the responsibility to manage these resources, there is a severe lack of means to be able to do so. This is even more problematic in the sense that the demand for such CPRs is high in urban centres. Therefore in Zambia we can speak of a de facto open access. This is partially also true for pasture area. On the one hand, new cattle owners from outside get access to pasture by payments to individual people using cattle camps, on the other hand, the new leasehold title Land Act from 1995 enables privatisation of land up to 99 years, leading to interests in land by local powerful people such as chiefs and their rivals. We find similar constellations in Mali, Cameroon and Tanzania. In Mali the decentralisation structure has put into question local restrictions on movement of fishermen, who now also have the possibility to be very mobile. These people can seldom be controlled in an efficient way. However, the local masters of the water still control the access to fishing areas in the Inland Niger Delta but everybody knows that local young men supposed to monitor the area can be bribed easily. It also does not seem to be in the interest of the master of the water to manage fisheries in a sustainable way. The third part of the catch normally given to the master of the water by foreigners has become a rent to be paid without any service of co-ordination being done. So the masters of the water are no longer interested in monitor and distributing fish resources but in gaining as much as possible cash. In Cameroon, the Kotoko are challenged more and more through political and man-made ecological changes. The Kotoko have lost control over fish and pasture resources to the nomads as well as to the Mousgoum agro-pastoralists, who diversify by adding fishing to their activities. As the state has issued new democratic rules, resource users make reference to this in order to claim access to CPRs without the management involvement of the Kotoko. Paying taxes to the state and the notion of decentralisation set the Kotoko rulers out of power and gave rise to the notion of freedom for all the resource users on the one hand. Therefore, interest in the CPRs is high considering the ecological and economic crisis the region is facing. Interestingly, a lot of people are diversifying their livelihood strategies. Fishermen start to have cattle, fishermen

and women become traders, Mousgoum start fishing etc. One of the major problems is the fact that due to the dam, droughts and the Waza Park but also to a strong commercial interest, nomadic pastoralists moved to the rich pastures much earlier than before. As they have paid taxes, they say that they can move wherever they please. This brings about destruction of fishing activities and fields, which is sometimes even desired by the local people so that they can receive compensation. Administrators are also the ones to profit from such payments and arrangements. These situations can be analysed as privatisation for by claiming an area as private property where work load has been invested, compensation and exclusion is possible. Even more important, some Mousgoum now close the pasture commons due to the fact that they see themselves now as the new rulers of the area. Similarly, pastoralists dig wells that they claim to be their property. Often this is very informal and administrators as well as local people play with this informality. In Tanzania we have two settings which are different but also show open access situations. In both areas major changes brought about by people being relocated into Ujamaa schemes have opened up all the resources for all the Tanzanians but due to other options, CPRs remain for a long time not much touched. But with the economic changes in country and privatisation schemes, more and more timber, water, fish and wildlife become open access resources. There is the same problem as in Zambia that many people lost their jobs and their basic income and have now to opt for alternatives, which is also enabled institutionally and because access costs have lowered. Pangani River Basin had coffee produced but with the changes in coffee prices, people had to switch. Mostly powerful people took advantage of the unprotected state forests. In the Rufiji area Ujamaa had dismantled the ethno-professional groups and increasingly opened up the area, which had been a remote place to be reached by roads and bridges. As the research of our team shows, areas closer to commercial centres now face a big influx of fishermen from outside as well as taking up local young men to do fishing. In another setting the people further away still are able to fish according to local rules because the pressure on fish is not so strong. On the other hand, the latter area is famous for hunting and close to hunting trade roads. Locals do not have the power to challenge immigrant hunters from the urban centres. State control is weak in both cases. In Botswana we do not face similar situations. Land has been put into the hands of local communities but who, in the case study area in the Panhandle of the Okavango Delta, do not have the right to use the CPRs but to sell tourist use out to a lodge administration. However, the area is not of big interest and also local institutions are lacking but this is not yet a problem, for the interest in the CPRs is simply only on a very local level. People still wait for the promises of the gains from CBNRM structures.

Therefore, we have not only open access constellations but also privatisation moves in the areas studied. While for open access, the classic problem of no management remains, which leads to the degradation of CPRs, if it persists for a long time (several seasons not just during a short time in the year) clearly more resources are harvested, fish is getting smaller, wildlife scarcer and pasture more and more degraded and timber logged. On the other hand, we have informal privatisation moves especially regarding land or related resources such as water, setting up a field, a well or setting up infrastructure (weirs or canals). These are then seen as private property and these might or might not be backed up by administrators. The situation is best illustrated in Cameroon where for nobody is it clear what the rules of the game are, when the nomads are supposed to come, who has the right to levy what tax and use which resource or exclude whom. This situation is then similar to open access where the most powerful users try to keep a status quo in order to profit as much as possible. What then counts are the relationships one has with powerful people such as administrators, for whom local conflict situations are like a resource for they receive compensations from one hand or the other. This then leads to the problem of collective action for nobody knows clearly what the other side wants and how to co-operate

without losing too much. There is also a clear heterogeneity of interests on the local level to be illustrated in the village of Kalkoussam in the Logone floodplain. The arrival of nomadic pastoralists is a big problem but people do not have a common vision. The fishermen with canals want to keep cattle out, while some of the Kotoko in the village have entrusted cattle to these people in order to diversify their subsistence. These would like to have the nomads closer to them as well as some women with kinds of selling places (kiosks) where they sell goods to the fishermen and women. In the same way, in Zambia collective action is difficult as there are different interest groups fighting each other on which kind of institutional setting shall be sued for the floodplain. Similarly, for commercial fishermen, local rules are of no value to them. In the Rufiji area due to Ujamaa and due to the fact that the areas have opened up recently as well as with privatisation and decentralisation schemes by the government, people are irritated about what actually is happening to the resource management. The most obvious response is to take as much as one can.

Differential change of local institutions: Rules which pay are going to stay

However, there are differences in the level of institutional change. We have observed that not all the traditional institutions are eroded or changed in the same way. While some of the institutions are completely eroded, others persist and the important question to ask is if these are more robust institutions, which can resist the external changes and the changes in relative prices described above. A second question then is if these institutions contribute to a sustainable use of CPRs.

One of the most striking examples of institutional resistance is the case of Mali where Bozo and Somono masters of the water are still in place despite all the changes in Mali and despite the fact that open access constellations occur. The masters of the water still have their ritual masters conducting rituals for the water spirits and still initiate collective fishery activities. But if we look closer, then it can be seen that most of the co-ordination function that the institutional control regime of the Bozo and Somono have, is eroded. There is no control of the collective fisheries in the area because masters of the water and the local young men monitoring can be bribed. But at the same time, the basic institution of getting the third part of the catch, called *manga ji*, remains valid. This is now the case in cash but not in kind anymore. The *manga ji* is now regarded as a rent by the masters of the water as well as granting access to the most powerful fishermen as long as they can give enough money. Similarly, we have still a body people for monitoring but these young men are very much vulnerable to bribe. Administrators profit from this situation for they leave the old rules, which are transformed as they are, because they can get payment for their *laissez faire* handling of the situation. However, the rules regarding the sustainable use of the fisheries, rules regarding gear and fishing times are all violated. One of the first hypothesis in this context was that rules which pay are going to stay. This was one of the starting points of the debate also in other cases researched by the team. We observed two different settings.

First, there are other cases of, on the first view, old institutions remaining despite change. But if one looks closer, then there are considerable changes to be seen. The first considers Cameroon where the fishing in canals is still done and the local Kotoko are seemingly the ones controlling the fisheries. But if one analyses the situation among the Kotoko, it becomes clear that they and the sultan no longer control these activities. The strong increase in fishing canals is not based on the traditional institutional procedure. Also control and co-ordination of collective fisheries is only superficially ruled in the traditionally way. Analysed closely, it becomes clear that Kotoko have lost control and ritual activities are no longer performed. The second could be observed among the Ila among whom old rules on giving out cattle camps are maintained by local first-comer groups, at the moment controlled by a local opposition leader. This is done in the light that a local chief wants to transform a pasture area into irrigated fields. But the conflict about the

irrigation project is only on a superficial level. The new land act of 1995 enables the president and the local chiefs to give out leasehold titles for 99 years. The opposition leader has land titles in the area and wants to get more but as he is at war with the local chief, he wants to set him out of power. His aim is to change the traditional system by making reference to the Ila way of life but wants to change the rule of paying one head of cattle as a usufruct right into a rent paid by all the households of one head of cattle per season, and thereby transforming the traditional institution into a rent seeking strategy. Although he had been stopped for the moment in 2004, he still tries to influence the local first-comer group in order to get the rent and there are new plans that local users shall get access by paying more cattle. Another case in the same area regarding pasture is that some open access situations occur which are linked to traditional but transformed institutions. Cattle camps can be used by relatives and this is something that some outsider cattle owners have realised as being the case among the Ila and Balundwe. There is at least one case known where somebody, being a relative of a cattle camp user, would give free access to about 900 heads of cattle belonging to a white businessmen from nearby town to herd his cattle on the common pasture for some month. It was possible to herd the cattle of an absentee herd owner by making reference to the rule of kinship ties. In the fisheries, similar to the Kotoko, there is an increase in the use of traditional fishing weir technique among the Ila and Balundwe, which is made possible through institutional arrangements but the increase of use of these techniques does not follow the rules of procedures of getting permission.

These examples show that in some constellations old rules are made reference to because powerful people can gain from them by claiming that the procedure still follows tradition but on the other hand, these rules persist because they yield a high rent. They are also considerably manipulated by powerful people in local communities.

Second, there are cases where rules still persist because the area is too far away from commercial centres and local communities are still rather homogeneous. We have two cases in our sample. First, among the Rufiji groups in Tanzania which are further away from commercial centres in the lake of Mtona Msona, fishing is still done the old way because the villages are homogeneous enough to protect their lake and to still conduct the rituals for appeasing crocodiles. Commercial fishermen are interested but their location further away from commercial centres lowers the pressure. Fishing in the tributaries among the Ila and Balundwe in Zambia has changed much in the last five years responding to the pressure of commercial fishermen but before some of the local institutions were still working because they were further away from commercial centres. This is true for collective fishing in ponds and gender related use of fishing gear. But as pressure on fish increased and local people as well as fishery department people were no longer able to monitor and sanction free riders, the area was opened for free use.

On the other hand, there are numerous examples of traditional rules, which are violated. Most of the collective fishing rules and rituals among the Kotoko as well as co-ordination of pasture use has been completely eroded. Similarly, rules in Tanzania in the Pangani River Basin regarding use of forests and water as well as use of pasture no longer follow the old procedures and there is no gain to be made by powerful people from outside or from inside the community to keep them because there is profit to be made in timber and unregulated water use after the prices of coffee fell. Also in Rufiji area of villages closer to market towns or trade routes for game meat, there are massive changes in rules governing access to fish and to wildlife. Here we see that Ujamaa policy has concretely eroded local rules while in the villages further away some of the old traditions still could remain intact. But if the pressure of markets centres and prices rises, it is rather difficult to keep local rules which are beneficial for sustainable use but bad for business.

In Zambia we have seen that in the tributaries most of local rules are violated now and rules in the main river have been violated for long time. The Batwa rules and partly the rules of reciprocal

access of the Ila and Balundwe are no longer operating such as gear size, closing times of special places of spawning etc. Similarly, in the hunting sectors old rules are abolished by the colonial and post-colonial powers and cannot be revitalised. The impact on the CPRs has already been described in the chapter on de facto open access. In some cases we see clear signs of overuse of CPRs.

The analysis of the differences in fisheries between Mali on one hand and Cameroon as well as Zambia is interesting. The masters of the water in Mali are able to work together with the administrators, and are also not in a minority position but are able to transform traditional rules into a rent seeking strategy. Also in the Zambian pastures case, it is powerful people seeking for rent and being able to hide their aspirations behind tradition who are using the strategy of rules which pay are going to stay. On the other hand, the Kotoko in Mali have lost their power due to political changes and are no longer able to control the fisheries. They cannot get a rent from collective fisheries because they are no longer accepted by the majority or by the administrators as rulers of the land. For the Batwa in Zambia, the problem is already that they are too small a group and too weak to try to execute control in the form of rent-seeking behaviour. So therefore only rules, which pay are staying because powerful people can try to transform them into a rent. On the other hand, traditional rules, which do not give access to revenues but would be beneficial for sustainable use, can no longer be maintained under the present conditions of external changes. There are several cases indicating this development:

In the Kafue Flats, Zambia, traditional closing times as well as rules regarding collective fishing and gender related type of gear are no longer respected. The institution forbidding fishing in holy spots in the river where the tilapia fish breed as respected by the Batwa, is no longer in use nor the restrictions on gear types. In the tributaries of the same area, collective fishing events are violated by young men fishing out ponds before collective fishing takes place in order to sell the fish and to invest it into a grocery shop. Because fish gives good money, the rule that women are fishing with baskets and men with spears among the Ila and Balundwe is violated as well. During fishing times, one can see men using baskets in order to catch fish for sale. Regarding hunting, there are no rules anymore because they have been dismantled completely by the colonial and post-colonial administration. The Zambian Wildlife Authority (ZAWA) however tries to set up a participatory wildlife management scheme in place on the basis of the previous ADMADE policy of its predecessor, giving financial incentives to three chiefs and to some local scouts, but fails to stop poaching in the area.

In Tanzania there are cases in both regions of research: In the Rifiiji Floodplain the Ujamaa policy has considerably changed the institutional setting closer to the commercial centres and old rules regarding agriculture, fishing, wildlife and timber use are no longer respected. Due to Ujamaa and mostly newly created villages, there is still not much social cohesion among the villagers as the village set up has been artificially created. Interestingly, accidents happening in the area with wild animals such as man-eating lions are explained by old villagers to be the punishment for destructive behaviour. In the Pangani River Basin the traditional rules of using water and the notion of the supreme being living in the water catchment areas has been weakened since the state took over the management of these areas. Revitalising this notion, however, would not be in the immediate interest of local individuals profiting from timber trade, which also compensates the loss of income resulting from the drop in coffee prices. However, it disturbs the peasants from these areas using the water downstream and who are the only ones trying to get back to a more inclusive water slope management regime and wanting to protect the water catchment forests. Nevertheless, these groups are not powerful enough at the moment to change the situation. In the floodplains the rules that during dry season pastoralists are able to use the fresh grass is violated

by the Pare peasants who came down after they lost income due to the reduced coffee prices and now try to do irrigation farming in the main floodplain.

In the case of Logone floodplain clearly, the pasture area is in a peculiar situation of open access and privatisation. There is no clear co-ordination of the pasture by the *ngalway* anymore for the Kotoko sultan is too weak to implement this. It could also develop into a rent as in the Mali fishery case but due to the low bargaining power, which gets even weaker after independence and especially after the multi-party system was introduced. Although the sultan and some Kotoko leaders try to cope with this problem, others take the lead in disputing the rent aspect. Administrators and local peasants or in some cases also local fishermen are quick to point out if there is damage caused. Or based on the democracy rule, some Mousgoum see themselves as owners of a pond and kick out everybody while they, at the same time, do not respect traditional rules of collective fishing set up by the Kotoko. Or they close the commons on sets of pasture areas for “outsiders” while the land traditionally is still in the hands of the Kotoko or of the state. The state creates open access constellations because after having paid a tax, foreign pastoralists feel free to go anywhere because they have been buying the “brousse”. The situation in the Lake Chad area connected to the Logone floodplain is even more illustrative where pasture areas close and are now being more and more privatised by rich people from towns looking for cheap land. On these areas it will be extremely difficult for nomadic pastoralists to survive as the prices of land have risen to a great extent. Peasants will get money from pastoralists by setting up field traps; fields which are set up in migratory routes of nomads in order to have them destroy the crops and be able to request compensation payments from them.

In Botswana the different groups using the Okavango Delta have mostly lost the traditional institutions for the use of the CPRs because of the land zoning and process of sedentarisation stemming back to the British Protectorate regime. Old rules of fishing, hunting and pasture use have not been able to resist these changes. But, on the other hand, the new CBNRM regimes give them at least the possibility at hand to profit from tourism and to decide on whom to allow to use gains through tourism. However, as the area in the panhandle studied by Roland Saum is in a land zone that does not foresee fishing, hunting and cattle husbandry, there is no way people can decide on resource use concretely. And as people get money from the state or remittance from relatives working in cities and as there are no markets for CPR products, the latter are not of interest anymore. Generally, however, we can state that some of the rules, which remain do so because they can be used by individuals or interest groups with strong bargaining power and that these institutions could be transformed in a rent seeking manner. Therefore, they persist but in a transformed version. However, they do not contribute to a sustainable use of the resource. On the other hand, we have many institutions, which are changed either by local powerful people or by outsiders or by the state. These rules would be beneficial for sustainable CPR management for they would co-ordinate use and give clear guidelines for use as well as for monitoring and sanctioning. Such rules however do not survive.

Open access and citizenship: The democracy/decentralisation problem

But the main question we have to ask in this context is, if it is true that we are dealing with an open access problem and if well functioning institutions are eroded, why are local actors not able to solve these problems? The question becomes even more pertinent if we follow our argument that open access stems from inefficient states not being able to enforce their own rules and regulations and having dismantled partly local rules. Therefore, one could argue that it is not really clear why local people then, in the absence of the state, are not able to craft again their own institutions for there seems no better condition to self-organisation than the state being not present as the state is one crucial factor of institutional change to open access. Or to put it

differently, are we not arguing in the line of Garret Hardin illustrating the inability locally – of course after major disruptions – to develop new rules in order to solve the tragedy of the commons. These are interesting and burning questions and we are arguing here that the data collected by the team gives some striking answers to that problem some of which are a paradox in themselves.

Problems of collective action: Present absence of the state

The first answer refers to the problem of collective action in the new contexts. As we have seen, in most of our cases studies there is a great economic interest in CPRs as a substitution for previous income of the state. As state revenues are dropping, there are two developments. First, the state does not have the funds to uphold its rules and therefore access costs are lowered. Secondly, people who used to be linked with the state through salaries lose this base and look for alternatives or top up small salaries with gains from CPR use or linked use (trade bribe etc). Therefore, the areas experience lowered access costs and an increase in the price of CPRs making them more and more interesting. This means that new user groups or old user groups in a new form have a new strong interest in CPRs. This makes it very difficult for local users to act collectively for they are not just acting on their own but have to deal with outside interests. These and local interests have been dealt with mostly, but not always, by the state. Now this imposed management system implodes and increasingly, the demand for co-management or community management rises, incorporating the idea of giving back more power to the local level. But the local level is often unable in this situation to act collectively for the actors are very heterogeneous and especially actors from outside, very powerful. Often, they argue that they are citizens of the state and empowered to use CPRs as they want by making reference to the discourse of citizenship while the state is, at the same time, absent. We have labelled this situation, “present absence of the state” The case of fishing in Zambia illustrates this situation. Local people in the Kafue Flats are very aware and angry about how immigrant fishermen use destructive techniques, how closing times are violated and fishing in spawning areas takes place. They are also aware that if they need fish, it is difficult to get access because there is no fish there anymore or it is too expensive as buying from outside traders leads to price increase. In meetings with local headmen in some of the Ila Balundwe chiefdom where we brought together officials from the fishery department and local people, we found that locals are pretty much aware of all the problems but are afraid of going in for collective action. These seasonal immigrants are dangerous, it was argued, they beat us up if we tell them what to do. They say, “We are Zambians, you do not have to tell us how to fish.” One of the headmen at a local meeting stood up and asked the pertinent question to the fishery department staff: “Where were you? We have been calling for you many times. Without you, we do not have the power to do something about the problem.” This means, without the state, which has set up the new framework, there is no possibility for local people to deal with outsiders who use the discourse of citizenship. Of course, one option would be to use violence but the seasonal fishermen are sometimes highly aggressive young men and secondly, in such a conflict it does not take long for a repressive military troop to arrive. Therefore, local collective action is hindered by the fact that the state opens up the Kafue Flats fisheries but is unable to enforce its own laws, while local rules are dismantled or not respected by outsiders. This means that there is literally no possibility for local collective action as long as it is not backed up by a visible state. But if this is done, there is a chance that collective action might take place. During our research, we took up a local initiative of a fishery department staff discussing and establishing by-laws to the national fishery laws. These by-laws were created by local stakeholder groups and made legal through local council structures on district level. It enabled local men and women to discuss which points should be included in a locally adapted fishery law, often including already set up rules but enabling local organised groups to take legally supported

action. But the by-laws are flexible and allow adaptation to local situations. One example is that fish in some areas in the eastern Kafue Flats are so scarce that fishermen hire local young men to jump into the water if they see a fishermen's boat approaching the harbour to be first and to secure the catch for their fish trader masters. This action has led to several death incidents and the local fishermen committee wanted to ban this practice. After this point was included into the by-law and accepted by the council as well as recognised by the police, the local fishermen committee could arrest people continuing to do this. This gives an enormous incentive to local people for they realise that collective action can have a result. However, it has to be said that this fishing camp is rather close to the office of the local Department of Fisheries and also, the police are only 5 to 10 km away. In addition, there is always transport available unlike the far away places of temporal fishing camps in the Kafue Flats, where it takes 100 or more kilometres to reach an operational fishermen's office or a police station. However, during our research we took up this initiative and wrote a project proposal, which was later taken up by the World Fish Center, who supported the by-law process in collaboration with the Department of Fisheries. There have been several interesting results out of the by-law process. First, locally organised groups not only made a reference to illegal fishing methods but also to health and sanitation problems linked with the large seasonal fishing camps as well as problems with law and order. Secondly, after first by-laws have been discussed and put to paper in some of the permanent settlements, seasonal commercial fishermen would not go to these places anymore but to places and Chiefdoms, where such by-laws have not been discussed. These are first interesting results that show how little is needed for local collective action to take place. However, the whole process is still on shaky ground as long as the state does not fully support the whole process and gives it legitimacy and, in critical situations, a clear power back up. The case of the Kafue Flats has been discussed at length because it is illustrative for other examples in our sample, although there are differences. In Mali and Cameroon there are decentralisation processes taking place leading to similar situations. In Mali the decentralisation process allows so-called communes to decide more on their behalf, which is, at first sight, positive. However, it is not on village level that decisions are taken and communes are much too large for collective action having an impact locally. On the contrary, it opens up local village resources for outsiders on the commune or on the district as well as on a national level, but making reference to the local level for taking action. This means they put all the burden on the local level, which is an inadequate level and also powerless to set up well functioning rules in the total absence of state support. Therefore, regarding bargaining power, paradoxically, local level collective action has not increased but decreased. At the same time, administrators still stick to a situation of legal pluralism from which they profit by moving between both levels in order to gain parts of the rents. The same happens in the Logone Floodplain, where before the 1990s but especially through the democratisation process of the 1990s, majority groups and immigrants started to claim more rights and questioning the rules of the Kotoko managing pasture and fisheries. Making reference to the democratic state and to the fact that they are the majority and that they are paying taxes, Mousgoum and some nomadic pastoralists see the CPRs as open access resource to be exploited by them because they are members of the state or district or foreign users who have paid national taxes. Similarly, state administrators are interested in a mix of national and local institutions in order to profit most from rent seeking behaviour such as informal privatisation or conflicts resulting from open access situations with fishing canals, fields and free movement without co-ordination. Also here the state is present ideologically but absent, if the local indigenous groups would like to take collective action. Therefore, local Kotoko in one of our study areas would opt not for some local new rules, because they have too little power to enforce them but would rather like to have a small artificial pond with village rights in order to easily exclude other users.

In Tanzania we have seen that Ujamaa has already dismantled local rules but not in the same way in every area. In Pangani local villages were still kept and some of the basic structures remained, however, with the decline in coffee prices and the interest in water and timber from outsiders and local powerful people, the notion of citizenship and outsiders being able to sue resources becomes evident while the state is no longer able to enforce laws for the use of the state forest, which had been an indigenously protected area before Ujamaa. Similarly, local pastoralists do not have the rights to claim for their dry season pasture in the Pangani floodplain for the state values agriculture more and sees no problem if more peasants are using the floodplain so-called more productively. In the Rufiji area we see that in areas close to commercial centres, the research areas are characterised by an open use of fish and timber by local and by immigrants. As local rules have been dismantled during Ujamaa, there is no way to develop new rules as Ujamaa was clearly about abolishing any ethnic identity and openness for all Tanzanians. However, in more remote areas parts of local rules still exist and are still set up and maintained as long as the pressure remains low. In areas closer to towns this is impossible for the bargaining power of external people is just too high specifically in the domain of fisheries and timber. Interestingly local people show more concern with a new CPR emerging. As nomadic pastoralists are pushed out of the Pangani area, they move to Rufiji, where there is still pasture. How to use this new CPR is now of a major concern, interestingly, in the same villages, which nowadays fail to craft locally adapted laws in the fisheries. Also in this area a by-law discussion and project has been taking place in collaboration with the District and the World Conservation Union. There are positive and negative results from this process. Positive was that such a local process has been initiated, negative that it is not always clear how strongly this is supported by the District administrators. For them, decentralisation is a double must. First, it is a request from the state, secondly, their salaries might be clearly topped up by involvement of NGOs but this does not necessarily mean that they are in favour of decentralisation and local empowerment. Similarly, there is a new law in Tanzania (Land Act of 1999) which, as one of the only countries in Africa, allows a title for common property land Legally. However, the implementation is difficult, costly and hard. The Baia and Hambukush in the Okavango Delta, on the other hand, have formally the advantage that the CBNRM regime demands local collective action on the ground and that there is a legal framework established for such actions really on the local level. However, as we have seen in our example, this does not lead to permission to use resources but to get possible gains from tourism.

Immigration and seasonal use of CPR

As we have shown, one of the main problems stems from immigrants, especially seasonal immigrants coming to these areas, attracted by really existing or just so-called good economic gains to be made. Of course, there is a structural problem with immigrants because they do not necessarily adapt to local conditions. Their bargaining power is often higher than that of local people and they often have experience with violent responses. By making reference to citizenship, nationhood, decentralisation or democracy, they are able to evoke a notion of modernity whereby every challenge to this claim can be put down by referring to the locals as backward and hindering free movement by local selfishness. In addition, as we can show in different settings, immigrants and seasonal users of CPR are not averse to threatening the use violence if hindered. There are some differences between immigrants who stay and those who just come for one seasons. Permanent immigrants first try to establish themselves and might profit from decentralisation and democratisation schemes as such as in Cameroon the Mousgoum, who as a majority now do not see why local Kotoko rules shall be of use anymore. Ujamaa policy in Tanzania is a good argument for immigrants in Tanzania to justify their access to CPRs, even more under the new regime of decentralisation as can be shown in the case of the Rufiji

Floodplain, where more and more administrators on the district take the lead but now have the financial means to do the job of enforcing laws. Therefore fish, wildlife and timber is leaving the area often without control. As long as decentralisation means that local people shall enforce what the state cannot do and even with less power and less money, the project is bound to fail. In Zambia the first immigrants of the Lozi group established themselves as commercial fishermen and have been protected, at least in one case by a local chief who was profiting by getting free fish from them. These have established themselves in permanent villages and were forced to adapt to local rules. This is not the case especially with seasonal commercial fishermen, who come and leave as they please and who can feel rather free because control by the fishery department is so erratic and ineffective. This example also shows that there can be a great difference between seasonal and permanent immigration. While the permanently settled fishermen want regulations in villages of uniform ethnic background, the seasonal fishermen who are highly mobile and stay in seasonal fishing camps, are not interested in establishing rules but in trying to keep the de facto open access regime giving them the most possibilities. But because they are able to argue with their citizenship, they cannot be forced to accept local rules. The same thing however is true in villages of mixed ethnic origin such as the former Batwa villages, in which sedentary and seasonal fishermen from Lozi, Bemba and other ethnic groups reside because the Batwa are seen as a minority and their culture is regarded by the immigrants as being backward, especially keeping fishing bans at breeding places and rituals performed connected with such places as well as food habits and social norms (such as respecting elders, sexual gender relations etc). In Mali the two basic ethnic groups involved in fishing activities see themselves as being challenged not so much by outside ethnic groups but by members of the same groups coming from other areas. As the Masters of the Water could keep and extend their bargaining power, however for those locals not belonging to that group, fish becomes scarce because of the rather free movement of commercial fishermen from other areas who fish partly individually with nylon nets and outboard motor boats. As there is a monitoring and sanctioning system, however, it is only operational for the Masters of the Water for they give access to rich people or richer people can bribe the monitors of rich resource areas. Therefore, with the exception of the Masters of the Water, most local people suffer from seasonal immigrants who are able to buy for violating local rules, which have turned to a rent seeking behaviour of the local powerful people. In Botswana there is no similar problem, for outside interest in the CPRs as such is low and there are no permanent or seasonal immigrants challenging local resource use.

Local social and economic change: Heterogeneity in interest

The CPR collective action problem however does not stop with the issue of the relation between immigrants and locals, as described in the previous chapter for all the cases with the exception of Botswana. The case of the Masters of the Water in the Inland Niger Delta has already indicated that locally there is a change of rules and norms regarding the management of CPRs that hinders collective action. In most cases, we have local changes in prices which make CPRs attractive not only for urban or semi-urban resource users, but as well for local people. Some of them have lost their resource basis due to changes in prices of basic cash crops and changes of national economic and political strategies leading to cuts in subsidies and alienation of land (for example for agricultural schemes or protected areas). Also environmental crises such as drought or less inundation due to dams as well as crop or cattle diseases, led to a reduction in gains from subsistence and cash income strategies. Therefore, these factors lead to changes in relative prices for the local people and push them to develop strategies of substitution or diversification. In some cases such as the Kafue Flats in Zambia both aspects come together and lead to economic strategies of individuals and groups, which would have been considered impossible. First, there are basic social changes for the difference between rich households and poor households are

reinforced by loss of cattle due to east coast fever in 1990 and 1992. Over two-thirds do not have cattle anymore and on average households have lost 80% of cattle and still, 10 years later only have 50% of what they had before. Nevertheless, there are still very rich households and the disparities have increased dividing the community into people who are interested in new strategies such as irrigation agriculture in a pasture area and those – mostly the richer cattle owners – who still want to keep pasture areas intact. Some of the poorer households have their basic income from maize but as well from selling chicken or fish. The latter strategy would previously not be regarded as appropriate for a local Ila. Some young men violate collective fishing events in order to catch fish and sell it to have capital for a grocery store. Men take up women's baskets for fishing because this is more profitable than fishing with spears. In Mali in the Inland Niger Delta as fish is one of the most valuable assets, there is the difference between the former co-ordinator of the fisheries and local people who fish for subsistence and cash, whereas the local powerful people see the fishing rules as a means to gain a rent. In the Logone Floodplain we have the differences among the villages studied in which there might be ethnic differences such as in Lahai between the Kotoko and the Mousgoum with different resource use strategies but also in the village of Kalkoussam, which is a Kotoko village. In the latter, the problems of heterogeneity refers to people interested in fisheries with channels, those doing small-scale fishing, those diversifying into cattle herding and especially local women setting up tea kiosks and selling bakeries. All these actors try to pursue their strategies, which differ greatly from each other and are different means of coping with the local crisis. In the Pangani River Basin as well as in the Rufiji floodplain state policies, changes in cash crop prices such as coffee as well as local crisis in economy have pushed people to diversify for gaining cash. In the Pare Mountains we find people in the two mountain village settings being interested in timber business. It is mostly powerful people, who had major offices in the government structure and have now good relationships with timber traders, then there are workers who do the timber cutting. Others invest more time in cardamon production on irrigated fields or some of the households have migrated into the Pangani River Floodplain in order to do irrigated agriculture in the former Maasai dry season pastures. In the Rufiji area, on the other hand, there are differences in the two village settings researched there: timber and fish have become for young people one of the most important cash strategies while the basic production still remains agriculture in the floodplain after water has receded. The problem here locally stems from the fact that the basic economic centre is close by in one setting leading foreign resource users and traders involving parts of local people?. In the other setting further away from the commercial centre timber and fish are not of so much importance for gaining cash for local people as well as for foreigners but, as the external interest in wildlife is high, there are also local people involved in wildlife business and therefore regarding this resource, people have different interests and profits. In addition, people engaging in agriculture close to the park have problems with crop destruction. Again, the case of Botswana is peculiar in so far as we have not the same kind of differences based on local resource extraction, apart from the basic division in fishermen and cattle herders. However, we do have basic social and economic changes and differences in the villages. In the one place studied we see that there are different interests in being involved in the local CBNRM strategy which shall lead to local benefit from tourism. As some of the locals are heavily involved in the scheme, others do not see the benefit but as there are no clear markets, people are not interested in extending their activities for cash gains. Everybody is somehow waiting for the money from tourism but not everybody invests time and energy in the projects to happen. We therefore are faced with considerable heterogeneity in interests in the CPRs also stemming from local differences, which have increased during the last 30 years.

What hinders collective action?

It has been widely discussed that the conditions for collective action might not be necessarily the small size of a group but that heterogeneity of interests and the way the future is discounted, makes the difference. In all the cases studied, we see that differences in interests among local villagers of the places studied have increased considerably and in concrete situations when action should be taken, this is difficult to do locally. In Zambia to act collectively regarding fisheries for example, or regarding wildlife would ask for main goals which are not there. Locals as well as foreigners have very different interests, calculations and do discount the future at different rates. For locals reinstalling fishery rights, perhaps based on old institutions would be an appealing idea but control by the state which is inefficient coupled with strong bargaining power of seasonal users, who are not interested in sustainability, hinders local collective action. This is then even more weakened as we see that inside the communities there are marked wealth and gender differences. The same is true with Mali and with Cameroon, where decentralisation and democratisation have opened up the CPRs for external users but as well which hinders local people paradoxically to act together on the behalf of the resource management. Cameroon is an interesting case for some powerful people not only opt for open access – often related to seasonal use – but try to find ways of formalising private property or restricted groups property rights of CPR which become more and more controllable (land, water points, some fishing techniques, pasture). In these cases there is an exclusion from former resource users by powerful local people or powerful immigrants alike. Other users then no longer have an interest in protection the CPRs and push for its immediate use or have to move elsewhere, where they have to extract CPRs at a high rate in marginal areas. Collective action is also hindered considerably in Tanzania where in the Pangani area trying to protect the forests, especially the water catchment is in the interest of people doing irrigation agriculture while not in the interest of the timber lobby. The same is true of the people downstream using water for irrigation, who have different interests as timber cutters in the mountains. Again, people immigrating to the floodplains from the mountain zone challenge the interests of the Maasai pastoralists. This is even more pronounced as the Mkomazi park has created a great loss for the availability of grazing areas for the pastoralists. However, there is one interesting case there of a group of heavily dependant peasants using water coming from the catchment areas. Based on the knowledge that former territories were based on slope boundaries and that cutting upstream affects water coming downstream, these people were organising themselves in a group and contacting their former relatives upstream in order to try to make a deal. In the Rufiji people have serious problems for collective action on all the settings studied. However, the interesting case is that it is not the same in the two village settings for the same resource. In the village close to the commercial centre acting collectively regarding the management of fish and timber is very difficult while as in the village further away from this centre people are able to maintain local fishery institutions and defend it against outside interests. But the same village fails when it comes to the management of wildlife, for external interests are much too strong. On the other hand, the first village is now confronted by a previously new CPR pasture, which they have not been using and which is of interest to be used now from immigrated Barbaig cattle herders from the North. Interestingly, local people have realised that they have to take action regarding the protection of the pasture resources and for monetary gains from the pasture.

Role of changes of external economic factors shaping interest in CPR

Our case studies suggest that the main difference between the cases is that Botswana differs in many ways from the other areas of study. There might be local cultural and social as well as ecological changes but we would argue that these changes can be out-ruled? for most cases. We have deliberately chosen similar ecological settings in order to exclude this factor as being an

independent variable. There are changes, as we have seen in one of the first chapters, but they are not important enough to explain the difference. Also cultural and economically local people of course differ but only in degree, not in kind. There are different kinds of pastoralists, fishermen and women, agro-pastoralists etc. but these do not explain the differences either. The one and main factor of change is the situation of economic performance. In our sample only Botswana has favourable economic conditions (diamond export) and does not face the same crisis as the other countries do, where CPRs are attractive livelihoods for many people. In order to understand, we have to see again important aspects of economic performance and the development situation as indicated in the HDI. Only Botswana has a per capita income higher than 4,000 US\$, in fact it is much higher than that. Only Botswana has an HDI, which is greater than 0,5, all others are lower since the 1980s. The relation between national economic performance and interest in CPRs is a crucial one: The case of Zambia is illustrative here: Economies based on one good for foreign currency are highly dependent and suffer greatly if this source of income no longer provides enough cash such as copper in the Zambian case. This led to lower income on the one hand and over-expenditures on the other. The expenditures were made in order to develop the country for its industries and for its agriculture as well as the state which gave a high number of jobs which were partly too much but partly necessary, if the state wanted to control the CPRs effectively. As these sources are now dwindling, the state is no longer able to fulfil its duties and at the same time, many people lose their jobs. This is also true for the other countries, which have seen low prices for cash crops, cotton and other goods as well as problems in producing more fossil resources (case of Cameroon). As the barriers for the use for CPRs are lowered by the state and by local people forcedly, the link of unregulated use of CPRs and the difficult state of economy of a nation are very much interrelated. Importantly, basic rights for local interest groups to devise local rules and regulations are difficult to make. Partly this is so because the legislation does not foresee such collective action formally, partly even if it exists, it is difficult to set up and often costly for local communities. This is even more the case with countries that seem to have good new institutional settings at hand in order to increase local involvement. But often it is expensive to set these up locally or knowledge and know how is missing, for these still have to take place in the framework of the state, which is sort of disengaging itself on several levels after democratisation and decentralisation policies. Interestingly, this is the case with all the countries regardless if their past was capitalist or socialist. This because also the capitalist countries in our case, such as Cameroon and partly in its history Mali, displayed a number of strong government structures such as one- party state times and strong presidencies. Therefore for them strategies of decentralisation and democratisation meant the same thing. Delegating more power to the grassroots level on the paper but not really giving good tools at hand while the notion of citizenship still remains. In the contrary, participation and decentralisation opened up the door even more to outside users, especially in former socialist countries, where liberal trade and semi-privatisation of state organisations are leading factors in this trend. In the capitalistic settings democratisation opened up the road for immigrants displaying new democratic power and their good right to change power situations related to resources. On the other hand, despite these institutional changes, much of the situation locally remains the same, meaning that local people bargain power to profit in a good way from the new formal rules. On the other hand, we have also shown that inside the communities there is strong heterogeneity of interests as a result of the adaptation to institutional and economic changes in their areas. Success in collective action could only be seen in cases where the pressure was not so high on a specific resource (Rufiji) and where among the same ethnic group, it was possible to start a dialogue over upstream-downstream conflicts, where we have a strong downstream group being much dependent on upstream activities. This group however tries to search the dialogue and tries to take up old

institutional settings in order to push their interest in a way which shall be acceptable also for the mountain villages. We could also consider the resistance to the irrigation project in Zambia as a successful collective action whereby pasture area was preserved. However, this is so based on the bargaining power of a special interest group and of some individuals within this group. Therefore, what is seen as collective action first sight is a deliberate strategy to save personal interests but by making reference to the ethnic identity.

Coming back to the case of Botswana, there is clearly a different economy although it is based especially on diamond exports. But for a long period of time prices have been favourable. Money was invested in infrastructure, which was however for a long time reserved for white people. Now after political change, more local people have access to the strong economy of the state, which has sufficient means to cover much more costs of the state than the other countries can cover. Most importantly, people in the formal sector have jobs and are paid and are not interested in CPR use for commercial reasons as there are many more rewarding options. This might not be the case in all the regions. Especially in rural areas such as the Okavango Delta, people are still poor. But they receive partly money from the state and, perhaps more importantly, the state has the financial means to enforce its laws. However, it remains an open question if the state would succeed in managing the CPRs sustainably but the test has not (yet) to be passed for, because of the economic performance of Botswana, there is no interest in such marginal zones. Unfortunately, for the local people, land zoning is now such that even with the possibility to govern their own areas, the direct use of CPRs is mostly hindered. Therefore, for local people the only hope lies in tourism and tourist operators, for direct money paid and additional jobs in tourism. But the failure of such schemes and the economic problems of the local people well as the erosion of local rules, does not have a destructive impact on the CPRs because the CPRs do not have much value in nearby markets. Therefore, people try to engage in the CBNRM schemes but the process is slow and gains from tourism small. Research has shown that local people get money from the state or from remittance of people abroad or working in major urban centres.

Discussion and conclusion

Our comparative study shows that one of the major independent variables is the economic performance of a nation state. In our examples we can rule out strong ecological differences as well as the strong cultural aspect. Of course, we have differences in the way of organising CPRs in the past but in most cases local institutions stemmed from powerful local people trying to control the resources but still granting access to CPRs to others in the community and other groups. This was based on clear rules and on co-ordination, which was one of the major services which they provided. This was not done in order to protect resources or in order to promote sustainable use but in order to have the maximum and most profitable control over CPRs. But this does not mean that the institutional change is not important. In the case of Botswana, favourable conditions prevail as long as profits from diamonds continue to flow. Unfortunately, there are indications that prices are falling. Therefore how robust local institutions are, is crucial for CPR use in future. In most cases we have the problem that local rules have been robust once but have been dismantled by state laws. As long as the state had resources to protect the CPR, this was a challenge for the state but still, there were some barriers to open access. It became however a serious problem after the state disengaged and let CPRs be treated either as open access or as private property of powerful stakeholders excluding others and pushing them to use other resources more intensively while establishing insecure systems of tenure rights.

We do argue that especially well-intended institutional changes such as participation, democratisation and decentralisation, which were set up to involve more local control, had the effect that the most powerful people in the new situation, which often have set aside former

traditional powerful co-ordinators, profit fully from the new setting but are no longer accountable to anybody. At the same time, we have problems of scale as all the cases are found embedded in nation states, which still have to execute a certain amount of power. Making reference to the state is one reason for many actors to have free or privatised access to CPRs and there is no way for local action by local people to change this. All the political measures taken, as mentioned above, are well intended to create a favourable institutional change but they are often difficult or costly for local people to implement without the backing of the state on several levels, such as enforcement of local laws in critical situations becomes counterproductive if the state disengages itself completely. The problem is to find the right measure of local and state action on the different levels and to guarantee action on all the levels. The problem is also well that we are dealing with considerable heterogeneity of interests in the local level as well hindering collective action. In all the cases we have large differences in interests of local groups. We see that in Cameroon local collective action in a village such as Lahai is hindered because of ethnical differences which go back to historic constellations. In the situation of decentralisation and democratisation, collective action becomes even more difficult. On the other hand, we have the problem of the proximity of areas to commercial centres which, even if ethnically homogeneous, do not hinder the development of heterogeneity of interest in the Rufiji area. This is also true for the ethnically homogenous village of Kalkoussam in Northern Cameroon where collective action such as organising a common position regarding the early arrival of pastoralists among these fishermen is difficult. On the other hand, the successful collective action we see regarding specific interest based on a specific resource constellation, homogeneity of interests and relative distance from commercial centres are decreasing the push factor.? Such is the case of one of the villages in the Rufiji area, which is able to act collectively regarding fishery rules or one village in the downstream area in the Pangani River Basin which was able to do so because of being of the same ethnic group. It made a reference to old water management rules to bring upstream people into a discussion regarding the protection of water catchment areas. Other areas of successful collective action show the resistance to the conversion of pasture area into irrigated agriculture wanted by an Ila Chief and by some of his people following an opposition leader. However, in this case the main protest was ethnically fought based on the Ila identity as cattle herders while the clear interest stemmed from land rights that one of the opposition leaders wanted to claim. We also argued that rules, which remain, are mostly rules transformed to suit the most powerful people in the communities and get a rent character as in the Ila case (opposition leader keeping the pasture access rule) or the Masters of the Water in Mali. However, these seemingly old resilient institutions get a new kind of quality and are no longer part of the old distributive setting and not necessarily favourable to sustainable use of well performed co-ordination. On the other hand, rules, which would be beneficial, are completely eroded or are about to be eroded such as among the Batwa, the Kotoko, the Rufiji and the Pare.

As a major conclusion of the comparative study, we would hold that local institutional change coupled with institutional change on the state level is leading to overuse of CPR and of bad distribution of CPR if on both levels institutions ensuring sustainable use of CPR are dismantled. As the difficult economic conditions nationally and internationally lead to more interest in CPRs, institutional barriers and co-ordination are at the same time weakened and dismantled. This combination leads to unfavourable conditions we have seen in the case studies. Therefore, the development of new or the revitalisation of old institutional settings is needed locally but has to be backed up by the state and of course adapted to local conditions.

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