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Open Access and the State: Change of Institutions Governing Floodplain Common Pool Resources (CPRs) and conflicts in the Kafue Flats, Zambia

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Abstract: Nobody would deny that governance of Common Pool Resources (CPRs) shall involve the local communities. Seeking participation and giving back authority to the local level has become the mainstream argument when it comes to the management of CPRs. However, often analysis lacks a historical, socio-political and economic background regarding the interaction between the state and the local level. This interaction is shaped by different expectations, heterogeneity in interests, power structures and ideologies from different actors involved. It is therefore important to examine historically how local CPR institutions were crafted in pre-colonial times by the indigenous peoples of an area and how new formalised institutions introduced by the colonial and post-colonial state, like land tenure reforms, fishery and wildlife laws have changed the access to CPRs. This paper presents the case of the Ila, Plateau-Tonga and Batwa in the Kafue Flats, Southern Province in Zambia, and shows how pre-colonial institutions governing access to CPRs such as pasture, fisheries and wildlife are transformed or put aside by the colonial and post-colonial state, claiming control over CPRs. Due to complex economic and political processes the state nowadays less able to control and monitor the CPRs while local rules - often embedded in religious believe systems - erode or are being transformed by the more powerful actors. This involves different local power-groups and immigrants such as seasonal fishermen, claiming being citizens of the state and its resources or powerful local individuals manipulating and transforming local customary laws. An analysis using Elinor Ostrom's design principles for robust institutions (Ostrom 1990, Becker and Ostrom 1995) as a reference shows that not only local rules get weaker but also that the national laws governing access to these CPR can not be implemented by the state due to the lack of financial revenues. This then leads to open access situations in the case of fisheries and of wildlife and a double-faced situation of increased privatisation on one hand and open access on the other hand for parts of the pasture area. In order to solve such CPR problems NGOs and state actors since the 1990ties follow the policy to get the local people back into management. Land tenure reforms and new formal legislation governing access to CPRs shall be crafted making possible more participation from the grassroot level. The problem is however that the local actors are very heterogeneous regarding their political and economic interests and bargaining power and that also the

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state is a differentiated body of actors, who therefore also follow their goals. This then can lead to serious conflicts, which can get an ethnic shape. The question is then on what level the involvement of the local groups and of the state is beneficial for the sustenance of the CPRs. In the case of the Ila, Tonga and Batwa this is a very challenging task for it is a complex resource situation: Access and use of pasture, fisheries and wildlife are interconnected and can not be separated from each other. Historically access to CPRs were connected to the membership to local residential village groups combining rights to access to pasture, fisheries and wildlife. Today problems of access and use of CPRs are also intertwined: For example immigrated seasonal fishermen have not only an impact on fish but also on pasture and on wildlife in the area. External factors such as droughts and a cattle disease have additionally increased the pressure on local livelihoods and are leading to more pressure on CPRs. Immigrants on the other hand respond to the national economic crisis based on copper export and engage in alternative economic activities such as commercial fisheries and fish trade, hunting, and trade in cattle. Additionally the loss of state revenues and structural adjustment programs lead to the weakening of the role of the state as a CPR monitor. Former CPR-management is then transformed in a de facto open access. The paper tries to show these complex interactions on different levels using the framework of Jean Ensminger (Ensminger 1992, Ensminger 1998, Ensminger and Knight 1997) and argues that only a wise combination of local involvement - based on local cost-benefit considerations and state involvement (principle of subsidiarity) can lead to solutions and help limiting conflicts between the resource users. Imposing participation without knowing local transformations of rules and livelihoods and without really giving the possibility to control the CPRs on the local level will fail (see Haller 2002, Cook and Kothari 2001). This is as well the truth if the state steps out completely and ignores local initiatives or is unable to provide support and protection, where it is needed. The paper argues therefore that not neither only grassroot institutions nor only state involvement will lead the Drama of the Commons (Ostrom et al. 2002) to a good end but that a wise interplay on different levels is needed paying attention to different power groups and stakeholders and their interests. It is also crucial that the level of trust is risen between the different actors involved (Ostrom 2002).

Introduction:

In the Drama of the Commons (Ostrom et al. 2002) much is written on how CPR research shall be conducted and which kind of models are suitable to analyse the problems of overuse of CPR, mostly held in common property regime. Despite the try to make a synthesis of different approaches by Agarwal (Agarwal 2002) I propose a two step analysis in the analytical framework of the New Institutionalism, especially on the work of Elinor Ostrom and Jean Ensminger: First one has to look at how institutions governing CPR have changed over time how they correspond with what Elinor Ostrom has proposed to be design principles for robust institutions challenging the main assumptions of the Tragedy of the Commons (Hardin 1968). I still regard the design principles (see appendix 1) as an interesting tool in order to compare institutional change over time. With this method it is possible to see where important changes occur. Second, I use a framework proposed by Jean Ensminger who deals in an interesting way with the question how external factors (socio-political environment, demography and technology) have an influence on relative prices for goods and services, which then in the internal constellation of a resource user group or a resource area has an influence on local institutions (rules, norms and regulations), organisation, ideology and bargaining power. She especially argues that change in relative prices can change the bargaining power of different actors in a group or between groups and that different ideologies are used in order to legitimate access to CPRs or exclusion of users of CPRs and therefor to shape the local institutional setting (Ensminger 1992, Ensminger and Knight 1997). As a feedback loop she proposes to look at distributional effects and how these influence external variables. To be included in this framework in the external setting are impacts of formal legal changes such as changes in land tenure, fishery and wildlife laws and major economic trends in a country or region. These shape considerably the relative prices and therefore also the internal aspects such as local institutions, bargaining power of actors, the way they organise and the ideology they use. For other areas such as western Africa such changes have affected the use of CPR considerably if they are not adapted to local natural and social constellations (see Benjaminsen 1998).

Therefore by analysing the robustness of institutions regarding specific CPRs in a first step and by explaining the changes in the second steep much of the dynamic of CPR use can be shown. In this way historical and power related aspects of the analysis can be illustrated. In this paper I will analyse how access to CPR in a complex ecological environment, the Kafue Flats, a riverine floodplain in the Southern Province in Zambia were, institutionalised and how formal state institutions such as land reforms, fishery and wildlife laws have altered the access to these resources held in common such as pasture, fish and wildlife among the indigenous Batwa fishermen and Ila-Tonga transhumant agro-pastoralists[2] All CPR- (fish and wildlife) or CPR-related resources (such as cattle) are on high demand in the capital Lusaka (about 250 km away). The research focuses on the southern part of the flats, especially in the Ila Chiefdom of Nalubamba (Mbeza). This area is inhabited mostly by the Ila, but since the 1930ties there are Tonga peasants and Lozi fishermen settling in the southern and the northern part of the territory, which is not densely inhabited. Today, the Ila face serious hunger crisis due to drastic environmental and institutional changes in the last 40 years: Dams and climatic change have reduced floods and rainfall resulting in bad harvests of maize and a reduction of the pasture. The government has taken over the control of the local fisheries and wildlife and has pushed aside the old CPR institutions. This is leading to a de facto open access situation and to the degradation of the resources. Additionally, a cattle disease has lead to a massive decline of the herds in the 1990ties and therefore many households lack cattle. The research results show the role of institutional change plays in explaining resource degradation in the area. Another aspect of the research regards conflicts on how the floodplains shall be used in the future: The local chief wants to introduce an irrigation project to fight hunger and was partly supported by the state. Some rich cattle owners do reject to this plan, because it would reduce the pasture. This opposition has a stronghold in the political opposition in Zambia and uses ethnic identity to fight the project. I will discuss how historically the access to these resources was interconnected and analyse separately how local institutions were operating and how they were dismantled by formal state laws leading to open access constellation. Also the paper argues as a conclusion that local participation does not exclude state involvement and that participative approaches have to face the challange of heterogeneity of interests (Cleaver 2001, Cook and Kothari 2001, Haller 2002a,b). The paper is based on research conducted with Sonja Merten based on two field trips between 2002 and 2004.

[2] The data for this paper was gathered during a two six-month fieldwork of Tobias Haller and Sonja Merten between August 02 and July 2004 among the Ila, Tonga and Batwa in the Kafue Flats, Zambia. Main research was made in Mbeza, Ila Chiefdom Nalubamba using anthropological methods but a lot of interviews, biographies and questionnaires were made at the village of Nyimba and in different fishing villages of Lozi people and in the seasonal fishing camps and in the chiefdoms Hamusonde and Choongo. Interviews with people from Fishery Departments and in the Lochinvar Park were conducted. The authors acknowledge financial support from the Swiss National Science Foundation and from KFPE. Dr. Sonja Merten (Institute of Social and Preventive Medicine, Basel University Switzerland) did research on health and food security, Dr. Tobias Haller (Dep. Of Social Anthropology, University of Zurich Switzerland) did research on institutional change and conflicts regarding the use of Common Pool Resources (CPR) in the area. He's research is part of a comparative study in five African floodplain wetlands including Mali, Cameroon, Tanzania, Botswana and Zambia (Haller 2002a). Research in Cameroon and Tanzania is financed by the NCCR North South (financed by the NCCR North South: Mitigating Syndromes of Global Change; donors are SNF and Swiss Development Corporation (SDC)). For further information see www.nccr-north-south.unibe.ch. The countries and regions included in the comparative study are Cameroon and Tanzania.

The Kafue Flats as a floodplain ecosystem

This floodplain has an extension of 6'500 km2 and is a resource rich pocket in an otherwise semi-arid environment of only annual average of 800-900mm rainfall. The whole basin covers an area of 154'000km2 (see map in paper of Sonja Merten). In spite of having little annual rainfall the area receives a lot of water from the Kafue River, which has its catchment areas north of the Copperbelt. The river does however not flow directly into the biggest river of Zambia, the Zambezi. It makes a strong hook at Iteshi teshi (at about 1000 m altitude) and then flows in eastern directions to Kafue Gorge, where it enters the Zambezi. On this distance of 400km the fall is only 15 meters and this makes the Kafue meander through the plain. Major characteristics are a lot of ox-bow lakes, permanent swamps, lagoons and ponds. Due to the flooding of about between 3000-5'000 km2 in the rainy season the area is naturally rich of fish, pasture for cattle (nutritious grass varieties grow after the floods have receded) and wildlife. The Kafue Flats are flooded normally between January and April and the water recedes between June and July leaving nice grasses for pasture. In the past the flats have been a very rich resource pocket in an otherwise semi-arid area (Ellenbroek 1987, Chabwela 1992, Hughes and Hughes 1992). It has also sufficient water due to the Kafue River and at least in the south western parts fertile alluvial soils. Topographically the area can be divided into woodlands, termitaria, permanent swamps, ponds, lagoons and levies.

In this rich habitat there are more than 40 species of mammals, especially the endemic antelope called Kafue lechwe, buffaloes, hippos and zebras, 400 species of birds (especially water birds and migratory birds), 67 species of fish and a large variety of grasses and Acacia trees. The natural environment is mostly oriented towards the seasonal cycle of rainfall and flooding, which both can be very erratic. Animals such as lechwe and fish migrate according to the flooding pattern. This will be outlined more clearly in the chapters on resource use. But as a general rule it is important to stress that irregularities in rainfall and flooding lead to major changes in resource availability through a season and between the years (ibid). By the building of two dams in the area (Kafue Gorge and Iteshiteshi) flooding has been regulated and have lead to different environmental changes which are regarded as mostly negative (Chabwela 1992, for details see below).

In the Kafue Flats there are three national Parks (Kafue, Lochinvar and Blue Lagoon) and a Game Management Area (GMA No. 11) where the use of wildlife is regulated.

The socio-cultural, historical and political context:

The area is inhabited by Ila (or Mashukulumbwe), Plateau Tonga and the indigenous peoples of the area, the traditional Batwa fishermen. The later are living close to the Kafue River. These ethnical groups are organised in 14 chiefdoms (11 Ila and 3 Plateau-Tonga, the Batwa do not have their own chiefdom anymore and are included in several chiefdoms that have territories up to the riverbank). Research was conducted on the southern parts of the flats in three districts (Namwala, Monze and Mazabuka) among the Ila Chiefdom Nalubamba, the Plateau Tonga Chiefdoms Mwanachingwala, Chongo and Hamusonde and the Batwa of a settlement at the Kafue River called Nyimba. Most of the time research was done in the Ila Chiefdom Nalubamba called Mbeza. The Ila of Mbeza are traditionally transhumant pastoralists and agriculturalists. Their major subsistence activities are cattle husbandry and cultivation of maize, but fishing and hunting have been important for subsistence in the past. In the literature up to the 1970ies the Ila were seen as one of the wealthiest cattle owners in Central Africa with an average of 13.1 animal per male adult (Fielder 1973:1973). The Ila households are polygamous and kinship organisation is bilateral, although in the old literature it is argued, that the Ila are matrilineal because the clan orientation is structured through the mother's line. In the past the Ila and the neighbouring

Plateau-Tonga (see also Colson 1970 (1962), referred to as well as Ila or Balundwe-Ila in Smith and Dale 1968) were living in large villages before colonial times in order to protect themselves from slave and cattle raids of the Lozi and from attacks of wild animals. After the Pax Britannica these big villages broke up more and more and today the people live in villages made up of scattered hamlets. Although the Ila have been the victims of Lozi attacks from the north west, they were known as fierce fighters. Conflicts were common between villages and between chiefdoms. European explorers such as Emil and Rosa Holub were attacked in Mbeza during their visit to the Ila country in 1885-6 (Holub. 1975)

Mbeza is the name of the territory (*chichi*), which has clear boundaries and is subdivided into village territories, which also have boundaries. Today, there are 76 of such villages in the whole area of Mbeza. The territory of approximately 2'000 km2 is inhabited mostly by Ila clans, but since the 1930ties there are Tonga-peasants and Lozi-fishermen settling in the southern and the northern part of the area. In 2000 Mbeza had 26'000 inhabitants (13 p/km2). The political structure has been transformed considerably since colonial times, starting from the 1900 by the British South Africa Company and continued in 1924 by the British Government: Before colonial times villages were headed by important men and there was no chief as such. Traditional conflict resolution mechanisms and at the same time collective choice arrangement were the so called *lubeta,* meetings at which local big men were solving conflicts and were discussing different matters regarding the village (Smith and Dale 1968). Chiefs were introduced by the colonial powers in the whole area of the Ila and Tonga in order to establish so called Native Authorities, who were collecting taxes and dealing with local conflict resolution at the Native Authority Courts. At the next lower level there were the village headmen who were responsible for all communal activities and conflict resolution on village level. This structure remained after colonial times although the powers of the Chiefs were considerably limited by introducing government courts (see Cutshall1980, pers. com of our research assistants, Mbeza). Today, the Chiefs try to recapture their lost power and want to be more incorporated into the political life again. Locally, the Ila and Tonga Chiefs are still important and powerful, although their powers are always contested and challenged. Chiefs have to show that they are able to distribute resources and if they fail their political legitimacy is undermined. An Ila or Tonga Chiefs power is not always as respected as it is for example with other ethnic groups in Zambia such as the Lozi and if a Chief decides on a matter, it is not evident that all the members accept his decision (for more information see Tuden 1968, Fielder 1973, Cutshall 1980).

Power and access to resources are embedded in religious believes: The Ila are traditionally monotheists but believe as well in the existence of spirits and especially ancestors who give them the right to give access to land, pasture and fish resources. The ancestral spirits are very important for making rain and are worshipped at shrines (*malende*).

Access to CPRs in chiefdom Mbeza illustrates historically how access to CPRs were intertwined: Before the Ila and Tonga came to this area two centuries ago, the river areas were already inhabited by the Batwa fishermen. They immigrated centuries ago probably from today's Botswana. One theory about their origin sees them as descendants of Stone-Age inhabitants, who survived in this remote area. Another theory argues that they are descendants from slaves or other people from the area hiding in the river environment. A third approach using linguistic methods argues that the Batwa stem from the first immigrated early Iron Age groups (Lehmann 1977:42f.). The Batwa (plural of Twa) can also be found in the Bangweulu Swamps and in Lukanga, also not well accessible areas in Zambia. A lot of Batwa are not as tall as the Ila-Tonga and are lighter in colour as the later. They look like the so-called bushmen, while others look like Ila-Tonga because of intermarriage between these groups and the Twa. The Batwa can be regarded as the indigenous people of the area and are looked at as being inferior by most Ila and

Tonga and especially by the immigrant Lozi and Bemba. Fishing was the main activity for subsistence of the Batwa and offered them a relative independence at the riverbanks, which they have lost nowadays (ibid).
In the 18th or 19th century an Ila man, from already settled areas in the west, who's mother was a Batwa, installed himself with his group in the floodplain, followed by his nephew called Kazoka. The area was attractive for fishing but as well for hunting and for its nice pasture. Kazoka following his uncle claimed to control this area before colonial times and managed the pastures, fishing ponds and the wildlife, especially the management of the lechwe antelope. Between 1820 and 1840 three other Ila and Tonga groups immigrated to the area attracted by wildlife and fish in one of the main tributaries of the Kafue as well as by pasture. These groups were raiding and hunting and they established customary rights to village areas after settling. Included in these rights were common property regimes regulating access to fish, wildlife and pasture in close vicinity. As will be illustrated in the discussion regarding the three resources in detail, control over these resources were in the hands of kind of big man or headmean (*mwami*), who were giving not only access to their community but also reciprocal rights to resources for other residential groups and even for groups outside the neighbourhood territory (*chichi*). There were time for collective fishing giving access to all the residents in Mbeza and to invited neighbours, times of complete open access in times of abundance and times for the village members only to fish, depending on the season. Further to the floodplain, in the area of the first settlers customary rights of this land with its floodplain related resources and therefore control over it was claimed first-comer Kazoka group as a kind of incipient right. But at the same time all these resources were common property for the whole *chichi*: Access to pasture was given to any group who wanted it's own cattle camp by a symbolic payment of one cow, and access of fish during announced fishing days was made possible but under the regulation of the Kazoka group. The same group controlled collective hunting days which gave access to lechwe. So this group was controlling but not privately owning a large portion of the land. During early colonial times the Kazoka group was given a small chiefdom which was then later on put under what is today chiefdom Nalubamba. Nalubamba a half slave from one of the three later coming groups called Munyati, himself a big man gaining wide reputation in the area for his possession of magic herbs (musamu), was accidentally chosen by the British to be chief and to control the area, to which also the Kazoka group later on belonged. Mbeza,, the name of the chiefdom came from answering the question by colonial officers, what the name of the place was. The answer was mbeza from the verb *ku mbeza*; crafting war clubs. But before colonial times there was the notion of territoriality in the area and boundaries were known and defended but access depended also on seaonality granting neighbouring groups reciprocal access.
Colonial and post-colonial times have contributed to major economic changes in Mbeza, which will be outlined in this paper in the different chapters on the CPRs. During colonial times chiefs were installed as Native Authorities controlling the resources in the area and mitigation local conflicts (see Roberts 1974). These chiefs had then more power than in pre-colonial times the big men like heads of the villages or village groups. Through pacification there was no longer the need to live in fenced big villages and people started to settle in a dispersed way. The also collected taxes but the Ila did not belong to the groups, which reacted on the forced taxes with the strategy to migrate to the mines in the Copperbelt to earn some cash, as was the aim of the colonial authorities. They were so wealthy because of their large herds of cattle that only few went to the mines. Most of them went to South Africa or Southern Rhodesia (today's Zimbabwe). So, the Ila, Tonga and Batwa were only lately influenced by the urban side of the country and remained relatively unimpressed by the blessing of the modern world (see Rennie 1982), However the Southern Province was mostly affected by giving out Crown Land to white settlers

along the line of rail and in the area of Mazabuka and Monze Plateau Tonga lost land. But the land of the Ila and of some of the Balundwe was as Native Reserve not so much influenced by this colonial land reform while fishery and wildlife laws affected them more (Richards 1974). The exception is Lochinvar which was a ranch in colonial times sold by a local chief to a farmer and later became a National Park.

But today the urban interests are felt clearly: The capital Lusaka is with about 250km within close reach and the Kafue Flats in general are since the 1970ties one of the most affected areas by the economic developments in the capital. Water and electricity for Lusaka comes from the Kafue River and the fertile land close to the tarred road is partly used by rich white farmers. The city of Mazabuka (130 km south-west of Lusaka at the beginning of the Flats) is home of the only sugar cane plantation in Zambia which now belongs to a South African Company and which is producing intensively using and polluting the water of the river. In the time of the first president Kaunda large dams have been constructed between 1972 and 1978. The first at Kafue Gorge before the Kafue River enters the Zambezi River and then the second at Iteshi-teshi, 300 km upstream. It was the aim of the government to use the water for electricity production and water supply for the capital and therefore to regulate the flow of the Kafue River (Jeffrey, Chabwela, Howard and Dugan 1992). This had a serious impact on the ecosystem of the Kafue Flats and its resources as will be shown below. The Flats were naturally rich in fish, wildlife, fertile alluvial land for agriculture and pasture for cattle. These resources are on high demand in Lusaka, at the line of rail and in the Copperbelt. Directly fish and game meat is sold but also sale of maize as the major cash crop between 1950 and 1990 had been important. To a much lesser extend cattle was sold in olden days but this has changed in the last years. By this way a lot of resources are extracted from the area with negative consequences for the local peoples. The state interferes with the local institutions by imposing its own rules of access to fish and wildlife. It does this with the introduction of national laws, national parks, game management areas (GMA) and licenses. Since the 1990ties there have also been two dramatic environmental changes taking place:

- First, the rainfalls are less and less reliable and the area is getting drier, which can be shown by the growth of woodland in the Flats. But contrary to this situation the dry season is in some parts of the flats wetter than in earlier times because of the water release from the Iteshiteshi dam. Nevertheless drought is one major problem affecting the agricultural production in the area today. This reduces the gains from the major cash crop maize.
- Second, the outbreak of a cattle disease called *corridor* or *denkete* locally (East Coast fever (*Theileria parva*)) has reduced the herds of the Ila considerably. This disease has struck most between 1989 and 1992 and the cattle herds of a lot of households could not recover since then.

Another important aspect is the change in the demographic and political-economic national and regional situation: Population has risen in Zambia and as well in the Southern Province between 2 and 4%. What is special about Southern Province and the Kafue Flats is the immigration of people from other ethnic groups such as Tonga from other areas, Bemba, Lozi and others. A lot of seasonal immigrant commercial fishermen are coming to the area adding to the permanent immigrants who came already during colonial and the first post-colonial time. Unfortunately demographic data of the area is not up to date so it is difficult to give the proportions comparing the natural growth of the population and the immigration (permanent and seasonal) in the area but the influx of newcomers attributes to 30-40% of the growth as locally estimated. More important is the fact that these newcomers, especially the seasonal immigrants, are interested in the commercial extraction of the fish and also the game resources, which are then sold by traders in

the urban centres. The area is well connected with tarmac roads up to the cities of Mazabuka and Monze (130 km and 190 km from Lusaka). From these cities there are sometimes very bad roads to Lochinvar Park and to Mbeza in the direction of Namwala (see map in paper of Sonja Merten). But still these areas are accessible during the most time of the year, although they are sometimes not passable in the flooding season.
One reason for the influx of immigrants is the current economic situation of Zambia. The country has been depending on its copper exports since independence in 1964. Unfortunately the copper prices have been declining since 1975 and in the 1990ties drastically. Coupled with the oil crisis in this time and with continued socialist policies expenditures (import substitution and subsidised agriculture) grew too high leading Zambia to one of the ten poorest countries in the world and one of countries with the highest debts in the region. The fact that Zambia was supporting the independence of Southern Rhodesia and the Anti-Apartheid-Movement in South Africa added to the high expenditures. The 1990ties were the time of implemented structural adjustments and privatisation during the Chiluba area not really done during the time of President Kaunda in spite of IMF and World Bank putting on pressure. But still the burden is high especially due to bad terms of trade. Dept and aid policies lead to lessen the monetary resources available for formal jobs (Andersson, Bigsten and Persson 2000). This affects Wildlife and Fishery Departments who are the statal or parastatal organisations that today shall protect the CPR. The economic crisis has lead a lot of people to look for alternatives in order to secure their livelihoods. Fishing and commercial hunting as well as trade (fish, meat, cattle and maize) is one of the opportunities for these resources are at high demand in the cities and access is relatively easy compared to other alternatives (lower opportunity costs compared to other businesses or agriculture in remote areas). Politically the years of Chiluba's government were difficult for Southern Province, which in Kaunda's times had been loyal to this former president.[3] Under structural adjustment programmes and privatisation schemes, which included the loss of subsidies especially for agricultural production, Southern Province was loosing support from the government side in sectors such as medical treatment, agricultural development, veterinary facilities (Chief Nalubamba, biographies of different people in Mbeza, personal communications 2002). At the same time the area is affected by hydropower production and extraction of water for urban centres and irrigation projects without profiting from these activities (Chabwela 1992). So political neglect and extraction of various resources have increased due to increase in pressure stemming from external factors.
The effect of these external economic and political factors will be now discussed in detail for pasture, fisheries and wildlife separately. It will be shown how these factor coupled with formal land tenure reforms in a wider sense, not only land as such but as well control of fisheries and wildlife since colonial times have affected the use of these CPR. They are now de facto open access resources. This regime is already leading to conflicts and can lead to severe ethnic conflicts in the future.

Cattle keeping and use of pastures
For the Ila the main activity and source of identity has always been cattle herding. They have developed a three-step transhumance system that is adapted to the seasonal changes in the

[3] This has not always been the case. In colonial times a party called ANC had a stronghold in the Southern Province because the founder and leader was an Ila. The ANC got pushed away by Kaunda's United National Independence Party (UNIP) after independence and during the first time of independence was not so much successful politically. After the decline of ANC the area became gradually a stronghold of Kaunda, which is especially true for Mbeza. Chief Nalubamba was a close friend of Kaunda and Kaunda staid many weekends in Mbeza (Chief Nalubamba, pers. com 2002, see also Roberts 1976).

ecosystem of the Kafue Flats. After the water recedes between June and July the cattle herds are taken on a regular basis to the floodplain, the banks of the Kafue River and its tributaries (*kuwila*). The animals are taken back to the villages in December and January when the water rises again (*kubola*). During the agricultural season most of the cattle stay in rainy-season cattle camps close to the villages and come back after harvesting to feed on stalks of maize before they leave again to the Flats in July. Most families - in former times whole villages or kraal groups - had their own cattle camps (*lutanga*). Pasture was communal property in Mbeza: The rainy season pasture was open to all the members of villages. After the harvest fields were open to all the cattle of Mbeza. But the control over the dry season pasture was in the hands of Kazoka group who claimed to be the first ones coming into the area after the indigenous Batwa fishermen as outlined above. The Kazoka represented by a headman, demanded one head of cattle of each of the other user groups[4]. By once giving this "payment" the other families and villages got the usufruct rights to their pasture sites and cattle camps. After this payment, a group had the right to use the same pasture area all the time. The usufruct right could be inherited without renewing the payment. New payments only had to be made if a new lutanga was needed. The boundaries of the *matanga* are mostly natural ones: Many of them are located within tributaries of the Kafue River and oxbow-lakes where the cattle is save during the night and in which traditional fishing with spears takes place. Cattle are important for marriage, for political purposes and for storage of wealth. The last point has often been misunderstood in the literature and by officials in the past: it is not only for political reasons that owning a lot of cattle is the goal for most Ila men (and women). Large herds are important for security reason, for cattle are seen as a security bank in times of need. Cattle can be exchanged with maize or they can be sold. In olden days milk was often consumed in the households on a daily basis while cattle was only slaughtered for meet at funerals. In the colonial and the first part of the post-colonial times, the slaughtering of many animals at funerals was criticised by officials. They saw cultural reasons inhibiting the Ila selling more cattle to the urbanised centres like Lusaka, the Copperbelt and the so-called line of rail (rail connecting the Copperbelt with Livingstone and today's Zimbabwe). It is true that the Ila were reluctant to sell cattle but this "habit" had more economic reasons than political or cultural ones as is shown in the work of Robin Fielder. He argues that the security level for a household in order to sell cattle was at least 40 animals. Before this number was reached Ila were reluctant to sell cattle (1973). Another aspect is the fact that cattle are not really private property but belong to a group of family relatives and it is traditionally not easy to sell a cow without various consultations among relatives (Tuden 1968, see also paper of Sonja Merten).

Today, the situation has changed completely. In times of need in the beginning rainy season one sees lots of lorries leaving the area loaded full with cattle. Those who still have animals are now selling regularly. But most of the people lost two thirds of their cattle between 1989 and 1992 due to a massive outbreak of corridor disease (also called east-coast fever, *Theilerosis parva*). This sickness is transmitted by ticks, which were less common in the Kafue Flats before the construction of the Iteshi-teshi dam because the ticks were drowned by the floods during the rainy season. After the dam was build, there was less flooding in the Flats especially in dry years (see Marchand and Drijver 1985, Drijver and Chooye 1995) and as a result there are more trees now and less pasture. Additionally, the ticks do not get killed in the same amount as before 1978. On the other hand there is more flooding in the dry season due to water release at the Itsehi-teshi

[4] There is also another „owner" of a smaller pasture area, who is called headman Hachiboloma belonging to a group called Cizungu, a uncle to the Munyati, who's group is holding the position of the chief. He has to be asked for permission but nothing has to be given to him, although people give him small amounts of goods (maize, money etc) from time to time.

dam. This leads to the situation whereby the ponds in the Flats have more water in the dry season now than before the dam was build. In earlier times the cattle used to feed on the grass in shallow water and swamps that had nice fodder. In order to get access to this green grass the animals stood deep in the water and by this lost the ticks that got drowned. But now paradoxically the water in these ponds in the dry season is too deep and has less grass and therefore the cattle fed on the higher grounds, where they are attacked by ticks and cannot loose them. This is an indigenous explanation why the corridor disease spread since the 1980ties, which is partly supported by scientist from the veterinary department and staff from a Zambian-Belgium veterinary co-operation project (Biographies of Ila men and expert interview with Laurent Mostin, Belgium veterinary in Mazabuka, November to January 2002-2003).

Regarding the changes in the use of the pasture area and the environmental changes it is at this point not possible yet to come to a final conclusion regarding the sustainable use of the CPR pasture and to answer of the question if the carrying capacity is reached or not. Nevertheless the factors contributing to an analysis can be outlined.

On one hand, cattle population has massively declined especially between 1989 and 1993 but since then is growing again slowly. Statistical data on cattle is available but hardly accurate: Nevertheless it can be estimated that there has been a rise from 70'000 in the 1950ties to 140'000 in the 1970ties in Namwala District (Fielder 1973, Bingham 1982). For the 1980ties there is no data but estimations are that the number could have reached 200'000 animals. As Mbeza had about 20% of the cattle in Namwala District 40'000 cattle seem to be realistic. Data from the veterinary services are very scanty and not accurate due to double countings. Our informants stated that the immediate loss between 1989 and 1992 was 80%. Our own data on five villages shows that in 2002 still nearly 60% less cattle was found in the households compared to the pre-corridor time. As growing maize for cash crop purposes gets more and more difficult due to the climatic change, herding and selling more cattle could be an incentive in the future to increase the herds. If cattle is becoming more and more an alternative as local informants state in order to earn cash and the old institution of selling only after basic household needs can be met is changed, a more intensive meat production could establish which would increase the herds in the flats considerably. There are already intentions to privatise the communal property of the pasture area indicating that a more intensive use could take place in the future but with the idea in mind that there is still plenty pasture available. There is also another change taking place. Rich cattle owners from outside the area (in one example a white farmer) employ cattle herders in local neighbouring chiefdoms. These then claim got reciprocal access to the pasture of the Ila of Mbeza because they had relatives in Mbeza. The new rule is then that more heads of cattle are paid but this clearly contradicts the old institutions that only members of a *chichi* or in special circumstances from neighbouring Chiefdoms can gain access to the pastures. So in this respect the area is already opened for market purposes by making reference to a traditional but transformed rule.

On the other hand, the pasture area has diminished due to the man made ecological changes in the flooding and because of there was less rainfall in the last 15 years. This leads to encroachment of woodland in the former floodplain pastures. Additionally, due to the increase in areas cultivated former wet season pastures close to the villages have been reduced. Our informants estimate that the pasture area in Mbeza has diminished about 25-50% from what officials and scientists have estimated in the 1960ties and 1970ties (according to different types of pastures, see Fielder 1973:332, 348). So with the growth of the cattle population the carrying capacity could be reached faster than it is regarded now due to the loss of cattle because of corridor disease. Additionally, a big portion of the pasture lies in a Game Management Area close to the Lochinvar National Park. Due to vegetation changes (immigration of an Australian weed called *Mimosa*

pigra) the endemic Kafue lechwe antelopes (*Kobus leche kafuensis*) and zebras (*Equus bruchelli*) leave the park and graze on the pasture area creating competition between cattle and wildlife.
The most important change however comes from interests of different stakeholders in the use of the pasture area, which was controlled by the Kazoka group. The traditional institution regulating access to pasture is severely put into question and two contradicting constellations can be observed: One leads to attempts of privatisation, while at the same time open access situations occur: The main line of conflict broke out during the period of food crises in Mbeza in 2002:
As in most parts of Southern Province many households in Mbeza suffered severe food shortages. Nevertheless it has to be said that the differences between the households are big regarding wealth in cattle and regarding reserves of maize. In order to mitigate the food crisis the local Chief Nalubamba reintroduced the idea of an irrigation project in the Mbeza territory that he had already proposed earlier without success. On 3'600 ha rice, wheat and other crops were to be grown with the use of the fertile land in the pasture area of Kazoka and the water from the Kafue River. The project, of which 3'000 households in Mbeza should have profited, rose many unanswered questions. The project was to be paid with funds from the Zambian and the Italian government and was included in the National Poverty Reduction Scheme. It showed an approach of modernisation, which was common in the 1960ties: It is not a small-scale project adapted to the local needs but a large-scale irrigation project of which the environmental and socio-cultural impacts were not studied. The ownership issue was not clear: As soon as the government steps in and the project fails, foreigner investors can buy the land from the government whereby the local population would loose access to the fields (Chabwela, pers.com.2002). Additionally, it would take one portion of the pasture, which has already been reduced by the regulated flooding in the rainy season (see section above). There was a strong opposition in Mbeza against the irrigation project lead by an ex-major of the Zambian army. He and his followers, especially the lineage of the Kazoka-family claimed that under customary law the control of the CPR area was under the Kazoka group and their headman. They were followed by the people still owning a lot of cattle. The main argument was that the Ila always have been cattle herders and that it is this traditional economy, which makes the Ila different and rich. They argued that with a better treatment of the animals the Ila would not face a food crisis but would be rich again like in former times. The strongest arguments are the feelings of being Ila people who love the cattle and the pasture areas of the flats and thereby reject violently this project for they fear to loose their identity and their land. The chief on the other side argued that he wanted this project for the poor people of Mbeza, who have got nothing to eat and no cattle. For him those who were against the project were the rich who steal food from the poor. He got support from the so-called "parliament of Mbeza", an elected body of local representatives of men and women from all the villages. The struggle over the establishment of institutions on how to use the wetlands in the future was lead in Mbeza with meetings and counter-meetings, with threats to use force and to kill somebody. Nationally the protagonists fought with the help of different ministers of the actual government, that officially supported the project, and the political opposition, who has nearly won the last elections in early 2002. Additionally, in the national media, TV, radio and especially in the three national daily newspapers there were a lot of news and articles in which the side of the opposition to the project and the side representing the Chief tried to manipulate the public opinion. In Mbeza itself the chief demanded to be protected by the police because of the threats uttered by the opposition. As a result there were police officers at the parliament building and at the chief's palace during the last three months of our stay in Mbeza in 2002.
Behind the conflict are interests of two leading figures, the chief himself and the opposition leader. It is a conflict that apart from other reasons goes back to the land tenure reform in Zambia: Both sides have their own interests to protect and use the ideology of "ethnic identity"

and against the ideology of "class-conflict" in order to pursue their goals. The leader of the opposition wants to protect the pasture area he uses for himself because he has a leasehold title in the area and wants to get another one in the future. After the land tenure reform in 1995 the legal framework still does not permit the possibility to buy land but one can get a Customary Leasehold Title. There is now a new draft of the National Land Policy from 1999, which is oriented towards more individualisation of property by further facilitating individualised leaseholds (Wily 2000:20, 21). The Land Act permits the President of Zambia to alienate land to individuals (for example investors) and to convert customary tenure into leasehold tenure for 99 years. In order to get a leasehold title alienated in customary tenure the President however has to take into consideration local customary law not being in conflict with this act (4a) and without consultation of the local Chief. Section 4 d explicitly states that the President shall not alienate land:

> If an applicant for a leasehold title has not obtained the prior approval of the chief and the local authority within whose area the land is situated (The Lands Act 29 of 1995:272).

Also under section 8 it is stated clearly that any person who holds land under customary tenure can convert it into a leasehold title for 99 years by the grant of the President only if the local chief approves it (ibid:274). This means that leasehold title can only be given if the chief agrees to this. This act sheds a new light on the conflict about the irrigation project for it was to be partly laying in the area of leasehold title of the opposition leader and additionally putting in jeopardy his plans to get another leasehold title in the area. It is therefore clear that the opposition against the irrigation project was not about Ila tradition but about individual land interests. The opposition leader wanted to have a chief who would grant him permission for his plans and of course the actual chief would never do this. The new land act is also giving chiefs great power in land issues, which local groups will find hard to fight against. This fight was lead with the ideological use of the indigenous institutions governing access to cattle camps emphasising Ila tradition, but the motivation for this has not been to protect the common property regime: Already under the traditional institutions of the Kazoka group giving out cattle camps the opposition leader tried to transform this rule in order to have the pasture under a more privatised regime: According to our informants he gained the trust of the main Kazoka headman to supervise the pasture area and he intended to transform the old institution regarding the payments for the access to the pasture. He proposed first that each family having a cattle camp in the area shall pay each year one cow for the use of a camp. This was then revised to one head of cattle every four year until the chief stopped these attempts. But if the opposition leader would get the leasehold title he would claim from each family using a cattle camp in "his" area one head of cattle each year. In this sense he wants to privatise the commons and wants to get a rent from this land.
On the other hand the interests of the chief are shaped also by the Land Act because the act helps to attract foreign investors to the area. The Chief depends on funds from donors in order to go on with his development projects and the irrigation project proposed in the time of crisis was strategically not a bad time to get government support. He hoped to receive such funds if the project was to be supported by the Zambian and Italian government. It is therefore the future of the floodplain that is contested on an ideological arena and on the background of the new land tenure system shaping the economic interests of powerful individual. However, these interests are hidden by strategically using different ideologies.[5]

[5] The conflict was not solved when we left the area in January 2003, although already back in Switzerland we heard the rumour that the Zambian government is feed up with one part of the local people opposing to the project and

Fishing institutions and institutional change:

Another important subsistence activity was fishing in Kafue Flats. Fishing was institutionally regulated by the local Ila of Mbeza and also in the neighbouring Batwa and Balundwe communities and these regulations were operating in pre-colonial and as well to a certain extend in colonial times. The most important fish species are breams (such as the Kafue Bream called *mpende* (*Orechromis andersonii*) or other *tilapia*), so-called "bubble fish" or barbel (such as the *mbuli* (*Clarias gariepinus*)) and especially in the tributaries the small *cisekele (Striped Robber, Alestes lateralis)*. Spawning and mobility patterns are very different for these fish but as a general rule one can say that at the start of the rainy season the tributaries which are dry in the dry season get water from their catchment areas and from the Kafue river with its rising levels. Fish then get outside the Kafue River and also outside the ponds near the tributaries in order to migrate when the water meats the water of the tributaries and ponds. Then in January and February when the flats start to be flooded by water these fish go out for spawning, some have specific location such as in the Lochinvar Park an area called Hippo Corner, others move freely in the flooded area. After the water reaches high levels in March and April it recedes. The flats become dry again and water only remains in ponds, oxbows and lagoons where then some of the fish remain.

Fishing was done according to the different seasons in the Kafue River, the flats, oxbow lakes, lagoons, and in the tributaries. The Kafue River was controlled especially by the indigenous Batwa, who used to respected breeding grounds during the early rainy season and sanctioned fishing with reference to their believe that ancestral spirits (*mizhimo*) would punish them with the loss of fish stocks and attacks by crocodiles and hippos. Especially it was believed that the *mizhimo* would not release the fish out of the holes in the river. Rituals were made for a women spirits who's body was put in a hole at hippo corner. This spirits is believed to protect breeding grounds of Tilapia fish, who make their nests there. Fishing was done with boats and spears. The Batwa had a special fishing technique unique in Africa called *mbewe*. This traditional method consisted in making shelters in reedy patches at the lagoons or along the river banks and channels, where the Batwa erected platforms. Either they were fixing a blanket over at the platforms or the reeds and also covering themselves and the boat with a blanket, whereby excluding all sunlight. By this shadow the fish are attracted in the now cleared open water place, could be seen and easily speared. According to MacLaren, who still saw this technique in 1955 catches were very good making possible to spear 200 to 300 fish in one week (MacLaren 1958 (1974:472).

Similarly, the Ila and Tonga of the different Chiefdoms (Chongo, Hamusonde and Nalubamba) had specific institutions governing the use of the fisheries. Most important is the notion of spiritual ownership of river sections and ponds whereby headman's claim to have ownership given them by their ancestors. In the early rainy season fishing in the tributaries was done first by the whole village later on the people form the own chichi and invited neighbours to come for controlled collective fishing called *ikuo*. At this occasion fishing was done by the women with controlled baskets (*ihumbo*) and by the men with spears (special barbed fish-spear called *miumba*) fishing in the shallow waters. The different owner groups claimed to control the area under a spiritual ownership given to them from the ancestral spirits (this also applies for the permanent ponds in the dry season). They supervised the fishing activities and sanctioned those who did not comply with the rules with the help of the leaders in olden days and with the help of the headmen and chiefs in colonial times.

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therefore not supporting it at the moment. In summer 2003 then the project was no longer supported by the government of Zambia because the local opposition was too strong (Times of Zambia, June 03).

In the full flooding season everybody could fish without restrictions doing individual fishing in shallow waters with spears, canoes, hooks and the area was open access. In the tributaries a lot of women fish standing in the water with their baskets catching especially the *cisekele* fish (Alestes lateralis). After the water goes down again weirs called *buyeelo* are installed by men. These weirs have an "owner", who has his helpers, mostly relatives. The weir is build with poles and grass in a way creating a higher upper level of the water and therefore a stronger current. Migrating fish swim against the current and are trapped in baskets, which are set into the weir. Ownership of the basket traps is private meaning that each of the helpers of the buyeelo has his own trap, which are put into the weir.
Otherwise fishing is forbidden in the time of recede and restricted until the dry season. Fishing was then done in ponds, oxbow lakes and at the Kafue River by cattle herders staying in the flats close to the river or tributaries. This fishing is connected to the transhumant move of the Ila with their cattle in the dry season (*kuwila*). At the cattle camps, the user of a pasture area did fishing with spears in waters belonging to the *lutanga*. These users could invite their neighbours for a controlled collective fishing activity called *lwuando*. Inviting neighbours gave then the permission to use the neighbouring fishing grounds as well. The same applies to the villages where dry season fishing was done in ponds under the control of the owner group of such a pond. The headman of such a group had a supervisor or so called monitor (*otamba*), who would control the tributary when the water stopped flowing. No one was allowed to fish then in order to prevent that there was no fish left in the ponds for the dry season fishing. Severe punishments like the payment of cattle was put as sanctions if someone violated this rule. In the dry season then a date was announced by the *otamba* giving the people from the chiefdom the opportunity to fish in the ponds. Initially the village was permitted to fish first before collective fishing took place. Rituals to appease the *mizhimo* had to be done by the *otamba*. On the day of the collective fishing then the *mizhimo* were again approached by the *otamba* in order to permit collective fishing and in order not to be attacked by crocodiles, which would be interpreted as a sign of discontent by the ancestors. After this fishing was closed and forbidden to have drinking water for the cattle remaining in the villages and also for enabling the fish stock to remain and to reproduce itself during the rainy season.

The following table summarises the CPR regimes according to the season:

Table 1: CPR-Regimes according to season among the Batwa and Ila of Mbeza

Season	Where	Regime	Rules	Technology and name	Costs for Economic Defendability
RAINS (Dez-Feb)	Tributary, ponds, river sections	**CLOSURE COMMUNAL COLLECTIVE (people form chichi and others)**	Breeding areas at the river Fishing in village and chichi, reciprocity	- Baskets (women) spears (men) **ikuo**	LOW HIGHER
FLOODS (Feb-April)	In all the inundated areas	**OPEN ACCESS**	No rules, exception: breeding areas at River	Boats, spears, Tonga baskets (women) Weirs **(buyeelo)**	HIGHEST (LOW for specifically known places, end of season)
RETREAT (Mai-July	River, ponds and tributaries	**CLOSURE PRIVATE COMMUNAL COLLECTIVE**	When water stops flowing Invitation by rit. Master Reciprocity	No fishing in restriced areas, some weirs **(buyeelo)** still allowed - **Lwuando**, controled Ila baskets and spears	HIGHER to LOW
DRY (Sept –Nov)	River, tributary and ponds	**COMMUNAL TO CLOSURE,** at Kafue river Batwa still fish	Reciprocity Rit. Master closes when little water	**Lwuando**, spears, at river boats (Batwa)	LOW

Source: Own research presented after an a table from Thomas 1996

In the beginning of the rainy season the property regimes change from closure to communal and common property again before fisheries become a temporally open access resource in the full flooding season. Nevertheless the open access did not affect the fish stock. This corresponds with what Thomas (1996) writes on seasonally changing property rights and boundary arrangements according to the characteristics of the resource due to different constellations in different seasons. After a closure in some areas of tributaries weirs are allowed which are under private and or communal property. In the retreat and dry season *lwuando* fishing in different ponds takes place first giving access to village and lineage communities and then opening up for the whole chichi and also neighbouring *chichi's* who are invited according to the rule of reciprocity. The same applies for ponds in the flats at location of cattle camps.

Regarding the fisheries major changes have taken place since pre-colonial times leading to a severe reduction of the catches in the Kafue River Basin. Although the decline is difficult to be shown statistically due to bad official data, officers from the fishery departments of Mazabuka, Monze and Namwala Districts have reported a drastic reduction of fish. They explain this with the use of bad fishing methods by mostly seasonal immigrant fishermen, methods that are taken up more and more by Tonga and Ila peoples themselves. Fishing was important for home consumption but not commercially. So the Ila were not much interested in the commercial side, leaving this to Lozi and Bemba immigrants since the 1930ties, who established fishing camps in the Kafue Flats and at the Kafue River. Some chiefs even profited from the immigrants by regularly getting fish from them. But for the traditional owners of the riverbank, the Batwa, this was a loss of control of their area because the colonial government opened up the fishing areas to immigrant commercial fishermen and did not pay attention to the customary fishing rights of the Batwa (Lehmann 1977:42, different interviews with Batwa from Nyimba 2002)). The Fish Conservation Ordinance, Cap. 263 of the main law, which was operational during colonial times

allowed to fish anybody within Northern Rhodesia and later Zambia who had a licence. New regulations were introduced by the Fishery Law of 1962 in which mainly seine netting was forbidden as was as well as other methods such as explosives or chemicals, poison, trawls. Certain gill nets with meshes less than three inches (76 mm) were allowed in certain fisheries but not in the Kafue flats. Additionally, the configuration of the land was not to be altered (Pike 1995: 93-94). The opening up of the Kafue Flats for immigrant commercial fishermen was a problem especially for the Batwa. Since then they see themselves being pushed away from their fishing grounds that get overexploited. On the other hand, the Batwa themselves are now also involved in commercial fisheries and hunting. But as they are adapting in this way to the new economic circumstances they face many problems. What for example the Batwa of the settlement Nyimba complain most about is that they are harassed in the park by a tourist operator and by game scouts. The problem stems from the boundaries of the park, in which a large area of the former Nyimba fishing and hunting area was located.

Since the Government of Zambia has taken over the control of the fisheries there have been major changes: Even before independence commercial fishermen (mostly Lozi and Bemba) started to fish in the Kafue River and in the Flats using nets and motor boats. In order to regulate the fisheries after independence, the Government of Zambia put the fisheries under the control of District Departments that have to cover large areas of about 80 km along the river according to the Fishery Law. All fishery concerns in this law were dealt with by the Ministry of Lands and Natural Resources, Department of Wildlife, Fisheries and National Parks between 1970 and 1979. Later on in the 1980ties Fisheries were moved to the Ministry of Agriculture and Water Development, Department of Fisheries between 1988 and 1992. After this time the Department is under the Ministry of Agriculture, Food and Fisheries which changed its name into Ministry of Agriculture and Cooperatives in 2003. Mostly relevant for the work of the fisheries officers in the area of the Kafue Flats are the Statutory Instrument No. 55 of 1986 of the Fisheries Act 300, which was still relevant during the time of our research. The fisheries regulations, March 1986 are cited as follows as “The Fisheries Regulations of 1986”. This law regulates the issuing of licenses, use of gear such as forbidding destructive techniques and mesh sizes, defining areas of control and closing times in the Kafue Flats. Most of these regulations were already put in place during the 1960ties. For these areas fishing areas licences can be obtained from the Department covering the area of a respective District on a yearly basis. The price of this license is very low compared to the gains to be made from selling the fish. According to the Fishery Law, the Department itself shall ensure that no nets with meshes smaller than 76 mm is used. As the gains from fishing are high and the capital Lusaka is close, the demand for fish for this market is rising and attracts a lot of commercial fishermen (Lozi, Bemba and others) and fish traders from town. The latter sell the fish at about two to three times the buying price at the tarmac road from Mazabuka to Lusaka or on the markets in Monza, Mazabuka or Lusaka. Calculations from one fish trader showed that from one trip to a fish-selling place in the Kafue Flats 100 US$ could be earned (work of about three days) in three days. This means that a fish trader can earn with four trips in one month about three times a fishery officers is paid. The Fishery Departments themselves are understaffed and not well equipped regarding transport facilities and fail to control the licenses and the fishing gears. This leads to an open access of the CPR because while the formal institutions are not working the traditional institutions have been severely eroded. The new-comers mostly do not respect the local fishing regulations and can at the same time not be controlled by the Fishery Departments. As a consequence, bad fishing methods are used: Fishing is done with plastic nets with very thin wholes, called *chikupula*, normally used in commercial agriculture to protect plantations from the sun. Another method used is called *kutumpula*. This is a small meshed net into which the fish is driven by the use of wooden sticks that are beaten on

the water surface creating noise. This method is quite risky for hippos can be scared and made aggressive. In the area of the Lochinvar Park two fishermen using that technique were killed by hippos during March 2002. Adding to the bad techniques is the use of mosquito nets or a very large small meshed net called *futukusa*. The later is used in the biggest lagoon in the area called Chunga Lagoon, partly within the Lochinvar National Park. All these destructive techniques are used in order to catch more and more fish.

As outlined before, monitoring is very difficult but if possible also useless for the sanctions are very low. Penalties are 10'000 Kwacha that is about only one tenth of a daily income a fisherman can make in good times. Big fishing camps along the Kafue River can be observed in the dry season with sometimes more than 900 fishermen. As a result of this process the catches go down drastically in several areas of the Kafue Basin: Especially in Mazabuka, Monze and Namwala District catches are going down as reported to us during our research in the area. The lowest catches are reported from fishing camps such as Shimungalu (Mazabuka District) and Namwala. Fishermen from these districts now travel further up and down the Kafue River in order to find fishing ground that are less plundered. These are found at the border of Namwala and Monze District in the Chiefdoms Nalubamba and Hamusonde, where good catches are still possible close to Chunga Lagoon. But already in Monze District (Plateau-Tonga) in Chief Chongo's and Chief Hamusonde's area catches are reported to have dropped between 50 and 25% in the last 5 years. The same is true for the Batwa fishing village Nyimba where a lot of immigrant fishers have settled now. This area is close to the Lochinvar National Park and the Chunga Lagoon, home of many migrant birds that also rely on the fish. These areas lie in the frontier zones of the Chiefdoms Mwanachinwala, Chongo, Hamusonde and Nalubamba. In the Chiefdoms of the latter two, many growing fishing camps have established themselves that are accessible through the park. Fish traders buy fish in these camps or on regular fish market days that take place in the Lochinvar Park itself. Although there is still fish to be caught and the catches reported by the fishermen have not jet reached the loss of Shimungalu, they are already starting to decline due to the bad fishing methods introduced by the new influx of fishermen who have used up other areas. Especially in Chief Hamusondes area local headmen are very concerned about the situation. Attempts to implement the old rules or to introduce new ones to prevent fishing with bad methods have failed due to the resistance from the Lozi and Bemba fishermen. These immigrants threaten the local Tonga, Ila and Batwa fishermen by saying that they would use violence if controlled and show no sign of accepting the local rules. The main argument used by the immigrants is that they are Zambians and therefore they have the right of access to the fisheries within the state of Zambia. In their view the local peoples do not have the right to restrict the fisheries in the territory. The local headmen and Chief Hamusonde have now taken up the initiative from the officers of the Fishery Department Mazabuka and Monze to set up their own by-laws, which are complementary to the actual National Fishery Law. By this the local people shall be empowered to monitor the fisheries in their area, to sanction bad fishing techniques and to get a small profit from the commercial fisheries. Additionally, rules regarding behavior, littering, manners and health were included by the group of people setting up the new by-laws. Especially local headmen are very concerned about the changes in manners and behavior and also about the bad health situation in the fishing camps. The camps attract prostitutes and women who are selling their bodies for fish in the fishing camps and for milk in the nearby cattle camps. But also local women get engaged in fish trade (see paper of Sonja Merten). The same situation is now developing in Chief Nalubambas area as well, where by-laws will also be discussed. But the major problem is that funds for infrastructure and transportation is lacking in order to build up successfully a participatory co-operation and trust between local and immigrant user groups on one side and the Fishery Department on the other side. So still the transactions costs are

extremely high and put in jeopardy one of the only positive initiative in the region, which would lead to a real participatory crafting of new institutions. But even if funds can be found the whole process is a challenging task for locals and immigrants have to come to terms with each other. This illustrates critiques regarding the participative approach not paying attention to heterogeneity of local interests (see Cook and Kothari 2001, Cleaver 2001) One of the problems for establishing by-laws stems from the fact that nowadays the boundaries of the local chiefdoms Mwanachingwala, Chongo, Hamusonde and Nalubamba are still not clear in the flats and close to Chonga Lagoon. The problem could be solved by setting up an agreement especially between Chief Chongo and Chief Hamusonde.
There are not only changes due to the influx of immigrant fishermen but as well inside the communities. In Mbeza we were told that during collective fishing days in tributaries (*ikuo*) men give up fishing with spears and take up women's baskets, which give a better catch (see Paper of Sonja Merten). Also violations of rules regarding fishing in ponds were reported. In once case a young men did fish in a pond during night time when the fisheries were locally closed for *lwuando* fishing. He sold the fish and had then the capital to start a small shop. However, he was not sanctioned by local people. These are first signs that the fishing institutions in *chichi* Mbeza are starting to get weaker as well on a local level.

Hunting institutions and change:
Up to the 1950ties hunting and fishing has been important for subsistence. In the biographies, which were made with many old men and women, the abundance of antelope meat and fish was always underlined compared to the hunger crisis in the area in 2002-2003. Hunting was done with spears and with dogs and regulated by local institutions: In pre-colonial times hunting in another *chichi* without permission of the chief or a headman was dangerous. One could be beaten or killed. Within a *chichi* however wildlife was common property and hunting was allowed for everybody belonging to the community. It has to be stressed as well that it was too dangerous in pre-colonial times to move around because of the slave and cattle raiding attacks by the Lozi and other Ila groups. But for most of the time there was no need to go far away from the villages in order to be a successful hunter. The *lechwe* antelopes came close to the villages and could be hunted in the village territories, especially in the season of the floods.
On the other hand the Ila and neighbouring Tonga people had to face the problem that game such as the *lechwe* was living in migrating herds, which were not staying within the *chichi* boundaries. In order to secure what is called "optimal foraging" in hunter studies, the inhabitants of each of the chiefdoms Mungaila, Nalubamba, Hamusonde and Chongo as well as the local Batwa people were calling once or twice a year between April and May for a collective hunting time, lasting three days days (*chila*). All the inhabitants of these areas were gathering in big numbers with their spears and dogs, making a big circle around a herd of *lechwe*. By closing the circle they could kill a lot of animals at once. In Mbeza the chila was controlled by the Kazoka group involving people from Bweengwa (Balundwe) and Batwa who were involved in the deeper water with their canoes. A second *chila* was organised together with the Ila people from Maala. The officials saw this old hunting institution as being dangerous and leading to the extinction of the species. *Chila* was restricted in the 1950ties and then forbidden before the end of colonial times. Guns were introduced to the area since colonial times and already used in the 1920ties. This new technology might have lead to a decline of the lechwe but on the other hand especially in Kazoka area hunting was traditionally forbidden in the Flats after *chila*. Nevertheless the control of the game has been taken over by the colonial and post-colonial government. But contrary to the expectations, the animal population has declined considerably since the 1970ties, where numbers were at 100'000 animals to between estimated 45'000 in 1999, (but it is possible that there are

even only 20'000 animals or less) due to poachers from the cities and due to the lack of local hunting rules. Access to game is now made difficult for locals for it is forbidden to hunt with dogs. The use of wildlife in Zambia has been a political issue since colonial times for politics against the colonial masters could be made with this issue. Interestingly under the Kaunda area the same kind of state regulations were introduced with parks, GMAs and licenses which can't be afforded by locals (see Chabwela 1992, Gibson 1999) The formal wildlife regulation – before and also after the Zambian Wildlife Act of 1998 - requires a modern gun and one has to buy an expensive licence that locals cannot afford (ibid). Even if they could afford to buy a licence the transactions costs of getting to know where and how to get this document in the urban centres are too high. If local people get caught hunting or only in the possession of game meat, they are fined heavily: We were told of people who were sentenced five years of prison for only possessing game meet. Additionally, there are reports that locals were shot by game scouts, who are now monitoring the Lochinvar Park and the neighbouring Game Management Area (GMA 11). Nevertheless, monitoring is far from being perfect, game scouts are badly paid, transport facilities are bad and the moral of staff is bad too. There are also complaints of local people claiming that the scouts are poaching themselves. So there is no trust whatsoever in the work of the state that shall control the CPR. Although local people shall profit from the park and from the GMAs by so called CRBs (Community Resource Boards) - local boards of people managing the area and profiting from the revenues of the park and from commercial hunting - locals are ignorant of the existence of the CRBs and the money goes directly to accounts controlled by the chiefs or staff of the chiefs. So the local population as well as the chiefs themselves view that the government is taking away the resource from them, which in their eyes once belonged to them. They therefore do not see the need to protect the animals. But even if money is invested in schools and clinics this gain cannot compensate from the loss they have and also will not exclude free riders from hunting AND using these facilities. So this model with communal incentive does not show any response at least in the area of our study (see also Gibson 1999). One part of the population, especially young men, continue hunting - or poaching as the term is used by officials AND locals - with dogs and self made guns in remote areas in the Kafue Flats, where they know that the scouts will not reach because of dangerous animals (crocodiles and hippos). The meat is then dried and sold locally to the people or to traders (male and female), who then sell it at the tarmac road or they travel to Lusaka in order to sell it there. Most of the people hunting want to get access to the resource before it is taken away by commercial hunters from the cities. Those have the money to buy the licences and are well equipped with modern guns and pick up cars on which they carry deep freezers. Locals claim that these hunters also do pay the game scouts in order to shoot more animals than is issued on the licenses. There are also illegal hunters from town hunting themselves or hiring local hunters. The situation in Mbeza shows similarities with what Gibson (1999) has described for Zambia under Kaunda's regime where the Wildlife Department was called ADMADE (see Gibson 1999) and also echoes problems in participative managment in other parts of Africa (see Hulme and Murphree 2001). Today, the implementing the regulation in Parks and GMA's and co-operation with CRBs is under the Zambian Wildlife Authority (ZAWA) who under the privatisation scheme of the new government has partly to seek for donors in order to fulfil it's duties. This work is made difficult by the fact that Zambia's revenues are small and therefore all Departments receive such as ZAWA receive small funds compared to the task the organisation has due to the financial crisis the country is in, while finding donors is not an easy.

Preliminary conclusions:

This overview of the research conducted between 2002 and 2004 presents a first preliminary summery of the findings. Although that data still have to be evaluated it can be shown that the traditional CPR-institutions governing pasture, fish and wildlife were incorporating Ostrom's design principles for robust institutions mostly for they were reducing transaction costs. During the colonial times these were eroded and getting very weak in the post-colonial times. Table two (appendix 1) gives an overview of the design principles during pre-colonial, colonial and post-colonial times. It can be shown that in pre-colonial times the institutions for the regulations of pasture, wildlife and fisheries were meeting the DPs in most cases. Regarding clear boundaries it is obvious that boundaries as well as membership and access a change during the seasonal cycle and with the mobility of the resource. So this case study would then argue for a more flexible approach regarding boundaries, which is following the rule of economic defendability (Dyson-Hudson and Smith 1978) and of securing reliable gains in a natural environment with erratic and mobile resources. Regarding hunting this means that in dry season, when the large lechwe herds migrate, the best hunting results can be received by collective action of the *chila*-hunting, but which is limited to only small numbers of hunting events and days. During the floods, when the animals come close to the villages and can be hunted more easily, hunting rule inside a *chichi* or even a village boundary is applied. Regarding fisheries the range goes from community or more private property to common property with reciprocal access for outsiders of the community and to open access during flooding periods. These changes are then reversed when the floods retreat. The property regime change according to the possibility to defend the resource and to level irregularity of harvest. As rainfalls and flooding can be different in different parts of the area this is a levelling device which makes sense.

The research shows so far as well that the taking over of CPR-control by the colonial and the post-colonial state and its institutions rules out the local institutions more and more. Unfortunately the colonial and post-colonial state institutions do not perform well regarding monitoring and sanctioning. Therefore they cannot fulfil the task of reducing transaction costs (North 1990, Ostrom 1990, Ensminger 1992), which are in fact now very high. Starting with colonial times the state installs with the new laws, which are not well monitored and sanctioned a de facto open access situation or situations for fisheries and for hunting where there have been local CPR-institutions before (see appendix 2, graph 1 for illustration). The state with his weak institutions clearly gives incentives to overuse the CPRs. Additionally, what is perhaps even more dangerous, it creates a blockage for the local groups to organise themselves. On one hand, there is the need of freedom to organise themselves. But on the other hand local groups need also the co-operation with the state for problems of enforcement, which they cannot handle themselves due to very heterogeneous interests. Of course one could say that it would be the best for the local communities to use force in these circumstances. But I would argue that this put on the fire of ethnic conflicts, which is creating more problems than solutions. Internally also the new land tenure reform causes more problems than solutions for the legislative power vested in the President and in local chiefs can lead to severe threats to loose the land and to competition over CPR-land such as pasture. It also give an incentive for powerful individuals to privatise land while on the other hand individualised control over pasture will not lead to the best monitoring and sanctioning devices.

The institutional analysis following Ensminger's approach illustrates the relation between external and internal factors (see appendix 3, Graph 2). External factors of influence are the legal framework (privatisation, decentralisation) corresponding to the economic situation of Zambia and its dependence on copper leading to low incomes for the state. As a consequence there is less money for jobs leading to new livelihood strategies for cash purposes for a lot of people.

Commercial use of CPR such as fish and wildlife is one obvious possibility. The other problem here is that the state does not have the financial resources to create alternatives and to monitor and sanction the CPRs accordingly. These leads then to a seasonal and permanent influx of people from other rural areas and urban centres (Lusaka, Copperbelt etc.) and therefore to demographic changes. Also climatic (less rain, less agricultural harvest, regular flooding, less pasture), political (neglect of the agricultural production and cattle husbandry) and technological (new nets and boats) changes affect the area so that changes in relative prices are shaped considerably towards more commercial use of fish, game and cattle. This leads then to changes in bargaining power (between different local interest groups, chiefs and their rivals, poor and rich households, men and women, immigrants and locals) whereby mostly indigenous peoples, women and poor households are the vulnerable with less bargaining power. So the new institutional setting is then shaped by the powerful (immigrant fishermen, commercial hunters from the city, ZAWA officials, chiefs and politically powerful rivals) while local groups have to give in partly. On the other hand especially young men for example still do hunt but they go for smaller game and they go to places feared by the scouts because of crocodiles and hippos. Women get engaged in fish and game meat trade.

Regarding the pasture area, agricultural land and the irrigation project the following remarks can be made. It can be said that the old rules on how to use the pasture were clear in olden days. How far they can be maintained is questionable. Fact is that there is at the moment enough pastures because of the drastic reduction of cattle due to corridor disease. But at the same time there is a considerable loss of pasture due to droughts and the regulation of the water flows by dams making the woodlands and possibly also the infestation of the area with the *mimosa pigra*-weed grow. Also, if the agricultural land grows, pastures close to the villages to be used in the rainy season will be scarce. But the institutional changes are also very important such as leasehold titles, poverty reduction schemes and proposed change in use of pasture (irrigation project) and possible influx of absentee herd owners. So, the overuse of the pasture and the agricultural land cannot be excluded, even if there are now no signs to be seen. It is only possible to show which factors influence the use of the pasture and the agricultural land at the moment and to analyse why there is now a conflict over the institutions governing the future use of the Kafue Flats in Mbeza.

Under these situation collective action is very difficult due to heterogeneity of interests in the area and unfavourable external situations. It is only to be hoped that local initiatives to solve problems regarding fisheries is a chance to form new identity and to organise newly how to manage the CPR. The main conclusion of this example is that as the state is the main factor for the de facto access constellation the solution is definitely NOT to exclude the state but to see on which level the state and the grassroots level has to be effective. For both levels the analysis of heterogeneity in interests of actors, their bargaining power and the ideology used has to be studied. Similarly one has to study where the actual transaction costs are and how they can be lowered (f.e. transport for Fishery Department staff) in order that people on the local level can gain trust again in the state but still are able to develop locally adapted institutions.

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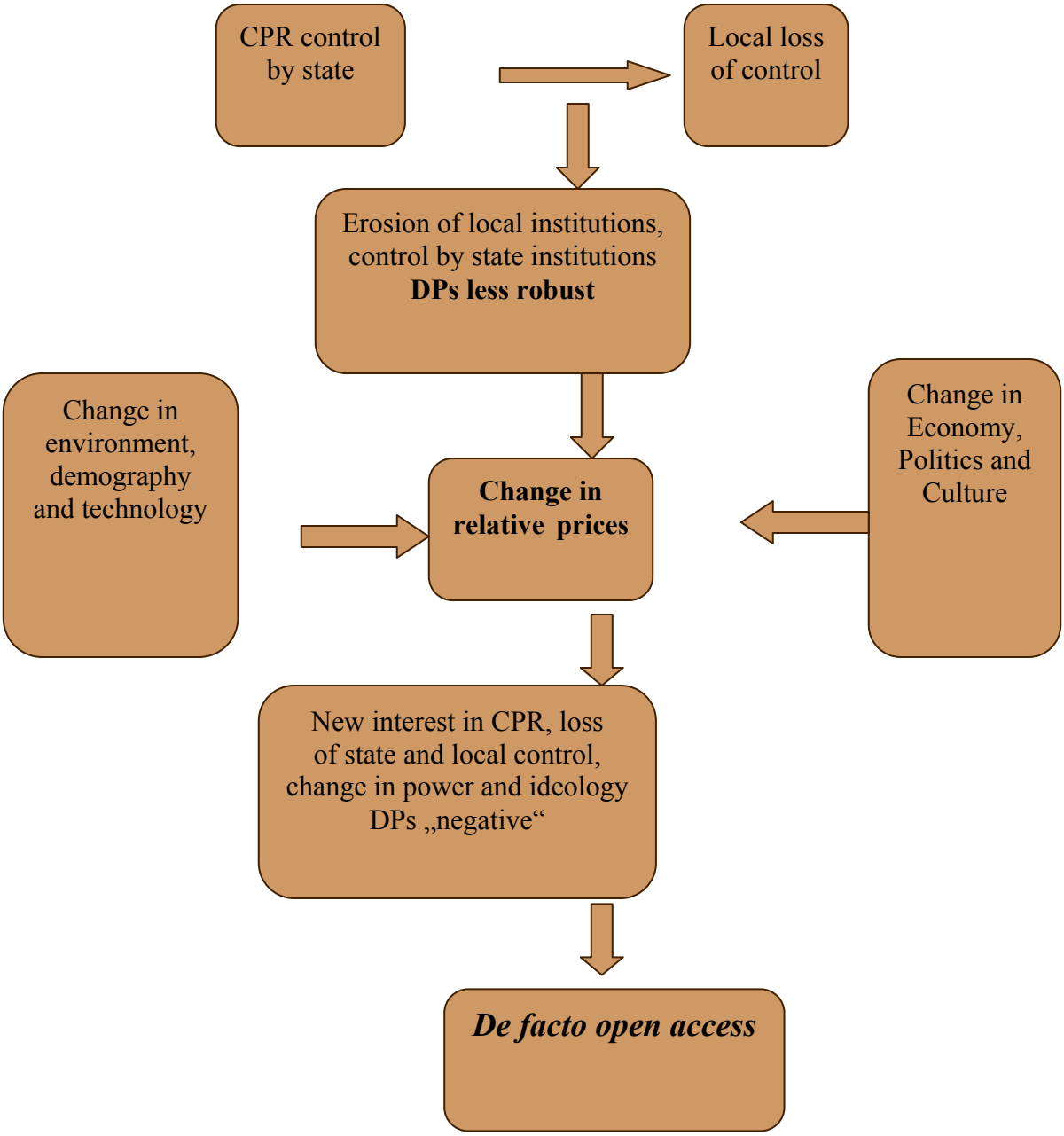
Table 2: Robustness of CPR-Institutions among Ila, Tonga and Batwa

Pasture-Institution	Pre-colonial	Colonial	Post-Colonial
1) Clear Boundaries/Membership	**YES**	**YES but opened up**	**YES but reduced**
2) Equivalence of costs and benefits	**YES**	**YES**	**REDUCED**
3) Collective choice arrangements	**YES, but partly unequal**	YES (more involvement by the chief)	**REDUCED**
4) **Monitoring**	**YES**	**YES**	**REDUCED**
5) Graduated sanctions	**YES**	**YES**	**YES but too little**
6) Conflict resolution mechanisms	**YES**	**YES**	**REDUCED/HIGH CONFLICTS**
7) Possibility to organise	**YES**	**YES**	**YES**
8) Nested enterprises	**YES**	**YES** .	**NO**
Fisheries-Institution			
1) Clear Boundaries/Membership	**YES, seasonally adapted**	**YES locally, NO at river**	**NO or reduced**
2) Equivalence of costs and benefits	**YES**	**YES locally, NO at river**	**NO or reduced**
3) Collective choice arrangements	**YES, but partly unequal**	**YES locally, No at River**	**NO or reduced**
4) **Monitoring**	**YES**	**YES locally, reduced at river**	**NO or reduced**
5) Graduated sanctions	**YES**	**YES, NO at river**	**No or too little**
6) Conflict resolution mechanisms	**YES**	**YES locally, NO at river**	**LIMITED**
7) Possibility to organise	**YES**	**YES, NO at river**	**YES on paper, NO in reality**
8) Nested enterprises	**YES**	**YES**	**YES but very limited**
Hunting-Institutions			
1) Clear Boundaries/Membership	**YES, seasonally adapted**:	**YES but reduced**	**NO**
2) Equivalence of costs and benefits	**YES**	**YES until 1950ties, NO after**	**NO**
3) Collective choice arrangements	**YES, but partly unequal**	**YES until 1950ties, NO after**	**NO**
4) **Monitoring**	**YES**	**REDUCED up to NO**	**NO (at level of local people)**
5) Graduated sanctions	**YES**	**First YES, later No**	**NO or too drastic**
6) Conflict resolution mechanisms	**YES**	**LIMITED**	**Local NO,**
7) Possibility to organise	**YES**	**First YES, later limited**	**YES on paper, NO in reality**
8) Nested enterprises	**YES**	**YES**	**YES but limited**

Appendix 2: Graph 1: Evolution from CPR-managment to de facto open access among Ila, Tonga and BaTwa



Appendix 3: Graph 2: The relation of external and internal levels affecting CPR-use after an idea from Jeans Ensminger 1992