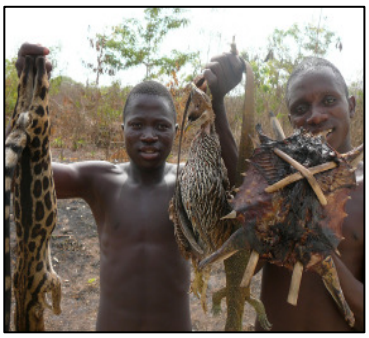
Diversity | Exploitation | Conservation


Governance of protected areas in West Africa

The case of the W-Arly-Pendjari (WAP) Complex in Benin and Burkina Faso

Dissertation zur Erlangung des naturwissenschaftlichen Doktorgrades

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2. Gutachter: Prof. Dr. Tillmann Konrad Buttschardt

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„If protected areas can not be secured and managed effectively, then we will loose fundamental elements of biodiversity forever. We do not know what this would mean and we must hope never to find out."

Wells & McShane 2004

Dedicated to the beauty of nature and biodiversity.

Dedicated to all people having to deal with adversities due to protected areas worldwide, especially to those having been involved in our study around WAP in Burkina Faso and Benin.

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Abstract

Protected areas are the central strategy for preserving biodiversity in the face of overexploitation and global change. To ensure their long-term survival, however, these areas may not be regarded as last havens of wilderness, but as complex social-ecological systems. Modern approaches of protected area (PA) management support this view by balancing conservation and development issues in a sustainable way and adapted to the local context. However, success of these strategies in achieving their aims so far remains limited.

This study therefore aimed at analysing processes and outcomes of PA co-management approaches implemented in a large transfrontier conservation area in West Africa. The W-Arly-Pendjari (WAP) complex spans over more than 30.000 square km in Benin, Burkina Faso and Niger and is composed of approximately 20 subunits. Due to national legal and administrative variety as well as a high diversity of local (project) implementation approaches, the general setting resembled a quasi-experimental design facilitating comparative studies.

A mix of quantitative (e.g. survey of 549 households) and qualitative (e.g. expert interviews, literature review) methods was used to evaluate the institutional and organisational differences of PA management approaches implemented in the different parts of WAP belonging to Benin and Burkina Faso. I included an analysis of contextual factors (e.g. land-cover-change) and ecological data, but concentrated on the role of local resource users within the co-management arrangements and the effectiveness of governance regimes to deliver positive socio-economic outputs. Exploring the question whether promotion of development in PA surroundings indeed stipulates conservation success (and vice versa) remained challenging: the lack of sound ecological data, a general mismatch of spatial scale in existing data sets, as well as the high complexity of realities on the ground made me refrain from using simplified proxy indicators and (statistical) modelling approaches.

I found that the Sudano-Sahelian context is a very difficult one for the implementation of effective participation approaches in the short-term. Political, demographic, socio-economic as well as ecological factors generated a very dynamic situation characterized by limited financial and natural resources as well as weak institutional and organisational settings.

Arenas of interaction were often marked rather by a high degree of distrust and competition than by cooperation among actors. Amid all rhetoric, participation in most cases was hence limited to the transfer of (sparse) information, regulated resource access and financial funds. Options for participation of local resource users in decision-making arenas were generally scarce. Underlying processes were dominated by opacity and often low accountability of actors on all levels. Negative, but also positive affection of local residents by PA existence and management hence was high.

Governance regimes of the complex performed very differently with regard to their ability of effectively empowering local village participatory bodies (vpb), generating and distributing benefits to individuals and village communities as well as providing mechanisms of conflict resolution. People around Pendjari enjoyed a relative wealth of high value benefits, while negative impacts caused by human-wildlife conflicts were widespread around the complex. Autochthonous farmers usually were better integrated in incentive schemes than were newcomers or herders.

While there was functional separation of actors' roles in all parts of WAP, these roles differed significantly between blocks. Existence and functioning of village participatory bodies ameliorated the situation for local resource users fundamentally, as they acted as cut-points between different networks (governmental hierarchies, private concessionaires and local resource users). Vpbs in the Pendjari region proved to be most advanced in their capacity to push resource users' claims in action arenas on the micro-level. Via their union, these associations also managed to impact arenas on the meso- and the macro scale.

Project interventions often had catalyst functions to empower local resource users and their vbps. However, they also contributed to social imbalance and intra-organisational competition.

My results represent a snapshot of an ongoing process to establish effective co-governance regimes in the WAP-area. Though I identified a large scope of shortcomings, there were also very promising initiatives underway. This work is therefore meant to foster future research and further positive development by giving guidance scholars and decision-makers form the local to the global level alike.

Zusammenfassung

Schutzgebiete spielen eine zentrale Rolle für den Schutz von Biodiversiät vor anthropogener Übernutzung und negativen Auswirkungen anderer Global-Change-Prozessen. Damit sie diese Funktion auch langfristig erfüllen können, dürfen diese Gebiete nicht als letzte Wildnisregionen verklärt, sondern müssen als komplexe sozio-ökologische Systeme wahrgenommen werden. Moderne Managementansätze tragen dieser Sichtweise Rechnung, indem sie Schutzmaßnahmen und Entwicklungsansätze miteinander verbinden. Diese Lösungen zielen auf Nachhaltigkeit ab und sind – im Idealfall – an den lokalen Kontext angepasst. Der Erfolg dieser Strategie bleibt in der Praxis jedoch hinter den Erwartungen zurück.

Die vorliegende Studie analysiert die Implementierung und Effektivität von Ko-Management-Ansätzen in einem großen grenzübergreifenden Schutzgebietskomplex in Westafrika. Dieses Gebiet erstreckt sich über 30.000 km^2 in den Ländern Burkina Faso, Benin und Niger und setzt sich aus ca. 20 Subkomponenten zusammen. Benannt wurde der Komplex nach seinen drei Kerngebieten (W-Arly-Pendjari (WAP)). Aufgrund der unterschiedlichen juristischen und administrativen Rahmenbedingungen zwischen den beiden Ländern sowie der Vielzahl an lokalen Implementierungsansätzen, ähneln die Voraussetzungen einem quasi-experimentellem Design und bieten sich für eine vergleichende Studie an.

Mit Hilfe verschiedener quantitativer (z.B. Befragung von 549 Haushalten) und qualitativer (z.B. Experteninterviews) Methoden wurden die institutionellen und organisatorischen Voraussetzungen für Schutzgebietsmanagement in Benin und Burkina Faso erfasst und die implementierten Governance-Ansätze evaluiert. Neben der Analyse verschiedener Kontextfaktoren (z.B. zu Landnutzung) und ökologischer Daten (z.B. zu Populationsentwicklungen von großen Säugetierarten), lag die Rolle lokaler Ressourcennutzer in den Ko-Management-Systemen im Fokus. Die zentrale Fragestellung konzentrierte sich auf die Effektivität der unterschiedlichen Governance-Regime, positive sozio-ökonomische Ergebnisse zu erzielen und die zu Grunde liegenden Interaktionen der beteiligten Akteure zu identifizieren. Die Frage, ob die gezielte Entwicklungsförderung von Gemeinden im unmittelbaren Umfeld von Schutzgebieten tatsächlich auch zu erhöhtem Naturschutzerfolg führt, musste weitestgehend offen bleiben: das Fehlen von zuverlässigen ökologischen Daten, unterschiedliche räumliche Skalenniveaus in den vorhandenen Datensätzen, sowie die

hohe Komplexität der Bedingungen vor Ort ließen keine (statistisch) belastbare Auswertung zu.

Die Kontextanalyse zeigte, dass Westafrika ein sehr schwieriges Umfeld für die schnelle Implementierung von Partizipationsansätzen darstellt. Die Region ist gekennzeichnet durch hohe Dynamik und Variabilität in ihren politischen, demographischen, sozio-ökonomischen und ökologischen Rahmenbedingungen. Das Management von sozio-ökologischen Systemen leidet daher massiv unter der Limitierung an natürlichen und finanziellen Ressourcen sowie schwachen organisatorischen und institutionellen Strukturen.

Interaktionen zwischen den einzelnen Akteuren waren stärker von Misstrauen und Konkurrenz als von Kooperation geprägt. Entgegen des von einigen Akteuren nach außen vermittelten Bildes, war die Partizipation lokaler Ressourcennutzer limitiert auf die Weitergabe von (unvollständigen) Informationen, sowie dem regulierten Zugang zu natürlichen Ressourcen und begrenzten finanziellen Mitteln. Die Möglichkeit, an Prozessen zur Problemlösung und Entscheidungsfindung mitzuwirken war nur partiell und räumlich eingeschränkt gegeben. Die zu Grunde liegenden Prozesse waren gekennzeichnet von Intransparenz und geringer Verantwortlichkeit der Akteure auf allen Ebenen. Die Anwohner waren daher häufig in hohem Maß von negativen Auswirkungen der Schutzgebiete betroffen.

Die Governance-Strukturen in verschiedenen Teilen des Komplexes variierten stark in ihrem Vermögen, lokale Partizipationsorgane aufzubauen und in aktuelle Management-Prozesse einzubinden, Vorteile für lokale Ressourcennutzer und Gemeinden zu generieren und gerecht zu verteilen, sowie effektive Mechanismen zur Konfliktbewältigung zu etablieren. Insbesondere die Anrainer des Biosphärenreservats Pendjari genossen eine relative Vielzahl qualitativ hochwertiger Vorteile; negative Auswirkungen der Schutzgebiete durch Mensch-Tier-Konflikte waren hingegen in allen Subkomponenten des Komplexes weit verbreitet und blieben weitestgehend unadressiert. Autochthone Ackerbauern waren generell besser in die Anreizsysteme des Parkmanagements eingebunden als neu hinzugezogene Ressourcennutzer oder Viehhirten.

Die funktionellen Rollen der einzelnen Akteursgruppen waren zwar in allen Teilen des Komplexes stark differenziert, unterschieden sich aber signifikant zwischen den Subkomponenten. Die Existenz aktiver und vernetzter Partizipationsorgane auf lokaler Ebene, verbesserte die Lage von Ressourcennutzern fundamental, da sie als

Schnittstellen zwischen den verschiedenen Netzwerken (staatlichen Hierarchien, privaten Marktakteuren und sozialen Netzwerken auf Gemeinschaftsebene) agieren und Kompromisse vermitteln konnten. Partizipationsorgane in der Pendjari-Region waren auf Grund ihres vergleichweise hohen Organisationsgrades am effektivsten in der Lage, die Interessen lokaler Ressourcennutzer in den entsprechenden Arenen auf der Mikro-Ebene zu vertreten. Über den Zusammenschluss aller lokalen Partizipationsorgane in Form einer Union konnten sie auch Arenen auf der Meso- und Makroebene beeinflussen.
Von externen Geldgebern gesteuerte Projekte erfüllten häufig eine katalytische Funktion, lokale Ressourcennutzer und ihre Partizipationsorgane für ihre Rolle als Ko-Manager anzuleiten. Sie verursachten aber auch soziales Ungleichgewicht und erhöhte Konkurrenz zwischen den Akteursgruppen auf lokaler Ebene.

Die vorgelegten Ergebnisse stellen lediglich eine Momentaufnahme des Prozesses dar, effektive Ko-Management- Ansätze in der WAP-Region aufzubauen. Zwar wurde eine große Anzahl an Schwächen identifiziert, gleichermaßen gab es aber auch vielversprechende Ansätze für die Zukunft. Die Arbeit ist als Grundlage für die weiterführende Forschung und Entwicklung dieser positiven Ansätze gedacht. Sie adressiert daher die Wissenschaftsgemeinde ebenso wie die Entscheider von der lokalen bis zur globalen Ebene.

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PART I
Theoretical Background

Chapter 1: Introduction

Protected areas

As strongholds for biodiversity conservation
- and development?

1.1 The impact of Man: accelerating profound change

From 1900 to 2000, the world's population grew from 1.2 to 6 billion and is forecasted to stabilize around 9 billion by 2050 (UN DESA 1999). The associated levels of consumption that have been reached today are far from being within the limits of most natural systems on earth providing food, fibre, fuel, fresh water or timber (MEA 2005) – or recycling negative by-products as is the case for carbon and carbon dioxide. Mankind is hence no longer living on the interest rates of natural capital, but using – and losing – the capital stock itself at alarming rates (Pollard et al. 2010): human induced extinction rates are estimated to exceed natural background extinction by the factor 100 to 1000 (Pimm et al. 1995) and between one-third and one-half of the land surface have already been transformed by human action (Vitousek et al. 1997).

The consequences of human consumption to the biophysical world are manifold and complex. Climate change, habitat conversion and fragmentation, alteration of hydrological cycles, invasive alien species and biodiversity loss (Rands et al. 2010) – all have direct and indirect repercussions on the thriving of human social, political and economic activity. These effects, however, do not affect all human-beings to the same extent. There is spatial as well as a temporal asymmetry in enjoying the benefits of consumption and coping with its externalities. Societies of industrialised countries found ways to satisfy their needs from various sources in a globalized market economy. If one source is running dry, there are multiple alternative options to gain access to those commodities in need, whereas societies of poorer countries often heavily rely on local natural resources for their mere survival (Kaimowitz & Sheil 2007). While harbouring the most biodiverse places (Myers et a. 2000), tropical countries and their societies experience the highest rates of land conversion into agricultural fields (Foley et al. 2011) and the strongest impacts of biodiversity loss (Brooks et al. 2006). Such patterns of inequality, however, can be found to varying degrees not only at a global, but at any scale. Some authors referred to this as the problem of intra- and intergenerational fairness of resource governance (Lockwood 2010).

Unsustainable exploitation of natural resources hence has to be evaluated from different perspectives, corresponding to different classes of value assigned to natural resources by different types of stakeholders. Obviously, *humanity* is a rather abstract level for defining a group of stakeholders and is more of theoretical than practical relevance.

Except from the global level, there is no “we” as such: there is no unity of interests, powers, capabilities or information at any level of action. And even if “we” as the global community, governments, communities and interest groups managed during the last decades to develop global norms of conduct (Barber et al. 2004) and to define frameworks how to tackle problems of global dimension including the definition of concrete aims and accords, we are succeeding very poorly in translating these in functioning processes of implementation, monitoring and evaluation, and achieving net positive outcomes (Chester & Moomaw 2008).

One of the milestones of rethinking and restructuring human resource use was the United Nations Conference on Environment and Development (UNCED) in 1992. Its outcomes (Agenda 21, Convention on Biodiversity (CBD) and the framework Convention on Climate Change (UNFCCC)) raised awareness of the universal and global threats by human misuse of natural resources and declared sustainability to be one of the guiding paradigms for all sectors of policy, respectively activity, from local to international level. Biodiversity became a popular buzzword, synthesizing in political as well as in public discourse anything that had to do with our natural environment. A refinement of this coarse concept was provided by the Millennium Ecosystem Assessment in 2005. The ecosystem approach as primary framework for action promoted a holistic view on natural systems that resulted in a human-centred approach of describing the functions of biodiversity as ecosystem services: biodiversity on all its different levels was acknowledged to provide humans with provisioning, regulating, supporting and cultural services. This utilitarian approach made it possible not only to name and categorise functions of biodiversity, but was a first step to give any of them a monetary value and potentially internalise them in economic accounting. Payments for ecosystem services (PES) subsequently became an important tool of environmental protection and nature conservation

However, despite all endeavours, the rate of biodiversity loss is not slowing and the services it provides are eroding continuously (Butchart et al. 2010, Groombridge & Jenkins 2010). So this is, in a nutshell, where we stand today: complex problems resulting from overpopulation coupled with overexploitation and unsustainable economics became a pressing threat to human livelihood; despite a lack of sound scientific data in many cases we are able to identify these problems and their root causes; we define common aims of sustainability, but still struggle to find fair and sound

ways of distributing costs and benefits of resource exploitation, conservation – and degradation – and transform our financial and economic systems accordingly.

1.2 Protected areas are the cornerstone of biodiversity conservation

Setting aside land for the protection of environment and conservation of nature: PAs in the international context

One core strategy (e.g. Chape et al. 2005, Dearden et al. 2005, Cernea & Schmidt-Soltau 2006) to mitigate biodiversity erosion and maintain ecosystem services is setting aside land defined by property right regimes that limit certain – or any – forms of use by some – or all – groups of users. Historically most societies have done so either for religious, exploitive or recreational reasons (Chandrashekara & Sankar 1998; Chape et al. 2005; Dudley et al. 2009). And since the designation of Yellowstone National Park in 1872, the number of areas officially declared protected has increased substantially (Coad et al. 2009). Having recognized the importance of protected areas (PAs) for conservation and human livelihoods in a world of human dominated ecosystems, the international community defined targets for PA coverage worldwide (Brooks et al. 2004). At the Worlds Parks Congress in 1982 in Bali, delegates advocated that all nations should declare 10% of their lands protected (Miller 1984 in Naughton-Treves et al. 2005). In the aftermath of the World Summit on Sustainable Development 2002 and the Vth World Parks Congress in 2003, the CBD agreed in 2004 that at least 10% of each of the world's ecological regions (terrestrial and marine) should be effectively conserved by 2010. The strategic plan of the CBD 2011-2020 refined a new, even more ambitious target. According to this, "*by 2020, at least 17 per cent of terrestrial and inland water areas, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes*." (CBD, COP 10 Decision X/2)

Today there are more than 150.000 of these protected areas worldwide (IUCN & UNEP-WCMC 2012), covering more than 11% of the world's terrestrial surface (MDG 2010) and rendering this form of land-use a most important one (Chape et al. 2005). Forest protected areas essentially contribute to the livelihoods of nearly 1.1 billion people (UN Millennium Project 2005) and their cultural and spiritual values enrich overall quality of life to a significant degree. They are one of the primary sources of drinking water for over a third of the world's largest cities (Dudley et al. 2003), and a major factor in ensuring global food security by holding important genetic resources for food and agriculture (Mulongoy & Gidda 2008). They are estimated to contain over 312 gigatonnes of carbon, or 15,2% of the global terrestrial carbon stock, worth several trillion Euro if valued according to carbon market prices (Campbell et al. 2008) and the overall economic value of goods and services annually delivered by the global reserve network is estimated to range between 4.4 to 5.2 trillion US $ (Balmford 2002).

PAs fundamentally differ not only in their characteristics like size, shape, connectivity or ecological inventory and functionality, but also in their original purpose, governance settings and ways of management. They range from relatively small and isolated community or privately protected areas to large-scale transfrontier PA networks involving diverse institutional and organisational settings. To capture and map this diversity, IUCN introduced internationally recognised guidelines for the categorisation of PAs based on management objectives. These six, respectively seven classes include PAs with strict protection where even human access is strictly limited as well as areas that emphasize cultural and scenic values besides ecological ones (see **Tab. 1.2** in Annex).

Each single of the above mentioned PA characteristics is subject of intensive scientific debate. In the heart of this discourse two main questions being relevant for practical implementation can be identified: (1) what are the species and where are the areas to be protected (this includes questions on coverage and representativeness/ irreplaceability/ vulnerability of biodiversity being protected in PAs) and (2) how effective are different management interventions and techniques? (Hughey et al. 2003). Indeed, the issue of PA-management itself became more complex, as these areas are not any more regarded as mere strongholds of biodiversity and ecosystem services, but rather as complex socio-ecological systems (see Chapter 2) (e.g. Adams et al. 2004, Naughton-Treves at al. 2005), that have to serve different expectations across different

levels and scales of conception, ranging from social to economic and ecological concerns.

Protected areas (PAs) are threatened worldwide by a large scope of unsustainable resource exploitation patterns. Various forms of direct threats, i.e. generally land conversion and extractive exploitation activities like poaching or selective logging undermine ecological integrity to varying degrees. Side effects, e.g. uncontrolled anti-cyclical bush fires might further boost negative trends in resource regeneration or system resilience. Moreover, widespread agricultural, pastoral or mining activities can even lead to total breakdown and transformation of respective systems.

However, root causes or ultimate drivers of most of these dangers lie in high local demographic growth, associated with urgent local subsistence needs (food, fire wood, etc.), and often coupled with adverse incentives given by regional, national or global markets (bush meat, tropical woods, cotton etc.) and/or management systems.

Dual Function: reconciling conservation & development

Is poverty reduction a prerequisite for sustainable conservation, or is it rather distracting attention and limited resources that would be needed to effectively manage PAs for their primary purposes: conservation through development or development through conservation? (Franks & Bloomley 2004)

Globally, one of the major challenges ahead is linking the aims of poverty reduction and of ensuring ecological sustainability (Millennium Development Goals 1 and 7), respectively ensuring human development while preserving a maximum of biodiversity (Myers et al. 2000; Mittermeier et al. 2011). As there is a general geographic overlap between biodiversity and poverty, with a concentration of both in the southern hemisphere (Roe & Elliott 2005), international efforts focus mainly on tropical countries. Despite criticism and ongoing debates on how to achieve win-win scenarios for humans and nature (e.g. Barrett et al. 2001; Adams et al. 2004; Borgerhoff-Mulder et al. 2007) (see discussion in Chapter 2), it is widely agreed upon that only strategies that are politically and economically acceptable to local communities and governments are supposed to ensure the long-term viability of species and ecosystems (Newmark and Hough 2000; Naughton-Treves et al. 2005; Kaimowitz & Sheil 2007). Several

approaches have been implemented that aimed at reconciling conservation and development, i.a. debt-for-nature swaps, extractive reserves, community-based conservation, and integrated conservation and development projects (McShane et al. 2011). There is hence a paradigm shift of PA purpose that comes along with a shift away from managing individual resources (Imperial 1999) for conservative reasons to the broader perspective of ensuring functionality of socio-ecological systems as a whole. Multi-use PAs that are capable of serving this dual function consequently became a trend and their number is likely to increase in the future (McDonald & Boucher 2011).

In reality, however, the linkage of conservation and development often seems to be some kind of forced marriage containing inherent contradictions (Newmark & Hough 2000): neither is achievable without the other, but they cannot exist together either.

ICDPs & incentive driven conservation

The Man and the Biosphere Programme (MAB, UNESCO) and its concept of biosphere reserves, relying on a spatial zoning of exploitation (buffer) and core zones, provided early experiences and theoretical background for the improvement of reconciling people's needs and environmental concerns (Wells & McShane 2004). During the 1980ies, projects started to systematically compensate local people for restricted resource access caused by PAs and provided alternative sources of income, e.g. by the promotion of tourism. Being regarded as a kind of working model for sustainable development and due to their high political appeal of generating multiple win-win scenarios, such integrated conservation and development projects (ICDPs) that focussed on PAs and their surroundings attracted the largest share of international and bi-lateral investments in biodiversity conservation during the 1990ies (McShane & Wells 2004).

Main principal of ICDPs is the provision of incentives to local users. These might be social or political in nature, but foremost focus on providing opportunities for economic development. Similar to more recent PES schemes, ICDPs hence do not solely rely on negative incentives to induce a behavioral change of local resource users (like sanctions), but aim to promote sustainable resource use and biodiversity conservation

by offering positive incentives (Miteva et al. 2012). The shifting of specific property rights to resource user level e.g. creates political incentives as the benefits of sustainable exploitation are potentially shared among those bearing the costs of conservation (Miteva et al. 2012). Approaches emphasizing material incentives contain enterprise-based strategies (Salafsky et al. 2001) that focus on economic substitution of (unsustainable) natural resource exploitation practices, monetary compensation or revenue sharing schemes (Spiteri & Nepal 2006). Besides equitable and fair distribution of incentives and benefits (Spiteri & Nepal 2006), major challenge is the establishment and enforcing of a direct linkage between community and personal benefits on the one hand, and a reduced negative impact on PA/resource integrity (Salafsky & Wollenberg 2000; Brown 2003; Robinson & Redford 2004). Ideally benefit distribution is distinguished based on individual/ group compliance to sustainable practices and refers to differences within and between communities (e.g. induced by level of impact from human-animal conflict, or the degree of restriction to individual user groups) (Agrawal & Gobson 1999; Spietri & Nepal 2006). To achieve desired changes in behaviour of resource users, conservation must generate values equal to or greater than alternative forms of exploitation (Kiss 2004).

Intrinsically, ICDPs are associated to some form of community participation in PA governance and management. Needs of locals are explicitly acknowledged and related to potential drawbacks due to PA existence or establishment. However, participation can take very different forms, in theory as well as in implementation. Resource users e.g. might be excluded from decision-making processes and only be receptors of process output. In fact, the degree of participation causes much of the debate surrounding ICDPs and community-based approaches (Community-based Conservation (CBC) is nowadays often used as an umbrella term including different forms of conservation and development integration (Waylen et al. 2010)). These issues of governance and participation are treated in detail in Chapter 2.

1.3 Do PAs keep their promises?

Experience with ICDP approaches generally showed that envisioned win-win situations were rarely achieved (Barrett & Arcese 1995, Newmark & Hough 2000, McShane et al.

2011). Scholars and practitioners keep on discussing strengths and weaknesses of the approach (e.g. Wilshusen et al. 2002; Mc Shane & Newby. 2004). Criticism focuses i.a. on failures to generate adequate benefits to local communities that provided sufficient incentives for conservation, the difficulty to distribute benefits to the individual level, the inability to effectively address underlying root causes of biodiversity erosion and ensure financial and technical sustainability of project interventions, simplified concepts of the community, or harvesting schemes not adapted to local resource dynamics (Metcalfe 1994; Gibson & Marks 1995; Barrett & Arcese 1995; Agrawal & Gibson 1999; Newmark & Hough 2000; McShane & Newby 2004). In many cases expectations have been over-optimistic and not taken into account the high complexities of most socio-economic and socio-ecological settings (Wells & McSahne 2004). There are also constraints to effective implementation rooted in the characteristics of projects as "discrete and time-bound packages of development assistance" (Sayer & Wells 2004). This "pathology of projects" is caused i.a. by a lack of adaptiveness that leaves many projects locked in a rigid donor-driven framework unable to integrate local knowledge or to react to changes in the economic or political context, as well as the need of donors for rapid success stories which impedes the acceptance of (and learning from) failure (Sayer & Wells 2004, Wells & McShane 2004, Wells et al. 2004, Garnett et al. 2007).

Surprisingly, most assessments of ICDPs are reported rather as anecdotal case studies (Garnett et al. 2007), reflecting the poor standards of monitoring and evaluation implemented in most projects (Brooks et al. 2006). Relatively few studies relied on quantitative hypothesis-testing procedures to assess success and failures of ICDPs (Garnett 2007) and those who did had to rely on rather simplistic assumptions. Based on literature reviews, Brooks et al. (2006; 2012) and Waylen et al. (2010) identified in their meta-analyses several factors that were positively correlated to ecological and economic outcomes as well as pro-PA attitudes and behaviours of local resource users. They i.a. found permitted exploitation of natural resources in buffer zones/ extractive reserves, market access and greater community involvement (Brooks 2006), project design (especially capacity building), tenure regimes, supportive cultural beliefs (Brooks 2012), as well as the local institutional context and engagement with these local institutions (Waylen 2010) to be important factors (see **Tab. 1.1**).

- **For more detailed information concerning the evaluation of PA performance see Annex (Chapter 1: Evaluation).**

Tab. 1.1: Critical factors for success identified by relevant (meta-) studies

Realm	Success factor	Source
ICDP outcomes (economic, ecological, attitude & behavior)	▪ Permitted exploitation of natural resources ▪ Market access ▪ Community involvement ▪ Project design ▪ Tenure regimes ▪ Supportive cultural beliefs ▪ Local institutional context & engagement with local institutions	Brooks 2006; Waylen 2010, Brooks, 2012; note: not all success factors contributed to all kinds of outcomes
Tropical rain forest PAs in Africa	▪ Large PA extent surrounded by similar habitat ▪ Public support ▪ Effective law enforcement ▪ Low human population densities ▪ Substantial support from international donors **No** direct effect: ▪ Employment benefits for neighboring communities ▪ Conservation education ▪ Conservation clubs ▪ Presence and extent of ICDPs	Struhsaker et al. 2005
Tropical PAs	▪ Enforcement ▪ Boundary demarcation ▪ Direct compensation to local communities	Bruner et al. 2001
PAs worldwide	▪ Law enforcement ▪ Control of access ▪ Resource management ▪ Monitoring and evaluation ▪ Maintenance of equipment ▪ Budget management ▪ Existence of annual work plans ▪ Staff numbers ▪ Slight trend of older PAs scoring higher	Dudley et al. 2007; Management Effectiveness Tracking Tool (METT) by WWF and The World Bank
PAs worldwide	For the conservation of values ▪ Staff/ other partners skill level ▪ Constraint or support by external political and civil environment ▪ Adequacy of law enforcement ▪ Research and monitoring ▪ Achievement of set work program	Leverington et al. 2010; variety of tools, results standardized

	For effects on communities ▪ Communication program ▪ Involvement of communities and stakeholders ▪ Management effectiveness evaluation undertaken ▪ Appropriate program of community assistance ▪ Research and monitoring

Chapter 2: background

Governance of socio-ecological systems/ PAs

Adopting a multi-level and cross-scale concept
for organisational and institutional set-up.

2.1 Protected areas as socio-ecological systems from an institutional perspective

Complex, dynamic and interconnected: Social-ecological systems

Integrating conservation and development has become one of the top priorities of PA management in the last 30 years (Wells & McShane 2004). It is important to note, however, that these concerns are not restricted to the local level of poor tropical countries. Growing complexities caused by the twin forces of economic globalization and global environmental change (Brondizio et al. 2009) directly link social and ecological systems all over the world across levels and scales (Gibson et al. 2000). Ecological services are rarely associated with administrative or judicial boundaries neither are the negative externalities and consequences of overexploitation and degradation of resources. International markets, flows of information, finances and goods, today directly link consumers and production systems all over the world. Buying behaviour and purchase decisions of some industrialized countries might hence impact the livelihood of West African smallholders living adjacent to a PA. An example illustrating direct linkages between higher level root causes and direct threats was given by Brashares et al (2004). Following the hypothesis that bush meat consumption is driven by dearth of protein in local human nutrition, they showed that shortages in off-shore fish supply, which is the primary source of protein in West Africa (and which has been declining in the last thirty years, mainly due to the exploitation of heavily subsidized high-tech foreign fleets), strongly correlated with an increase in illegal hunting and bush meat trade in PAs in Ghana. The primary mechanism described here is market exchange. However, there are many different forms of cross-scale (e.g. spatial and institutional) as well as cross-level (e.g. from global to local and from constitutional to operational) interactions at work that are again affected by the interplay between institutions at multiple levels and scales (Cash et al. 2006) (see **Fig. 2.5** in Annex). Governmental interventions might e.g. influence markets by providing subsidies (Nagendra & Ostrom 2012) for cotton production to their farmers (e.g. in the USA) and so distort commodity world market prices (Minot & Daniels 2002) - and impair competitiveness of the smallholders in Benin and Burkina Faso. These latter farmers

might additionally be dependant on governmental monopolies on (respectively control of) fertilizer sale (Honfoga 2013). Small-holders on the other side often form interest groups in order to organise collective action (e.g. Ostrom 2005), e.g. with the aim of negotiating for own state subsidies or reduced fertilizer prices. They might also oppose the existence of PAs and lobby for their declassification, potentially getting in conflict with other village bodies that participate in PA management (and that are in charge of distributing benefits borne by some alternative source of income like PA tourism).

All these activities hence involve a wide array of interactions between individuals and corporate actors at diverse levels that depend on a multitude of different organisational and institutional (here sensu North (1990): rules and norms) settings. Like for ecological systems, the connectivity among entities in such socio-ecological systems (SES) is often horizontal and vertical in nature at the same time (Brondizio et al. 2009), creates dynamic interdependencies across multiple levels and scales (Gibson et al. 2000) and often is shaped by an evolutionary and self-organizing character (Anderies et al. 2004). It potentially involves trigger points inducing phases of rapid changes in system functions and properties, spatial and temporal time lags of cause and effect (Underdaal 2010) and hence bringing about a high degree of uncertainty (Imperial 1999; Holling 2001; Gunderson & Holling 2001; Ostrom 2007, Brondizio et al. 2009). A concept that explains the evolving nature of such complex adaptive systems has been described by Gunderson & Holling (2001). According to them social, ecological or socio-ecological systems are interlinked in a hierarchical structure (called *Panarchy*) of “never ending adaptive cycles of growth, accumulation, restructuring and renewal”.

The evolution of cross-level interactions in scale-dependant resource regimes hence requires adaptiveness of respective institutional systems to complex changes. While such forms of adaptation (describing the capacity of actors to manage dynamic systems), are central concerns for the understanding of the social components of an SES (Walker et al. 2004; Ostrom 2005, Armitage et al. 2009), stability and resilience are key concepts for integrating ecological dynamic to the holistic model. According to Holling (1973) “resilience determines the persistence of relationships within a system”, and stability describes the “ability of a system to return to an equilibrium state after a temporary disturbance”. In other words, resilience is a measure of how much disturbance a system can experience without loosing its function, structure, identity and feedbacks while reorganizing (Walker et al. 2004; Lebel et al. 2006). Decreases in

ecosystem resilience and hence problems in managing natural resources can arise i.a. due to a mismatch between the level of management and the levels of the ecological processes being managed (Cumming et al. 2006), respectively due to mechanisms often being designed only at a single level of governance (Nagendra & Ostrom 2012) and neglecting realities on site.

While various small-scale SESs have outlasted for centuries due to relative abundance of resources and by adapting their institutions to natural changes (Berkes & Folke 1998, Janssen et al. 2007), humanity now threatens its own survival by severe overuse and degradation of natural systems and their services (MEA 2005). Several authors therefore point out that in a world of human-dominated ecosystems, the complexity inherent to social-ecological systems must be addressed and integrated in conceptual frameworks, instead of using reductionist oversimplifications as panaceas (Ostrom 2007, Ostrom & Cox 2010; Brondizio et al. 2009; Cash et al. 2006; Gibson et al. 2000).

How to address complexity? The concept of governance and its specifications

Obviously, the coupling of social and environmental systems in the form of SESs is nothing new per se; mankind and human societies ever since have been co-evolving with their natural environments. However, what has been changing is on the one hand our impact (see Chapter 1; including increased complexity) and on the other hand our understanding and view of natural systems and human-nature interaction. Traditionally, scientific approaches either focussed on specific aspects of social OR natural sciences, neglecting the integrative power of multidisciplinarity to address complex SES-problems and holistic governance strategies (Ostrom & Cox 2010) (see **Fig. 2.6.1** in Annex). In recent years, however, landscape and ecosystem approaches (CBD 1994), the classification of (large-scale) eco-system services (MEA 2005) as well as integrative frameworks of governance appeared and gave way to more holistic perceptions of SES (Ostrom 2007, 2009) (see **Fig. 2.6.2** in Annex).

Governance in fact can be seen as the key element that regulates human-human, as well as human-nature interaction. As it became a buzzword being used in a wide array

of contexts, there is no single conclusive definition of the term (Lee 2003, Benz 2004). Lemos & Agrawal (2006) refer to environmental governance as being "synonymous with interventions aiming at changes in environment-related incentives, knowledge, institutions, decision-making, and behaviours", more specifically it describes "the set of regulatory processes, mechanisms and organizations through which political actors influence environmental actions and outcomes". Governance hence is essentially used to describe arenas of interaction among different actors (e.g. including governmental officials, resource users, entrepreneurs, NGOs) that are regulated by specific rule settings. These rule settings might be formal or informal, de jure or de facto, being imposed in a top-down manner or evolving as societal norms and struggle their way into formal frameworks. Rule systems, or institutions, are prescriptions "used to organize all forms of repetitive and structured interactions" (Ostrom 2005); they hence "structure incentives in human exchange" and lower transaction costs by reducing uncertainties (North 1990). In analogy to sports, North (1990) calls institutions the rules of the game and defines organizations (like political, economic or social bodies) as the players that pursue specific strategies. Based on the works of North and Ostrom, we define governance for the purpose of this study as the *institutional and organisational framework, in which actors follow specific strategies in order to meet their aims, and who are thereby connected through a multitude of different processes to each other and various forms of contexts (e.g. historical, biophysical)*. The term "management" is closely linked, but rather refers to the processes in the latter part of the definition, i.e. the activities being carried out by actors on the operational level or "the products of applied governance" (Lockwood 2009).

The discussion about governance of natural resources has for a long time centered around the "tragedy of the commons", based on Garret Hardins seminal publication in Science in 1968 (Nagendra & Ostrom 2012). Hardin states that any resource considered as common is inevitably subjected to a process of degradation, as any rational user tries to maximize his personal benefit and thereby neglects negative consequences for the user community (Hardin 1968). His example of an open pasture illustrates the principle and has often been used in contextual discussions.. In line with contemporary events – a world polarized by market economy and communism- he proposed two alternative remedies: privatization or centralized government authority to regulate resource access and exploitation. Since then the debate on the best property

right regimes for the governance of shared natural resources is ongoing (Ostrom & Nagendra 2006) and scholars of various disciplines criticized Hardin to have neglected the broad spectrum of collective action and the successful development of self-governing institutions by local resource users (Dietz et al. 2003, Gibson et al. 2005). Research indeed revealed many positive institutional arrangements and management regimes on this level (Ostrom 1990, Agrawal 2001). However, from a general perspective, successes and failures were found for all the rough types of governance (private property, common property and government property) (Gibson et al. 2005), and today there is a brought spectrum of hybrid environmental governance regimes being practiced all over the world (Lemos & Agrawal 2006).

The institutional and organisational structures associated with these three basic types of governance are hierarchies (often associated to governmental organisation), markets (associated to private actors) and networks (often associated to collective action) (Birner & Wittmer 2000). Networks as functional hybrid regimes have the potential to avoid or minimise the pitfalls of hierarchies (like rigidity, excessive bureaucracy and principal-agent problems) and markets (opportunism and uncontrolled externalities), and so to combine the advantages of both (e.g. better long term reliance on partners, flexibility and exchange of reliable information) (Powell 1990). In fact, facets of all of these structures intermingle in any given governance regime, and all kind of action is embedded in (network-) structures of social relation (Granovetter 1985).

This structural mix also has repercussions on the model of the individual: individuals hence often do not adjust their personal payoff-functions that calculate personal costs and benefits of a specific action to a pure homo-economicus-model or according to formal rule settings, but rather integrate a "delta parameter" determined by social norms in their decision-making (Ostrom 2005). This delta parameter refers to intrinsic motivations associated to costs or benefits like guilt when breaking a norm or pride when obeying a norm (Ostrom 2005). Individuals hence pursue their strategies under "constraints of limited cognitive and information-processing capability, incomplete information, and the subtle influences of cultural predispositions and beliefs." (> *Behavioural Rational Choice Theory*) (McGinnis 2011b). Social capital on the community level based on these norms, trust, trustworthiness, and reciprocity (Ostrom & Ahn 2003, Powell 1990) hence represents one fundamental factor to influence individual behaviour and solve social dilemmas and collective action problems (Ostrom

2002; Andersson & Ostrom 2008). Incentive based governance strategies that try to influence resource users' behaviour by imposed formal rule settings, e.g. by using new taxes, better enforcement and stronger penalties (Agrawal & Lemos 2007) are in many cases necessary (Ostrom et al. 1999), but have to acknowledge the potential role that these delta-parameters can play in achieving the willingness of individual resource users to cooperate.

There is a general trend for environmental governance systems (including PAs) to get more diversified and involve a growing number of stakeholders (Agrawal & Lemos 2007), and at the same time to assimilate network-like structures characterized by a top-down shift of powers and enhanced participation (Dearden et al. 2005, Andersson 2006). In other words: the central state as the prime agent of environmental governance is losing importance in favour of market-inspired mechanisms and community based forms of governance (Lemos & Agrawal 2006; Agrawal & Lemos 2007). In many developing countries these shifts of deconcentration (shift within governmental hierarchies), decentralisation (shifts from central governments to local governments) and privatisation (shifts from governments to private actors/ markets) of natural resource governance are taking place within a fragile framework of complicated state building and national restructuring processes involving i.a. political, financial and administrative devolution (Agrawal & Ribot 2000). Reasons for these changes are manifold and include the lack of economic means of many countries to manage their environmental sectors, the higher efficiency of markets compared to hierarchies, the inclusion of negative externalities of economic activities in environmental accounting, as well as effective usage of local place and time information for decision-making processes and the promotion of participation and downward-accountability in the course of democratization (Lemos & Agrawal 2006). These processes of devolution, however, involve risks as those in charge are often unwilling to share power (Ribot et al. 2006). Criticism therefore often focuses on the aggravation of social and economic inequalities: traditional and informal networks dominated by patronage and asymmetric power relationships, as well as market-based mechanisms ("neoliberalism") might additionally embody forms of elite capture and thereby further hampering real democratic decentralisation processes (Andersson 2006; Lemos & Agrawal 2006).

Design principles for effective governance regimes

Instead of focussing solely on governance structures, the underlying principles of governance regimes increasingly came to the fore with the evolution of a vast array of hybrid regimes. These principles describe i.a. more directly the distribution of rights and powers of access, withdrawal, management, exclusion and transferability within the sector of resource exploitation (see **Tab. 2.2** in Annex) (Schlager & Ostrom 1992; Agrawal 2001). Such property rights are an important subset of the general institutional setting that e.g. allow functioning markets to come up by providing security of tenure (Lemos & Agrawal 2006) and impact the structure of incentives (costs & benefits) for resource users involved (Agrawal & Ostrom 1999). Without these rules, substantial free-riding in the form of overuse and lack of contribution to resource maintenance and improvement is likely (Ostrom et al. 1999). As common pool resources (CPRs) are characterised by costly and difficult exclusion of beneficiaries and a high degree of subtractability (exploitation of one user reduces availability for others) (Becker & Ostrom 1995), these settings – *open access* to *common pool resources*- are indeed likely to cause the tragedy of resource degradation described by Hardin.

Owners possess the largest bundle of property rights, and are consequently supposed to experience the strongest incentives to invest in the improvement of the resource system (Schlager & Ostrom 1992; but see Gilmour et al. 2012). However, they are not the only users who care about long-term sustainability: also proprietors were found to make similar investments, and claimants to adapt their management accordingly (Schlager & Ostrom 1992). According to this classification, empowerment of local resource users can take different forms, and property rights can be divided among different actors. Key for any well functioning resource exploitation system are hence well defined and implemented property rights on a national and local level (Nagendra & Ostrom 2012), and the transfer of at least specific management rights to local resource users.

Success factors & facilitating conditions

Rapid social, economic and ecological changes are particularly challenging to the establishment of stable governance and management regimes (Armitage et al. 2009).

Many of the involved processes need considerable periods of time to mature, e.g. trust building, social learning, evolution of working rules and conflict resolution mechanisms. Ideal conditions for governance that enable these processes to work on rather small scales and buffered from outside influences are increasingly rare (Dietz et al. 2003). Furthermore, the diversity of resources, users with specific value systems and mind-sets, formal and informal rule settings, as well as contexts, make it impossible to determine a strict normative approach, or a blueprint for governance. However, best practice is guided by the definition of qualitative criteria summarized under the header of *good governance*, and the evaluation of past experiences delivered a set of success factors and facilitating conditions for the governance of common pool resources. **Tab. 2.3** in Annex summarizes principles of good governance as presented by UNDP in 1997. They were meant to guide societies in promoting, supporting and sustaining human development (UNDP 1997). Various adaptations of these principles refer to different fields and subjects of governance. Graham et al. (2003) and Lockwood (2010) for example discuss principles of good governance for protected areas based on the UNDP principles.

More specifically in the context of natural resource management, several scholars evaluated governance systems with a focus on common pool resources and collective action on a local level (Armitage et al. 2009). Though being less well tested quantitatively and in other settings, most of the governance principles extracted seem to be of general importance for the regulation of human interaction, and should be applicable to larger scales of organisation as well (Costanza et al. 1998; Dietz et al. 2003). Major challenges of this up-scaling, however, are higher population numbers involved, higher cultural diversity characterized by differentiated interests and understandings, complications of interlinked CPRs and decoupling of causes and effects, accelerating rates of change (learning by doing is increasingly difficult), and the fact that most resources reached their harvesting limits (no more alternatives available, e.g. space for migration) (Ostrom et al. 1999).

Success of governance can be measured in many ways, e.g. to what degree outcomes match the principles of good governance like efficiency, effectiveness or equity. Common denominator of the most important review studies cited in the following is the robustness/ durability of governance settings. **Tab. 2.1** displays the results of a review conducted by Agrawal (2001) that integrates research by Ostrom (1990), Wade (1988)

and Baland & Platteau (1996). Agrawal clustered the enabling conditions for robustness of governance into four broad categories: (1) characteristics of the resources, (2) nature of groups that depend on resources, (3) particulars of institutional regimes that govern resource management and (4) the kind of relationship between a group and external context factors (e.g. markets, states).

Tab. 2.1: Important enabling conditions for sustainable management of CPRs; from: Agrawal 2001, adapted according to Ostrom 2005; RW= R. Wade; EO= E. Ostrom; AA= A. Agrawal; B&P= Baland & Platteau

Category	Factor/ condition/ principle	Author
Resource system characteristics	Small size	RW
	Well-defined boundaries	RW, EO
	Low levels of mobility	AA
	Possibilities of storage of benefits from the resource	AA
	Predictability	AA
Group characteristics	Small size	RW, B&P
	Clearly defined boundaries	RW, EO
	Shared norms	B&P
	Past successful experiences -social capital	B&P, RW
	Appropriate leadership – young, familiar with changing external environments, connected to local traditional elite	B&P
	Interdependence among group members	RW, B&P
	Heterogeneity of endowments, homogeneity of identities and interests	B&P
	Low levels of poverty	AA
Relationship between resource system characteristics and group characteristics	Overlap between user group residential location and resource location	RW, B&P
	High levels of dependence by group members on resource system	RW
	Fairness in allocation of benefits from common resources	B&P
	Low levels of user demand	AA
	Gradual change in levels of demand	
Institutional arrangements	Rules are simple and easy to understand	B&P

	Locally devised access and management rules	RW, EO, B&P
	Ease in enforcement of rules	RW, EO, B&P
	Graduated sanctions	RW, EO
	Availability of low cost adjudication; conflict resolution mechanisms	EO
	Accountability of monitors and other officials to users	EO, B&P
	Proportional equivalence between benefits and costs	EO
Relationship between resource system and institutional arrangements	Match restrictions on harvest to regeneration of resources	RW, EO
External environment	Technology	
	Low cost exclusion technology	RW
	Time for adaptation to new technologies related to the commons	AA
	Low levels of articulation with external markets	AA
	Gradual change in articulation with external markets	AA
	State	
	Central governments should not undermine local authority; minimal recognition of rights to organize	RW, EO
	Supportive external sanctioning institutions	B&P
	Appropriate levels of external aid to compensate local users for conservation activities	B&P
	Nested levels of appropriation, provision, enforcement, governance	EO

This list is not exhaustive, and not all variables are important in all settings. External partners e.g. often stress the importance of technical capacity on the local level and the need for secure funding (Andersson 2006; Togridou 2006; Brooks et al. 2012).

Interdependencies among factors are complex and also depend on a vast variety of further internal and external context conditions (see e.g. Chapter 1, Tab. 1.2). As for any complex systems and contingencies, the whole is more than the sum of its parts. There are emergent properties of well functioning governance systems that develop as a result of the enabling conditions presented here; alternatively, however, the question of cause and effect might also be answered vice versa and other characteristics might facilitate the enabling conditions required for sustainable governance cited in Tab. 2.3). Among them are adaptiveness of the system frameworks when confronted to change (Nelson et al. 2007), reduced transaction costs of governance and management processes, as well as enhanced human (referring to capacities of actors involved) and social capital. Though the latter already occurs in the initial list, we repeat it here as it grows through functioning processes of interaction (e.g. Ostrom 2000). All these variables hence have to do with dynamics and evolution of governance systems, and are crucial elements that have to be addressed in external interventions. Especially in multilayered governance systems the linking of levels and organizations by bridging organizations (cut-points in networks) and leadership (providing vision) become additional critical factors (Folke et al. 2005, Gutiérrez et al. 2011; Olsson et al. 2007).

Adaptiveness to new challenges (or as fine-tuning of processes due to experiences made in a rather “constant” setting) is dependant i.a. on communication and social learning (Armitage et al. 2009, Berkes 2009). The process of learning-by doing is presumably better established in rather small groups that share common norms and that are connected through dense social networks. Repetitive interactions, face-to face communication (Dietz et al. 2003), as well as clear rule settings and well established conflict resolution mechanisms also help fostering trust, trustworthiness and are hence essential for social capital to grow (Ostrom & Ahn 2003). This form of social coherence helps to lower information asymmetries among actors (Birner et al 2002) as well as uncertainties and transaction costs of many processes, e.g. of monitoring and enforcement (Mburu et al. 2003). It is also key for the establishment of legitimized instances of social control.

Types of governance: the example of PAs

Protected areas can be seen as bundles of natural resources that are spatially related and also connected by some kind of overarching governance regime. PAs as well as single resources can mean different things and have different values depending on stakeholder. The establishment of PAs by some higher level of legal authority basically alters property right regimes and introduces new restrictions on resource exploitation. Prior used informal consent on usage based on locally evolved rules and traditions is often ignored and implicit entitlements and personal relationships tend to be eliminated (Baland & Platteau 1996; in Agrawal 2001). Many PAs consequently face severe opposition on the local level (Mannigel 2008).

If there is no consequent implementation and enforcement of the new rule settings in a scenario like this, potentially accompanied and amplified by eroding social capital (due to e.g. population growth or migration), illegal exploitation thrives and might result in a *de facto* tragedy of the commons. Unfortunately, this is what happens in a large proportion of PAs worldwide, creating so-called *paper parks* (Brandon et al. 1998) (see Annex **Fig. 2.7.1**). Rule enforcement, i.e. regular monitoring and sanctioning, is a key element for the conservation of PA integrity (Bruner et al. 2001, Gibson et al. 2004) - either practiced by resource users themselves or governmental authorities (Gibson et al. 2004, Hayes & Ostrom 2005). However, it proved to be extremely costly in cases where laws are not perceived to be legitimate by those expected to comply with these rules (Hayes & Ostrom 2005, Ostrom & Nagendra 2006). Nevertheless, for decades the states usually were exclusive holders of PA property rights and the resulting biocentric “fines and fences” approach focused on keeping people actively out of parks (e.g. Barrett & Arcese 1995) (see Annex **Fig. 2.7.2**). Formal rules in this setting are imposed by governmental authorities and monitored and enforced by park rangers. These approaches have at least in some instances been remarkably successful in providing a continuous supply of ecosystem services (Armitage 2012), even though at considerable social cost (e.g. concerning forced relocation of local communities) (Schmidt-Soltau & Brockington 2007; Lele et al. 2010). Disregard of needs and aspirations of local resource users, however, spurs conflict and raises general concerns on moral and legal aspects of excluding people from parks (Neumann 1997, Wells & McShane 2004). *Participation* of resource users consequently emerged as a new

paradigm in nature conservation and PA management since the late 1980ies, however, often without further detailed differentiation what is meant by the term: who is meant to participate in which issues to achieve which goals? (Sayer & Wells 2004). Since then the appropriate balance between state and community as the primary source of institutions to structure social and socio-ecological interaction remains debated (Singleton 2000). Like fortress approaches, participatory approaches delivered rather mixed results and generally stayed behind their expectations (Barret et al. 2001; Wilshusen et al. 2002; Berkes 2004). This holds especially true for coupled conservation and biodiversity outcomes. Several authors are therefore calling for a renewed emphasis on authoritarian protection of protected areas (Kramer et al. 1997; Oates 1999; Terborgh et al. 2002), however tend to ignore the social, economic and political contexts (Wilshusen et al. 2002), including key aspects of the good governance concept (Brechin et al. 2002).

The World Conservation Union IUCN and the CBD acknowledged a four-level categorisation of governance types for PAs in addition to the IUCN management categories (Borrini-Feyerabend et al. 2006, Borrini-Feyerabend 2007): (1) government protected areas, (2) private protected areas, (3) community conserved areas (an idea rapidly developing in recent times, also called *indigenous and community conserved areas* (Berkes 2009b)), and (4) co-managed protected areas (shared governance). Co-management corresponds to the hybrid regimes that unite different groups of stakeholders of multiple levels in formal and informal networks, functionally sharing responsibilities, rights and duties (Carlson & Berkes 2005). Participation of local resource users and their communities can take many different forms within a co-management setting. Accordingly various terms are used for these regimes that have "biodiversity conservation as one of its goals and some form of community involvement as its approach" (Lele et al. 2010), including community-based conservation (which is also often used for conservation activities initiated by communities themselves). Several authors described the nature of participation as a continuum, ranging from minimal or passive participation (being informed), through different forms of information exchange and sharing of decision-making power, to a transfer of primary responsibility to/ self-mobilization of local communities (Pretty 1994, Pimbert & Pretty 1995, Mannigel 2008). In reality, though, there might be different forms of participation implemented at the same time within a single PA governance system: resource users can participate in a

decision-making process on an interactive basis, while only being informed about some other process without playing any further role. Furthermore we consider it practical to differentiate between participation in decision-making (choosing between alternatives) and problem-solving (generating these alternatives) (Simon 1989 in Carlsson 2005) processes on the one hand and participation in operational tasks on the other hand, reflecting different dimensions of local empowerment (similar to Schultz et al. 2011). For the analysis of co-management networks, it is also necessary to understand that neither local communities, nor the state are unitary, homogeneous actors. While communities might involve diverse subgroups of gender, ethnicity or socio-economic group (each with its own interests) (Agrawal & Gibson 1999, Carlson & Berkes 2005), the state is internally also divided in distinct authorities, each having its own strategies and objectives (Agrawal & Ostrom 1999, Carlson & Berkes 2005). Dimensions along which political actors struggle for increased power are consequently horizontal and vertical in nature (among the different levels of governmental hierarchies) (Agrawal & Ostrom 1999).

A simplified operational model of a PA co-management arrangement is given in **Fig. 2.1**. Different levels of governmental hierarchies, private actors and local communities interact in a network-like structure according to formal and informal rules. Conservation and exploitation interests differ among these groups and determine individual, respectively corporate strategies. In advanced systems village participatory bodies (vpb; e.g. committees, associations) effectively act as bridging organisation by bundling and channelling individual resource users' concerns (bottom-up function) and also mediating the suits of private or governmental actors directed at the resource user level (top-down function). They "provide an arena for knowledge co-production, trust building, sense making, learning, vertical and horizontal collaboration, and conflict resolution" (Berkes 2009). Spatial and temporal zoning of PA resources allows for diversified and shared property regimes. Many larger PAs are made up of strict conservation and multiple-use zones. The latter serve as buffer for the conservation core while the conservation zone itself ensures resource regeneration and influx to exploitation areas. Local communities and resource users might be granted official higher level property rights here (including rights of management and exclusion). Spatial and/or temporal zoning is also used to lease specific withdrawal rights to private concessionaires, e.g. hunting in specific areas/ during specified hunting periods. Economic gains of these actors often help

funding PA management activities and/or local development initiatives. States hold full ownership at least of core zones (e.g. national parks) and have by definition the legal monopoly to use coercive power (Birner & Wittmer 2003) in the case of rule infraction. **Fig. 2.8** in Annex summarizes the key mechanisms of devolution taking place between the three groups of actors (similar to Lemos & Agrawal 2006) and main institutional settings they add to the system. In many developing countries, there are also external partners providing technical and financial assistance to other actors, foremost to governmental organisations and communities. Due to their status based on financial power and relative neutrality, they also often fulfil the role of bridging organizations facilitating processes and interactions among actors (Birner et al. 2003).

Worldwide co-management arrangements like these are gaining in importance as other regimes largely failed to create effective linkages between the public sector, the private sector and communities (Hanna 1998; Mburu et al. 2003). Whether understood as multi-facetted networks (Wilson et al. 2006), relational contracts (Birner 1999) or continuous, path-dependant problem-solving processes (Carlsson & Berkes 2004), they all describe hybrid regimes of governance that are characterized by some form of information- and power-sharing. Though reducing efficiency, a certain degree of redundancy of partners by function often is needed in such arrangements (Berkes 2007) and was found to improve system resilience (Olsson & Folke 2001, Berkes 2009) like polycentricism in general does (Carlson & Berkes 2005; Ostrom 2005, Nagendra & Ostrom 2012). So despite high initial transaction costs associated to such arrangements (Mburu et al. 2003), as well as other challenges encountered in most real life settings (e.g. lack of capacity of involved actors (Berkes 2007)), their inherent institutional and organisational diversity seems most promising for long-term sustainable solutions for complex resource and PA governance.

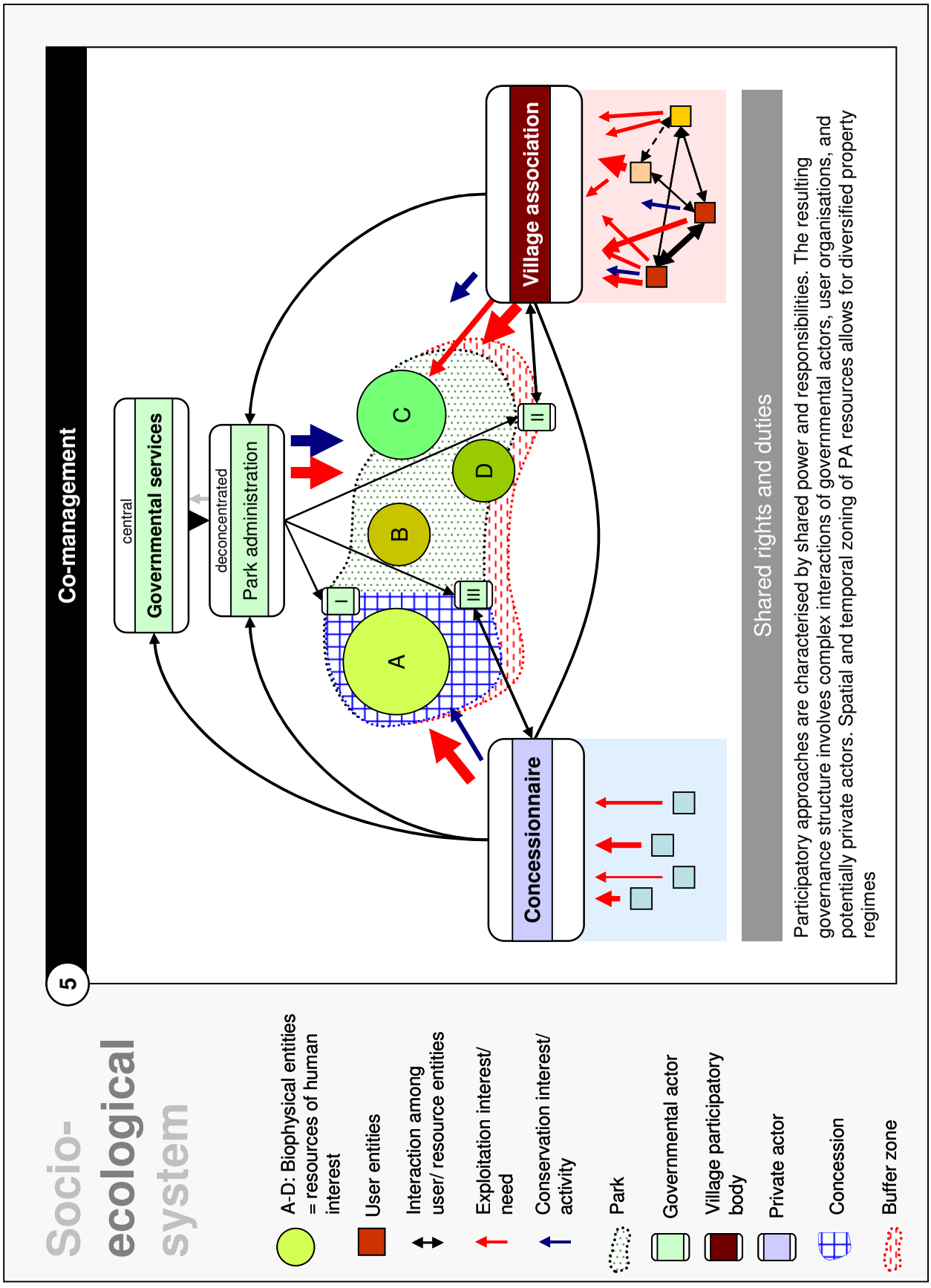


Fig. 2.1: Complex co-management arrangements that share rights and duties among different stakeholders

2.2 Analysing governance diversity: the institutional analysis and development framework (IAD)

In their quest of dissecting complex systems of human interaction and relating institutional processes to outcomes, Ostrom (e.g. 1990) and others developed a conceptual framework called the institutional analysis and development framework (IAD). The appeal of this framework, which is widely used in various sectors today, derives from its power to identify the major types of structural variables that can be found to some extent in all institutional arrangements (Ostrom 2011). It is consistent with game theoretic modelling as well as other concepts originating from the new institutional theory (e.g. transaction cost theory) (Ostrom 2011). In recent years, the IAD also significantly stimulated the development of a multi-tier diagnostic approach for the analysis of SES (McGinnis 2011b).

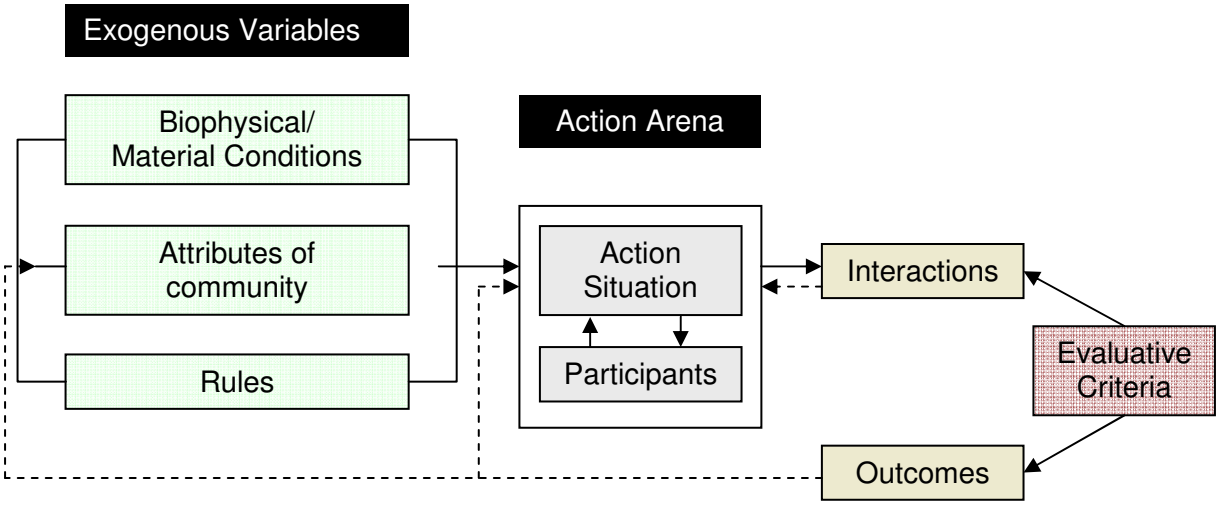


Fig. 2.2: Framework for institutional analysis (Ostrom 2005; adapted from Ostrom et al. 1994)

The central part of the IAD is the action situation, describing the "social spaces where individuals interact, exchange goods and services, solve problems, dominate one another, or fight" (amongst other things) (Ostrom 2011). This situation, or action arena[1], is influenced by exogenous variables, foremost the biophysical/ material conditions,

[1] Originally an action arena was defined as containing an action situation and respective participants as separate component. However, as participants and their characteristics are also defined by positions within the action situation, there is nowadays no more separation between action arena and action situation, respectively usually the first term is not used anymore (Ostrom 2011, McGinnis 2011). In this study we use both terms interchangeably: action situation = action arena

attributes of the community and the operational rules in use (**Fig. 2.2)** Internally action situations/ arenas are structured by seven working parts (Ostrom & Cox 2010).
These are: (1) the set of participants, (2) the positions to be filled by participants, (3) the potential outcomes, (4) the set of allowable actions and the function that maps actions into realized outcomes, (5) the control that an individual (respectively corporate actor) has in regard to his function, (6) the information available to participants about actions and outcomes and their linkages, and (7) the costs and benefits (serving as incentives and disincentives) assigned to actions and outcomes (Ostrom 2005) (see **Fig. 2.3**). These core micro variables hence affect the preferences, strategies and actions of participants (Ostrom & Cox 2010), and are in turn affected by rules that emerged as the outcome of interactions in an adjacent action situation at a different level of analysis (McGinnis 2011b) (see **Fig. 2.4**).

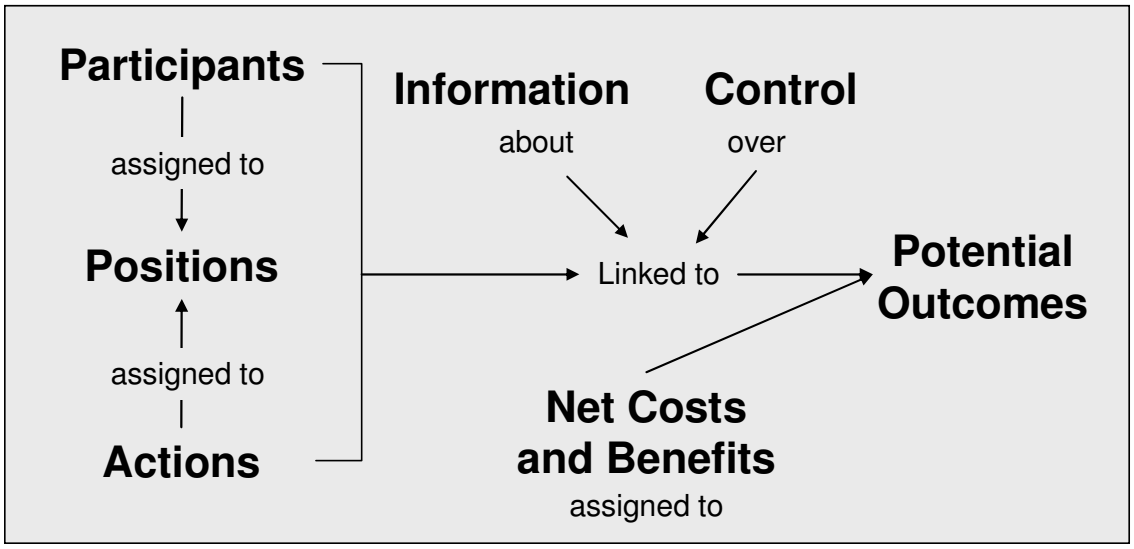


Fig. 2.3: Structure of an action situation on the micro-level (Ostrom 2005)

For each working part, there is hence a respective group of rules. When analysing situations of resource exploitation on an operational level, they are all more or less closely linked to the governing property rights regime. McGinnis (2011) offers concise explanations of these rules:

- *Position rules* specify a set of positions, each of which has a unique combination of resources, opportunities, preferences, and responsibilities.

- *Boundary rules* specify how participants enter or leave these positions. They are hence associated to the exclusion of "external" users and free-riders.
- *Choice rules* specify which set of actions is assigned to which position.
- *Aggregation rules* specify the transformation function from actions to intermediate or final outcomes. The determine whether a decision of a single participant or of multiple participants is needed before action is taken (Ostrom 2005)
- *Scope rules* specify a set of outcomes. They affect a known outcome variable that must, must not or may be affected as a result of the actions taken (Ostrom 2005).
- *Information rules* specify the information available to each position.
- *Payoff rules* specify how benefits and costs are required, permitted, or forbidden to players.

Like action arenas, all rules are nested in other sets of rules at several levels. Usually at least three levels of rule-making are distinguished (Ostrom 2005). Operational choice rules prescribe the implementation of practical decisions by those taking part in operative action situations. The setting of these activities is determined by collective-choice rules. This includes i.a. the definition of who is eligible to take part in operational situations and how the rules of operational situations can be changed. Constitutional choice arenas finally describe the process through which activities on the collective choice level are defined (see **Fig. 2.4**). Though these levels reflect some kind of hierarchy that might easily be associated with governmental authority and structures of the state, the application of this framework is by far more universal. All three levels can e.g. be found within the setting of a traditional village community in which the constitutional level is represented by village elders, the collective choice level e.g. by some socio-economic group and the operational level by some delegates of this group. The same individuals might be part of all three levels as well. The application of the framework is hence relational and (like for action arenas) the level of analysis has to be well defined and evaluated in advance.

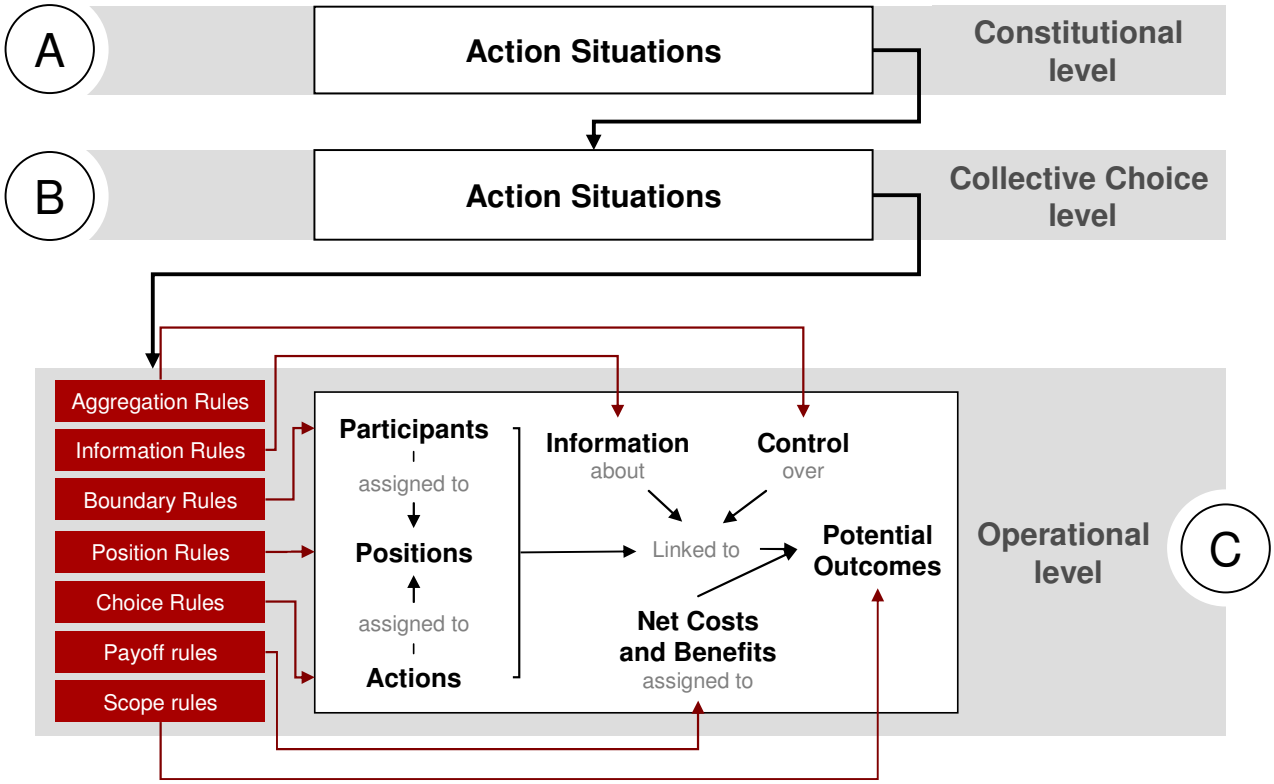


Fig. 2.4: Levels of analysis and rules affecting the elements of action situations (adapted from Ostrom 2005)

Action arenas are linked vertically in a nested design. Additionally, they are also linked horizontally. This means that potential outcomes of one situation may enter adjacent situations in various forms, i.e. networks of action situations emerge on the basis of the seven different types of rules that define an action situation (McGinnis 2011). Though it might prove difficult to specify the nature of these linkages, the enlargement of the concept is especially useful for the analysis of polycentric systems of governance (McGinnis 2011) with all its multi-level, multi-scale, multi-sectoral and multi-functional forms of interaction (McGinnis2011b).

Participants of these situations might be linked in various ways. These social networks do play an important role for the dynamics of action situations, however, remain analytical separate from the relations between the situations themselves. **Fig. 2.9** in Annex provides a rough-scale example of such a network.

The IAD framework hence allows analysing all kinds of institutional and organisational settings in a very flexible way. Depending on the research question, the focus might

either be on single arenas or integrate the context by constructing a network of adjacent action arenas. As well, it might shift and zoom in and out to specific aspects and so follow key processes from the planning to the implementation phase. Besides a mere description of institutional and organisational settings, it also facilitates the integration of other theories and concepts, like transaction-cost theory, the concept of social capital or stakeholder analysis. Due to this broad spectrum of potential applications and its universal character, we chose the IAD framework as logical background for our analysis. The second part of the thesis will therefore start with an introducing chapter and the construction of an operational PA governance model based on the IAD principles.

PART II
Empirical Analysis

Chapter 3

Logical Framework

And conceptual PA governance and management model

Part II focuses on the governance regimes of the W-Arly-Pendjari (WAP) protected area complex of Burkina Faso and Benin. Due to organisational, financial and temporal constraints, we had to omit the Niger part of the complex from our analysis (see Fig. 4.1). Our assessment is based on extensive field work in the years 2007-2009 and hence gives a snap-shot of a highly dynamic institutional and organisational governance regime for this period: project interventions as well as names and structures of governmental services changed even within this timeframe. The findings presented here largely rely on own field work, however, are supplemented with data that was kindly provided by other scholars. To a large degree we also integrated information derived by review of scientific and grey literature, especially for the analysis of context conditions.

The introducing chapter (Chapter 3) of Part II starts with a general description of the institutional and organisational setting of PA governance and management approaches implemented in the study region. It then condensates concepts introduced in Part I to a governance and management model that links all different interdependent parts of the study in an integrative and causal way.

The second chapter of Part II (Chapter 4) describes the geographical, biophysical, social and socio-economic contexts of the study site and also gives an overview of the methodological approach. More detailed information on methods and data analysis is provided in respective chapters.

Chapter 5 presents some of the core findings: the benefits, problems and conflicts perceived by local resource users due to PA existence. Differences between ethnic groups and block affiliation are subsequently elucidated.

Resource users' linkages to and perceptions of other key stakeholders of PA governance are treated in Chapter 6. One of the central questions here is the correlation between the perception of benefits and problems and the way other stakeholders are appreciated by resource users.

Having analysed these linkages between actors, we focus on the role of village participatory bodies as bridging organizations between resource users and governmental and private actors in Chapter 7. An extensive assessment based on qualitative interviews sums strengths and weaknesses of their capacities and functional roles.

The evaluation of ecological outcomes produced by the different governance regimes proved difficult. Nevertheless we summarize our findings on big mammal population dynamics and land cover change in Chapter 8. Additionally we also asked resource users about their perception of resource evolution in recent times and present results here.

Finally, Chapter 9 summarizes the findings, reflects final assumptions and gives an outlook underpinned by recommendations derived from our results.

3.1 PA management in Burkina Faso, Benin, West Africa – an introduction to the institutional context

In both countries covered by our study, there have been major shifts in nature conservation policy, institutional and organisational structure during the last twenty five years. They have not been terminated yet and go along with profound state-building transformation- and decentralisation processes.

Since the 1990ies, the states of Burkina Faso and Benin had demonstrated their willingness to act upon the challenges of degrading resources by accepting their national and international obligations concerning the preservation of biodiversity. They signed several international treaties and conventions, like the Convention on Biodiversity (CBD) or the Convention to Combat Desertification (UNCCD). At the same time they have integrated fundamental social and ecological principles of modern protected area governance, like participation of local communities or the ecosystem approach in their legislations, policies and programmes. More than 39.000 km^2, which approximately corresponds to 14% of its national territory, have been designated as protected areas in Burkina Faso, and even 24% of the total terrestrial surface became protected in Benin (MDG 2011). Furthermore, international financial and technical donors have been attracted and actively taken part in ambitious programmes to implement policies into effective management of these classified areas.

However, despite all efforts, the preservation of biodiversity and the management of protected areas in both countries still face major obstacles and challenges to become effective. There are various judicial, institutional, socio-economic and bio-physical constraints that impede the success of above mentioned actions.

Current conservation strategies in Benin and Burkina Faso are affected by the widespread shift of paradigms and developed from strict “fines and fences”, i.e. authorative approaches to co-management and community based approaches (see Chapter 2). Most of the protected areas existing today have already been classified in one form or the other during the colonial period and served for most of their time as hunting grounds for political elites. Local communities were kept out of faunal reserves by force and were even relocated. Conflicts between authorities and neighbors of PAs were prevalent, though rather limited in scale due to low population and exploitation

pressures. This formal situation governing PA management did not change until the early 1990ies, when Benin and Burkina Faso initiated democratic decentralization processes in all sectors of policy. Both countries formally left behind their colonial and socialist heritage of highly centralized governance structures, characterized by direct rule strategy (Njoh 2000). The new PA governance approach of hybrid regimes, which is itself essentially a process of decentralization and privatization, was consequently embedded in a fragile framework of complicated national decentralization and deconcentration processes. Being among the poorest nations in the world, however, the governments of both countries faced limited capacities and strong constraints to implement such complex institution building (WB 2002).

Generally PA governance approaches that were implemented in the WAP area at the time of our study corresponded largely to the scheme described in Chapter 2.1, hence to a co-governance regime characterized by a division of rights, duties and revenues. This organizational setting was made up of three principal groups of actors: the governmental services, the concessionaires and local communities adjacent to protected areas. Furthermore, external partners played an important role in financial and technical support which was usually implemented in the form of projects. In fact, donor engagement in PA management reaches back as far as the 1970ies, and presumably had strong impact on the governance framework since then. (A list of important projects in the area can be found in the Annex of this chapter.) Areas adjacent to PAs, respectively PAs themselves, were transformed to hunting areas for big game hunting and contracted to authorized claimants holding partial management rights as well. Most management tasks, however, had to be coordinated with the governmental service in charge for respective PAs (surveillance e.g. formally rested within state authority). Concessionaires were obliged to invest in adequate infrastructure that enabled economic exploitation via (hunting) tourism and successfully run the sports hunting business in their concession. These rights and obligations of both parties were formally fixed in a catalogue of duties that also obliged concessionaires to support local communities adjacent to their zones. The lease and various fees that concessionaires paid to the government were usually shared between all three actors to varying degrees in both countries. Property rights of local communities were restricted and usually only allowed for place and time bound withdrawal rights for specific resources. Their share of the economic benefits generated by private concessionaires hence can be understood

as compensation payments for exploitation options foregone. The role of local resource users and village participatory bodies will be treated in detail in the following chapters.

Burkina Faso

Burkina Faso faces strong limitations and constraints due to its biophysical context. Mineral resources are relatively rare and, being landlocked, there is no access to marine resources. This means there is up to now little tangible alternative to the sustainable exploitation of the primary sector and terrestrial faunal and floral resources for enhancing development.

In 1996/97 Burkina adopted a new Forestry Code (Loi 006/97/ADP), that was based on two basic principles. First, it emphasized a clear commitment to the valorization of natural resources in order to stimulate local and economic development as a whole. And second, it gave way to the new form of tripartite co-management by acknowledging the Government, the civil society and private entrepreneurs as legal stakeholder groups. Burkina Faso carried out these reforms because it widely lacked adequate financial resources to effectively manage its protected areas (UNDP/GEF 2005). Howsoever, this new approach was in line with other laws and programs guiding the combat against poverty or the reorganization of property right regimes, and hence was supported by international technical and financial assistance.

The network of protected areas in Burkina Faso consisted of more than 80 sites that were managed under governmental authority, and a high number of relatively small areas that were managed by decentralised local authorities on the communal level (see **Fig 3.2** in Annex). The majority of PAs belonged to the category of Classified Forests. They varied in size from 40 ha to approximately 100.000 ha and were scattered mostly in the West and South West of the country. Traditional exploitation of resources for subsistence purposes was principally allowed to local people. In theory, decentralised local authorities (i.e. majors and community councils) could proclaim themselves classified forests as communities were owners of the forests on their territory (if not classified otherwise by national legislation). However, due to a lack of capacity on the

one side, and a general slow pace of any decentralization process in the country, none such forest existed until the end of 2008.

There were ca. 12 Classified Forests that were managed primarily for their faunal resources. Within the reforms of the forestry sector of the mid 1990ies, they were clustered with the other categories of government led reserves (National Parks, Ranches, Partial and Total Faunal Reserves) to administrative entities called “Protection Units” (*Unité de Protection et Conservation,* UPC). One protection unit usually contained one to several PAs, respectively hunting concessions. Each UPC was lead by a governmental conservator, who was in charge of the surveillance and other management tasks.

The Ministry of Environment *(Ministère de l’Environnement et du Cadre de Vie,* MECV) and its departments formed the top level management and determined national conservation policies (see **Fig. 3.3** in Annex). They established and kept contact with international donors and promoted and implemented national conservation programs. In recent history (since 1990), there have been ongoing changes in the institutional setup on this level. The result was a multitude of different actors, and a fragmentation of competences and accountabilities. There was an institutional branch that was strictly organized in a paramilitary way and mainly in charge of the surveillance of the protected areas (“Paramilitary Corps”, left side in **Fig. 3.3** in Annex). All above mentioned “conservators” and local foresters formed part of this branch.. A second institutional branch was in charge of more administrative and strategic tasks, but was acting on the local level as well via its deconcentrated service (on the local level often represented in dual role with representatives from the first branch). Central player here was the Department of Fauna and Hunting (*Direction de la Faune et de la Chasse,* DFC), that effectively dominated the sector of PA management in the East of Burkina Faso (our study region), as it coordinated the cooperation with private concessionaires. As cooperation between these two different governmental branches proved to be difficult, a new public-law institution (*Office National des Aires Protégées,* OFINAP) was established in 2008. It was supposed to reunite the different responsibilities and reorganize the sector, including the relationship to local communities and their decentralized governance bodies, the private sector and international donor organizations. The paramilitary branch hence was eliminated as independent organization in 2008. During our last field stay (2009), the situation on the local level

was somewhat confuse: UPCs should be transferred to the authority of the deconcentrated regional department of the Ministry of Environment, however (and though everybody was well informed), details of this process and assignment of new competencies remained obscure. The OFINAP started its work with a lack of staff and was still in a planning stage for the establishment of local entities (i.a. to take over the management of "PN" Arly that officially was not contracted out as tourism concession for the new lease period).

Private persons (nationals) or corporate bodies that leased certain rights of use (foremost big and small game hunting), formed the second group of important actors for PA management. After big game hunting was officially suspended for a period of several years during the socialist period, it was resumed in 1985. Reforms of the forestry sector in 1996 included also a new institutional framework for big game hunting, and altogether 24 concessions (10 for big game hunting, 2 for mixed hunting, 6 for small game hunting, 3 game farms, and 3 for tourism) have consequently been contracted to mainly private operators (UICN/ PAPACO 2009). Initially, these concession periods were limited to ten years, but had been prolonged for the second period (2007-2027) to twenty years in order to guarantee planning reliability and activate new investments by private actors. The concessionaire paid i.a. an annual operating license (ca. 3.000 Euro) and an annual management tax (e.g. 0.08 Euro/ha/a for a concession of big game hunting) (Arrête Conjoint no 96-022/MEE/ MICA/ MEF). A catalogue of duties defined rights and obligations of both contracting parties and subjected the concessionaires to carry out several management tasks, like construction and maintenance of roads or waterholes. Hunting of big game was restricted by quotas that were allocated by the governmental hunting department also on an annual basis. Parts of the economic benefits (i.a. 50% of the annual management tax) had to be transferred to local communities lying next to their concessions by installation of a fund that was used to finance local development, or by creating job opportunities for local people. During the hunting season 2004/05 more than 240 big game hunting licenses had been issued for the eastern province (UICN/ PAPACO 2009). Benefits for the three different groups of stakeholders in the eastern province during this season were as follows: government ca 356.000 Euro, private concessionaires ca. 1.6 Mill Euro, village communities ca. 73.000 Euro (UICN/ PAPACO 2009). Hunting and associated touristic services developed and

gained in socio-economic importance, however, still only played a minor role overall and were generally regarded as rather unprofitable (IUCN/ PAPACO 2009).

Local committees formed the primary partner of civil society for governmental management bodies as well as private concessionaires. They were supposed to support the suppression of poaching in and around the protected areas and safeguard natural resources exploited by villagers. The role and activities of these village participatory bodies (vpbs) are analyzed in detail in chapter 7.

Benin

In general terms, changes of the institutional and organisational framework of PA management in Benin resembled those that took place in Burkina Faso. After becoming a presidential democracy in 1990, far-reaching reforms of the forestry sector introduced a co-management arrangement that in parts evolved as a role model for the whole region and integrated governmental and private actors as well as local communities. Important judicial milestones were inter alia the adoption of Law No 93-009 regulating the forestry sector by defining rules for the management, conservation and exploitation of forests; the environmental law No 030-98 providing guidelines for all aspects of environmental protection and valuation; and law No 2002-016 dealing with the management of Benin's fauna and habitats, including the establishment of faunal PAs and regulations concerning (commercial) hunting. Though commercialisation of faunal resources did play an important role, two other characteristics shaped governance and actual management of the two national parks forming part of WAP: ongoing support by international donors, and the creation of a (relatively) independent governmental organisation being in charge of the management of these PAs. Action plans (e.g. Environmental Action Plan 1993, revised 2001; Strategic Plan for the Conservation and Management of Protected Areas 1994) (Schmidt-Soltau 2008; UNDP/ GEF 2005) provided frameworks and guidelines for the implementation of above mentioned reforms.

Since 2006 and during our study period overall responsibility for PA management lied within the ministry of Environment and Protection of Nature and its sub-/associated

structures (see **Fig. 3.4** in Annex). Key players were the Directorate General for Forests and Natural Resources (*Direction Générale des Forêts et des Ressources Naturelles*, DGFRN) and the National Centre for Wildlife Reserves Management (*Centre National de Gestion des Réserves de Faune*, CENAGREF). Before 2006, both organisations had been attributed to the Ministry of Agriculture, Animal Husbandry and Fishery. Due to this change in accountability, the forestry administration became a directorate general and hence experienced an up-grade of status (Schmidt-Soltau 2008). This department (often called *Eaux et Forêts*) has for a long time been the principal actor in charge of the management and conservation of forests and limnic resources in Benin. Traditionally it was organised in a para-military way and disposed of subordinated structures on the local level throughout the country. One of its tasks was the management of classified forests, where it cooperated with different external partners and was actively involved in the implementation of participatory co-management arrangements. In 1996, however, it experienced a drawback when the two national parks were attributed to another governmental organisation: international donors requested the foundation of the semi-autonomous CENAGREF as a prerequisite for their funding of a national parks project (the performance of the forestry sector was assessed to be affected by corruption and inefficiency) (Le Meur 2006). The role of CENAGREF for the establishment of a participatory approach is discussed in Chapter 7 in detail. Driven by donor engagement, forces within the forestry sector (and especially within CENAGREF itself) that supported a truly participatory management have been strengthened and dominated in particular the management of Pendjari NP. However, ongoing rivalry and dissent between DGRFN and CENAGREF, respectively traditional and more progressive forces within CENAGREF, has characterized the sector during the time of our study, and resulted in open conflicts after donor engagement faded. Generally, there were several shortcomings affecting the management of natural resources and PAs in Benin due to the structure of governmental organisation: a general lack of priority of the sector in national policy, deficient cooperation between governmental actors that sometimes turned into adverse forms of competition and affiliation of cooperating services to different head structures (Dovonou-Vinagbé & Chouinard 2009).

CENAGREF was also authorized to manage income generated by its territories, namely hunting and tourism (UICN/Papaco 2009). It administered five concessions (see **Fig. 4.1**) which received their official status as early as 1959 (CENAGREF 2002). Due to

depleted wildlife populations, hunting was suspended between 1975 and 1997 in the zone of Djona, and between 1983 and 1990 in the other zones (CENAGREF 2002). According to law 2002-016, these zones were offered by a public call for tender in 2004 and consequently leased to concessionaires for an initial period of 5 years (UICN/ PAPACO 2009). After a (positive) evaluation at the end of this period, the concessionaires had the opportunity to renew the contract. Economic and operational activities of the leaseholders as well as their interactions with other stakeholders were regulated by a catalogue of duty and quotas that determined the number of killings per species. Success rates per hunting permit issued were quite low, hence quotas usually not fulfilled since the reopening of commercial hunting activities. Concessionaires paid several taxes directly to CENAGREF, i.a. the lease for the area, the killing tax and the fee for hunting licences. Though these taxes were by far not sufficient to cover the operative budgets of CENAGREF/ the park administrations, they represented an important source of income. CENAGREF kept 70% of the total and distributed 30% to local communities via AVIGREFs. The 70% of CENAGREF were further subdivided among the park administrations (70% for the park administration and 30% for the directorate general). The total income generated by hunting continuously rose since 2004 from 142.000 Euro to 208.000 Euro in 2007/08 (UICN/ PAPACO 2009), and was subdivided as follows: for the communities 43.000 Euro (2004/05), respectively 62.000 Euro (2007/08); for the Pendjari Park administration 43.000 Euro (2004/05), respectively 68.000 Euro (2007/08); for the W Park administration 26.000 Euro, respectively 34.000 Euro (2007/08); and for the directorate general 30.000 Euro (2004/05), respectively 44.000 Euro (2007/08). In particular Pendjari Park was hence successful in generating and raising revenues from hunting during this concession period. When calculating the average financial benefit per person and year in adjacent communities (2004-2007), Pendjari also performed *relatively* well with ca. 1.50 Euro, while people around W Benin statistically only benefited from 0.15 Euro (benefits in Burkina Faso were laying in between these values for the entire region). Generally, however, amounts per hectare yielded by big game hunting were (at least in the short term) not competitive with other types of land use, i.e. agricultural exploitation (UICN/PAPACO 2009).

Participation of local resource users in the area of the two national parks and adjoining hunting concessions was realized via associations on village as well as on regional level (*Association Villageoise de Gestion des Réserves de Faune;* AVIGREFs). To a large degree, the establishment of these organisations was initiated and accompanied by

international development assistance. They were officially recognised as principal partners of CENAGREF for the co-management of both parks, however, their organisational capacity was much more advanced in the Pendjari area. Details about their organisation and functionality are described in Chapter 7.

- **For a summary of the stakeholder analysis see Annex Chapter 3: "Summary formal stakeholder analysis"**
- **For an overview of important projects in the sector of PA management active in the region see Tabs 3.1-3.3 in Annex.**

3.2 Operational model of PA governance & management

Having introduced the concept of the IAD on a coarse scale that helps to structure the complexity associated to resource governance (Part I, Chapter 2) as well as the institutional and organisational context of the WAP complex in the previous paragraph, a conceptual model for the analysis of PA governance and management is deducted in the following. It strongly draws on these findings and helps to integrate all separate parts of the present study into a logical framework (**Fig. 3.1**).

The rationale of this scheme is that specific governance systems produce specific *outputs* directly and in the short term. These outputs in turn trigger long-term *outcomes* that potentially have profound effects on system characteristics. According to the dichotomic purpose of most PAs, these ultimate goals are the conservation of biodiversity and ecological integrity as well as the promotion of local development.

The *governance system* is represented in this scheme by two interacting blocks: the *institutional context* (see above) and *processes*. This corresponds to our working definitions of governance as being the institutional and organisational framework in which action arenas take place, and to that of management representing the processes and activities being carried out. As postulated by the IAD, the institutional and organisational context directly influences key activities of PA governance actors and their interaction. We identified a wide variety of such action arenas taking place within the general frame of PA governance and management, however, focussed our empirical research on "collective" choice arenas on the macro and micro level, as well

as on operational situations. Kapos et al. (2009) found seven broad categories of such conservation activities, including e.g. the management of species and populations, or the provision of alternative livelihoods to local resource users[2]. Specific governance and management settings allocate powers and competences (e.g. control over action arenas) to participants of these action arenas in very different ways. However, the outputs of a vast majority of management activities directly aim at the local resource user level, either to restrict and control resource exploitation, or to enable participatory processes (ranging from the exchange of information to decision-making power). The perception of PA management actors by resource users is hence likely to vary according to respective actor group and with study site, depending on how well actors fulfil their formal role and how much freedom of action a governance system concedes to its individual groups of actors/actors. We therefore used the perception of local resource users (hh-survey) as primary source of data to explore these spheres of action. We consequently subdivided the general arena of PA management into secondary arenas (and these in turn again in sub-categories). These are on a first tier the arenas of *conservation*, *restriction* and *participation*. While it may be argued that any restrictive activity -and to a certain degree also most participation arenas- have the ultimate aim of conservation, we considered it necessary to still separate strict conservation measures (e.g. reforestation) that target the ecological system from those arenas that produce social outputs in the first order. This classification and the role that each major group of actors plays in the different arenas is analysed in detail in Chapter 6.

The *outputs* of the restriction and participation arenas (output I in **Fig. 3.1**) affect the degree of problems and benefits that resource users experience. Restrictions on resource use usually involve the control and sanctioning of individuals, and often lead to problems, conflicts and consequently negative attitudes towards the PA. In most settings, PA management therefore resembles a process of conflict management and a continuous search for trade-offs (Janssen et al. 2007). Participation arenas on the other side produce various kinds of benefits for local people and their outcomes are supposed to stimulate positive attitudes. Efficient governance in fact critically depends on the mobilization of such individual incentives and their incorporation into innovative

[2] Other activities are: management of sites, landscapes & ecosystems; development, adoption or implementation of policy or legislation; education and awareness raising; training & capacity-building; research & conservation planning

strategies (Lemos & Agrawal 2006). Financial instruments or permitted use of natural resources e.g. can provide incentives to achieve compliance with environmental rules and contribute to project success (Dietz et al. 2003; Brooks et al. 2006).
The perception of both, benefits and problems, again potentially depends on contextual factors like ethnic affiliation or educational status (see Chapter 4). The quantity and quality of problem and benefit perception by local resource users (i.a. as a function of social and socio-demographic characteristics of resource users) as well as their attitudes towards neighbouring PAs are analysed in detail in Chapter 5. Attitude often is taken as a proxy for the effectiveness of management interventions and participation. Such studies of incentive-driven conservation implicitly assume that resource users with positive attitudes change their exploitation behaviour in a more sustainable way (Infield & Namara 2001). In other words: benefits and problems that resource users perceive as outputs of participation and restriction arenas affect the cost-benefit ratio of their exploitation arenas/ activities: positive attitudes reduce direct human impact/threats and so enhance PA ecological integrity in the long-term while negative attitudes have a contrary effect. Key of this linked incentive strategy is the development of dependant relationships between resource users and the status of resources, respectively the conservation of the resource (Salafsky & Wollenberg 2000).

The output of conservation arenas (output II) controls, respectively affects the status of one or several resources of the PA. This is what traditionally is understood as the core of PA management. Resource status, however, is also dependant on the biophysical context (see Chapter 4), and therefore might be submitted to natural dynamics that complicate the implementation of rigid exploitation rules. Assessing the effect(iveness) of respective management interventions is consequently a difficult task and relating effects of outputs that target resource users (output I) to outputs and outcomes that target resource quality and quantity (output II) has to be done with caution. Also for assessing the final *outcome*, the preservation of ecological integrity, these different functional chains (natural dynamics and human impact/management effects) should be separated as clearly as possible (Ferrarao & Pattanayak 2006). In reality, however, there are very few cases that have managed to do so (Miteva et al. 2012) and project managers often cannot determine whether their interventions are working (Salafsky & Margoluis 1999). Very often data for the analysis of resource status/ ecological integrity is missing at all (Bertzky & Stoll-Kleemann 2009), is of questionable origin, not detailed

enough, or does not match in resolution to data of the social and biophysical contexts. As we encountered similar problems for our study area, we have refrained from postulating any such causal linkages. However, available data on large mammal population dynamics and their potential correlation to management interventions are discussed in Chapter 8. The analysis of human induced land cover change in PA surroundings gives further hints on the effects of different management strategies and the status of human impact (Chapter 8 as well).

The next paragraph summarizes the rationale of the study by formulating key questions and hypothesis. It thereby strongly draws on the logical and operational framework model described here.

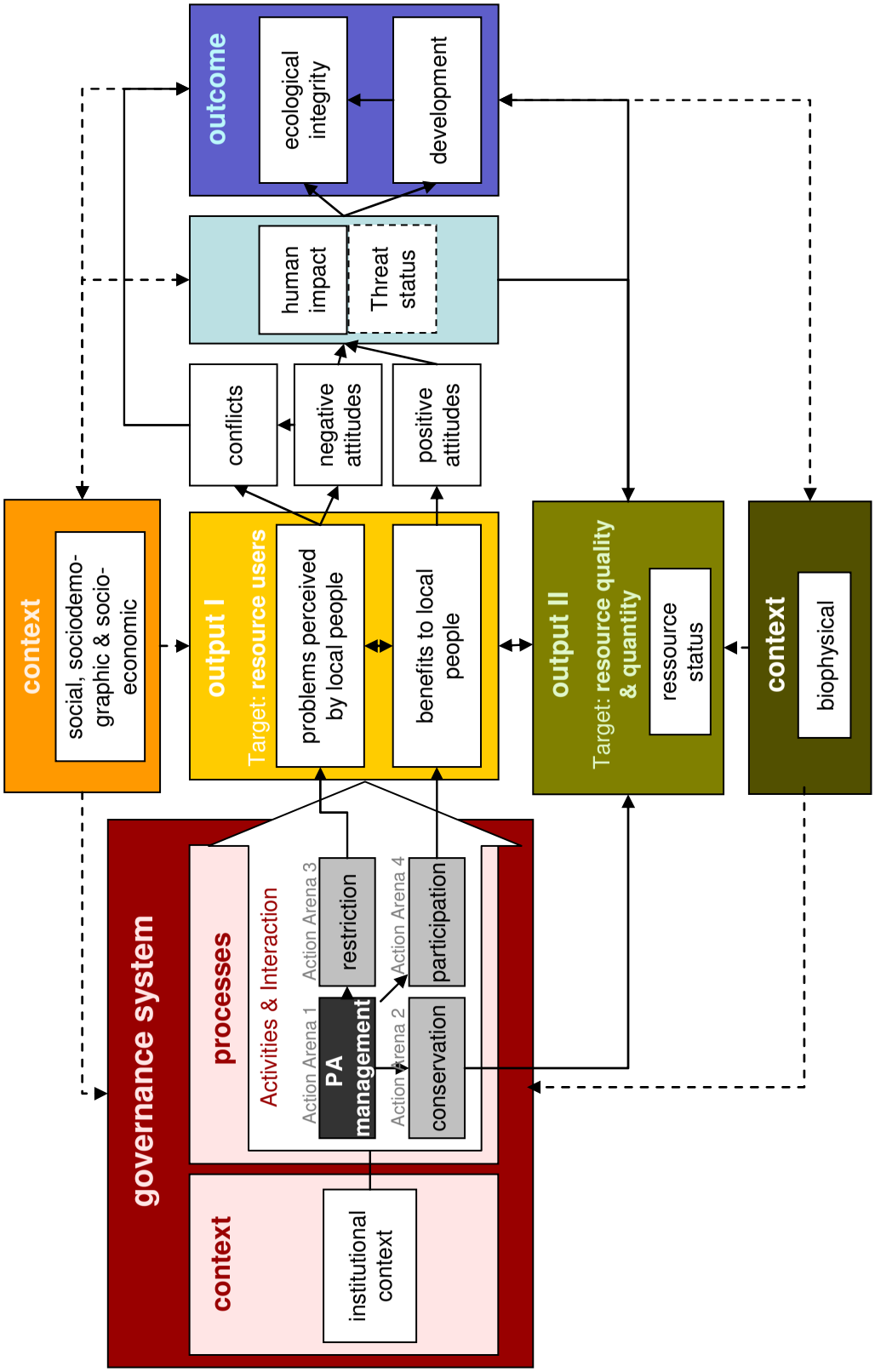


Fig. 3.1: conceptual model of PA governance and management. For further explanations see text. Arrows show direct linkages of major importance; dashed lines show impact of context

3.3 Key questions and hypothesis

Often induced and implemented by state or other higher level authorities, the establishment and governance of PAs change property right regimes on the local level tremendously. Changes range from the alteration of access and withdrawal rights on the operational level (Schlager & Ostrom 1992) to limitations in the rights of management, exclusion and alienation of certain resources on the collective-choice level of local communities (Schlager & Ostrom 1992). Such centralised authoritarian approaches with high levels of restriction have been called “fines and fences approaches”.

(H1) These altered regimes are found in the WAP region. They…

- **… lead to high degrees of perceived limitations/ problems concerning natural resource exploitation (including agricultural activities) and the virtual absence of benefits for local resource users.**
- **…provoke conflict between those that are dependant on natural resources and those that exercise power by holding and monitoring property rights.**
- **…enhance competition between different user groups that depend on the same resources.**
- **…lead to increased socio-ecological problems due to a lack of management rights for those that hold local place and time information, e.g. restricted self-control of human-animal conflicts by affected resource users.**

(H2) Management activities, however, can balance these negative impacts and provide incentives to local people.

(H3) Successful distribution of benefits to local resource users leads to more positive attitudes towards the PA.

(H4) The quantity and quality of benefits perceived by local resource users i.a. depends on a balanced institutional landscape in which each actor is fulfilling a specific role.

Besides conventional conservation activities, modern conservation strategies hence promote sustainable development in PA surroundings. They do so by establishing alternative ways of sustainable resource access, exploitation and management as well as resource valuation and benefit sharing. Local resource users as legitimate stakeholders are enabled to participate in management activities (operational level) and ideally in decision making processes (collective choice, possibly constitutional level). These approaches are characterized by multilevel governance regimes, a diversity of rule settings and a multitude of linked action situations. Consequently they have do deal with a high degree of complexity.

Therefore, the effectiveness of integrating local people's stakes in PA management and providing direct benefits to them and their communities strongly depends on the institutional and organisational set-up and adapted management interventions.

(H5) Local participatory bodies do play a key role in the institutional and organisational set-up.

To be effective, these regimes …

- …need cut-points or bridging organizations between groups of actors representing different stakes, levels of power as well as value and rule systems on the horizontal level. Interest groups of resource users that are well embedded in their communities and acknowledged as official representatives by internal and external partners (hereafter village participatory bodies, vpb) play a key role in negotiating and distributing benefits to local people.

- …need well functioning vertical interactions of vpbs with governmental and private actors. Unions of vpbs can further enhance bargaining power and influence decision making processes on the collective and constitutional choice level. The quality of cooperation, respectively the degree of conflict between these actors hence directly influences the quantity and quality of benefits that villagers receive. This holds especially true for monetary or material benefits that are based on complex distributional processes.

- ...need a favourable biophysical and societal context, like low degrees of environmental degradation and population pressure in PA surroundings, and high degrees of social capital in adjacent communities.

Effective approaches of participation are furthermore characterized by…

- … problems and conflicts that are qualitatively different from those associated with conventional fines and fences approaches: there is a shift from problems associated with natural resource exploitation to problems concerning organisational issues.

Chapter 4

Context & Methodological Approach

Practical Concept

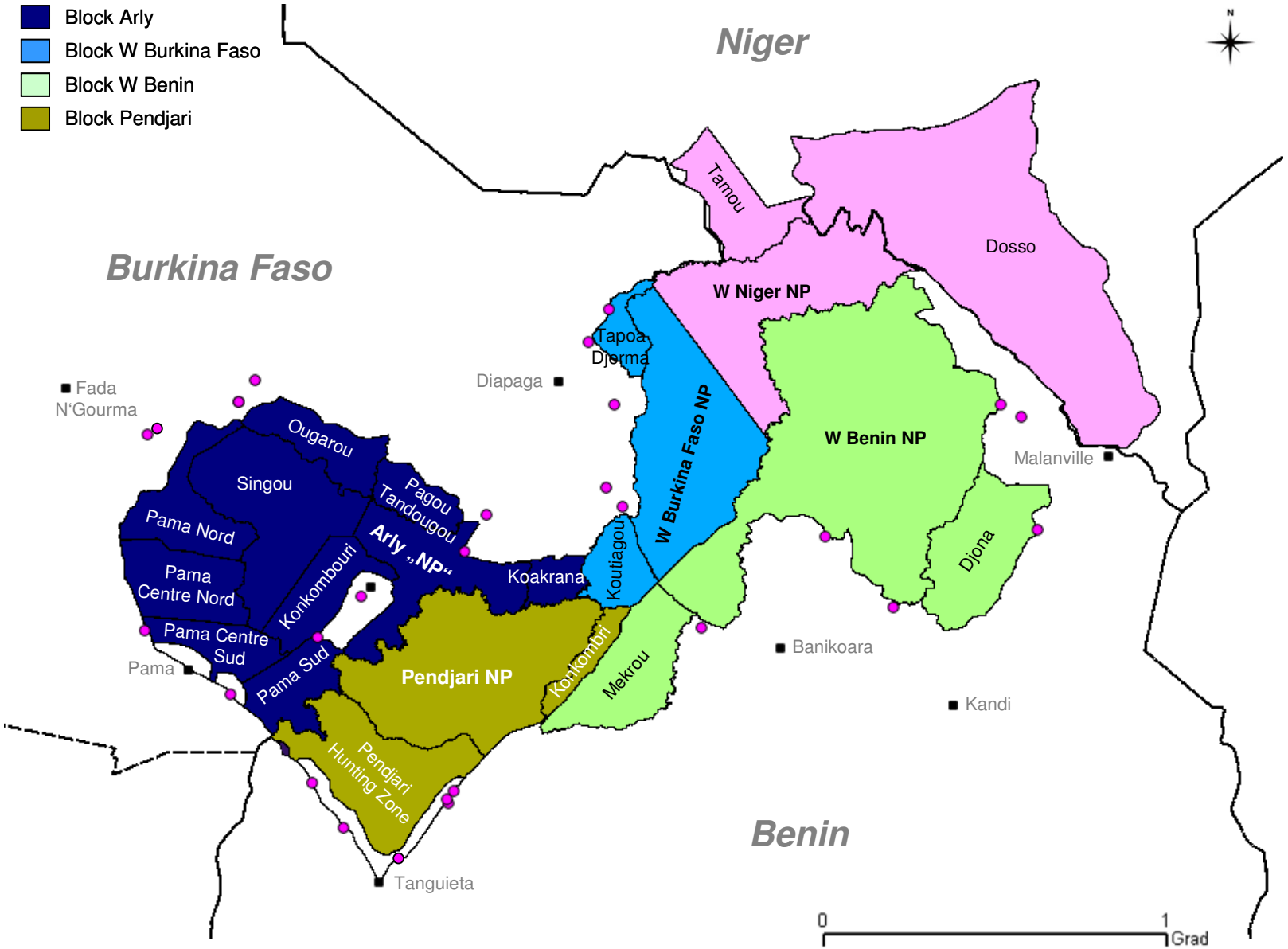


Fig. 4.1: Schematic map of the study region with all PA subunits and blocks. Pink dots mark the location of study villages

Chapter 4 is divided in two major sections. The first (4.2 & 4.3) gives a brief overview of background information and contextual factors that impact PA management approaches in the region. The initial paragraph of this section describes the geographical context (4.2) of the WAP protected area complex (including classification of its subunits), and is followed by analysis that highlight important factors shaping the socio-economic and socio-demographic contexts (4.3). The second section (4.4) deals with the methodological approach used for data collection and analysis.

- **For more information on key variables of the geo- and biophysical context see Annex Chapter 4**

4.1 Context: Introduction

Due to its long history of human intervention, current high population growth rates, weak economies and institutional/organisational settings, as well as future impacts of climate change, socio-ecological systems in West Africa are especially vulnerable and prone to the risk of degradation. Protected areas serving as the last strongholds of biodiversity conservation and at the same time providing vital ecosystem services, are thus often threatened by complex and interlinked proximate pressures and ultimate drivers of change. West Africa indeed has proven not to be an easy setting for sustainable PA management (e.g. Struhsaker et al. 2005). Our study site, the WAP transfrontier conservation area itself offers a wide array of different governance and management approaches, to a large extent determined by different external factors like national formal settings and project interventions (financed by multilateral donor agencies) as well as ethnic and cultural diversity in its surroundings. Because of this diversity of institutional settings on the one, and its ecological continuity on the other hand, the characteristics of the area resemble a quasi-experimental design for scientific analysis.
However, as there is generally a lack of sound social and ecological monitoring on all scales of governance (including PAs and their surroundings), a thorough context analysis for PA management can only have provisional character within the frame of this study. Nevertheless, we here provide an overview of some context characteristics that might corrupt site-level efforts, and then analyse the institutional/organisational systems of the WAP complex on a local scale in the following chapters.

4.2 Geographical context: study sites & status

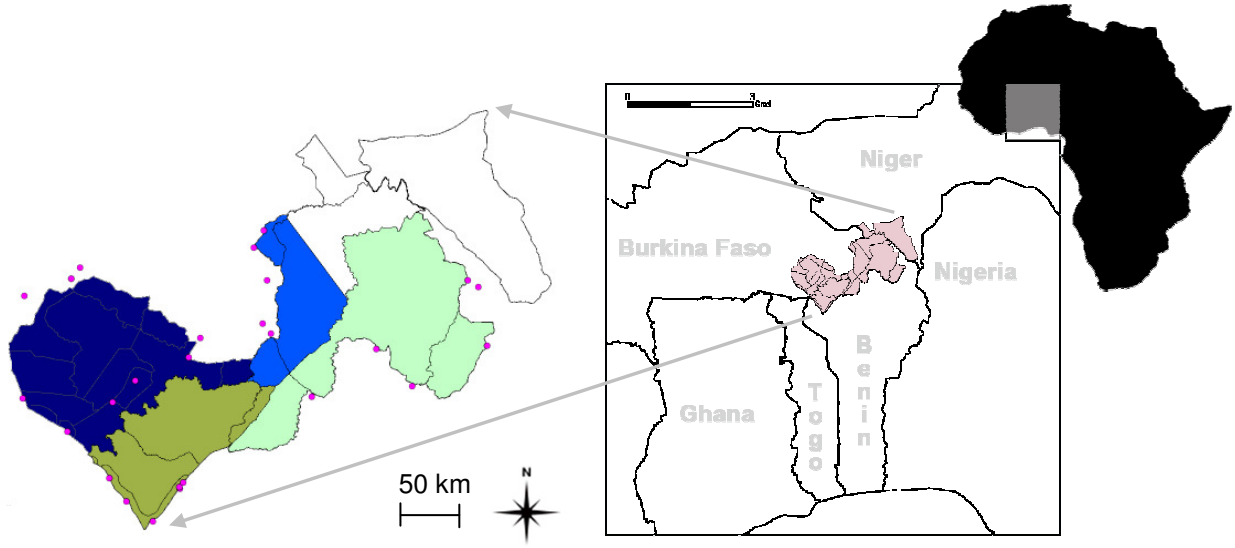


Fig. 4.2: The WAP in its geographical context. Pink dots on the left map mark the location of study villages

The study area lies in West Africa and stretches from 0,4°E and 3,15° E and 12,6° N to 10,7°N (Clerici et al. 2007) (**see Fig. 4.1 and 4.2**). As a transfrontier conservation area, it covers about 31000 km^2 and is shared by the three countries of Benin, Burkina Faso and Niger. Core areas are the three national parks "W", the Total Reserve "Arly" and "Pendjari" national park. The whole complex (called WAP) is composed of approximately twenty subunits of different protection status, ranging from national parks to private hunting concessions and multiple-use buffer zones. It is the largest contiguous area of protected West African savannah and forms an ecological continuum in the Sudano-Sahelian zone. Its ecological as well as socio-economic importance is significant for the whole region, representing for example the most important area for elephant conservation in West Africa (Bouché 2007).

During the colonial period, PAs in the region primarily served as hunting grounds for official elites. Several areas (like W) received some kind of protection status as early as 1926 (Dramé-Yayé et al. 2007). During the 1950ies then most of the areas were upgraded several times. Pendjari e.g. was classified as Partial Reserve in 1954, became a Total Reserve in 1955 and was enlarged in 1959 by the designation of its adjoining hunting zones. After independence, the Total Reserve became a National

Park in 1961. It received an international status in 1986 as UNESCO Biosphere Reserve (DPNP/ CENAGREF 2005) and was acknowledged as RAMSAR site in 2007.

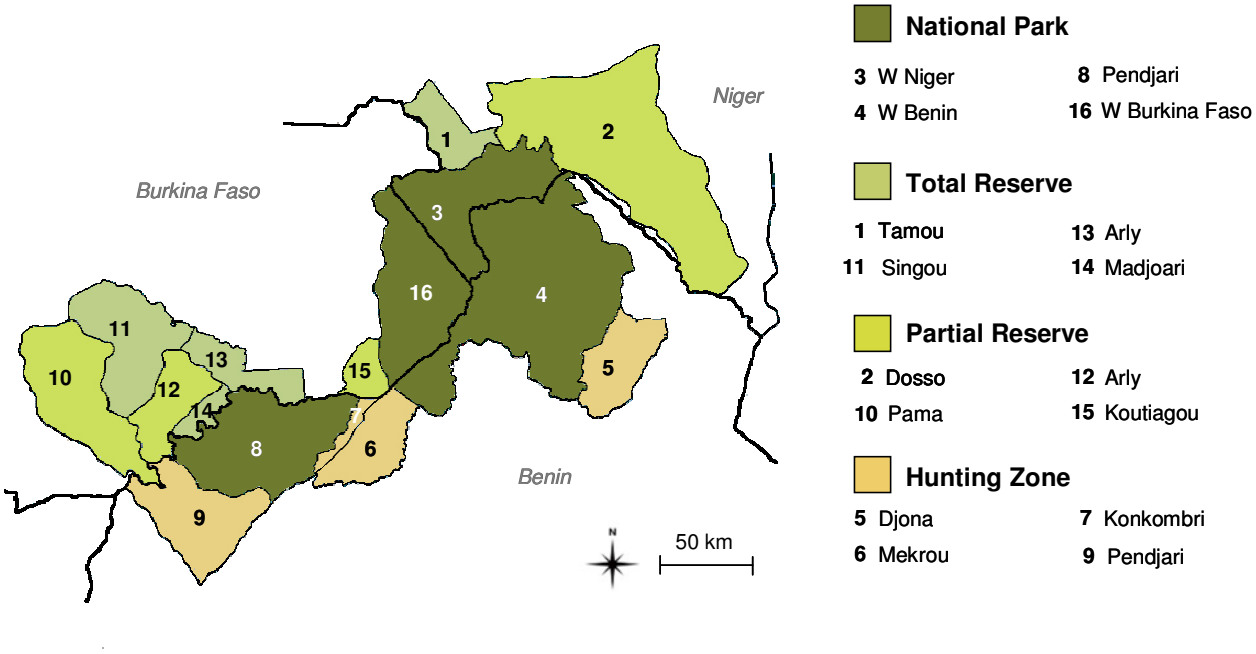


Fig. 4.3: De jure status: the official classification of PAs according to IUCN/ national legislation in 2009

Park W, being national park since 1954, was additionally recognized as UNESCO World Heritage Site in 1996 and as Africa's first Transboundary Biosphere Reserve in 2002 (Dramé-Yayé et al. 2007). Arly and the other Partial and Total Faunal Reserves in the East of Burkina Faso were also first recognized during the 1950ies (PNGFAP 2006). In the course of the reforms of the forestry sector during the mid 1990ies, these areas were clustered with the other categories of government led reserves (National Parks, Ranches, Partial and Total Faunal Reserves) to administrative entities called "Protection Units" (PU) (see **Fig. 4.12** in Annex).

In fact, most Partial and Total Reserves in Burkina Faso had been transformed to hunting or tourist concessions in order to promote economic valorisation of these PAs. Concessionaires were mostly private operators. In reality though, this approach led to the establishment of a second form of classification: some PAs were subdivided into several concessions (e.g. Pama Partial Reserve) and, vice versa, there are concessions that were not spatially congruent with the officially declared PA boundaries (e.g. Konkombouri). Furthermore, there were several hunting concessions adjacent to PAs in

the eastern region that lacked an official status as classified area, and hence would fall under the official category of "protected forest" (e.g. Tapoa Djerma and Pagou Tandougou). This means they formally belonged to communal land and not to land governed by state authority, however, were managed in the same way as classified areas. Generally though, there was a lack of clear definitions concerning the status of several zones and actual management of the concession system consequently did not correspond to the formal classification based on respective laws (see **Fig. 4.3 and 4.4**). During the concession period from 1996-2007 e.g. the Total Reserve Singou was treated as a ranch, and hunting consequently allowed, however without proper legal justification. On the other hand the two Total Faunal Reserves of Arly and Madjoari were usually called "National Park Arly", but there was no official certificate for this classification as well.

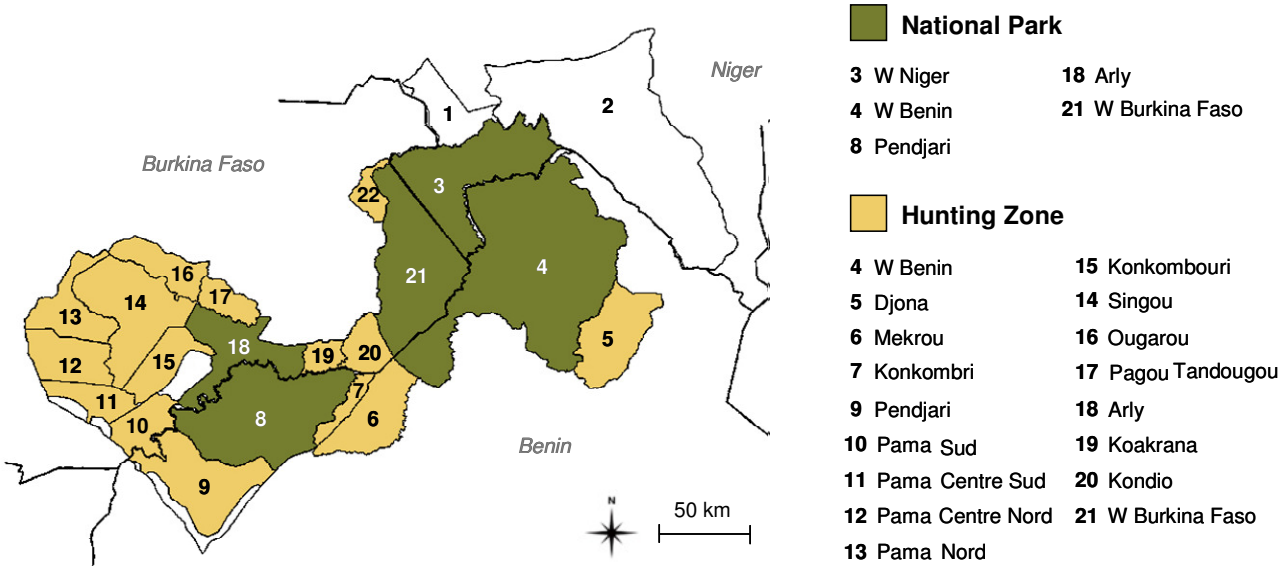


Fig. 4.4: De facto status: actual management status during our study period

Besides these areas under the authority of government, there was a growing number of village hunting zones (*Zones villageoises d'intérêt cynégétique*, ZOVIC) in Burkina Faso that were formally managed by village associations under the authority of the corresponding municipalities. These zones often were found adjacent to larger PAs and thought to form some kind of buffer zone. Only small game could be hunted there and revenues were foreseen to rest with the associations and communities. The judicial

status of these areas and their management bodies, however, remained partly unclear and was a potential source of conflict on the local level.

4.3 Social, socio-economic and socio-demographic context

Social and socio-economic key indicators

- **Macro/ Regional and national scale**

The three countries sharing WAP belong to the poorest and least developed countries in the world. On the 2011 ranking of the Human Development Index (HDI), they were listed on ranks 167 (Benin), 181 (Burkina Faso) and 186 (Niger) - out of 187 (UNDP 2011). All countries hence faced severe social, political and economic challenges that also impact environmental policy and vice versa: among these are high illiteracy rates, low life expectancies, high population growth rates, as well as high dependence on foreign official development assistance (see **Tab. 4.2** in Annex).

In the following we refer to Benin and Burkina Faso as they were covered by our field work. Both countries are characterised by high ethnic, cultural and linguistic diversity: in Benin as well as in Burkina Faso around 60 different ethnic groups are co-existing (gizLIP 2012; MCT 2012). Dominant groups in Benin are: Fon and related (39,2%), Adja and related (15,2%), Yoruba and related (12,3%), Bariba and related (9,2%) and Peulh and related (7%) (according to the 2002 census; CIA Factbook 2012). In Burkina Faso Mossi represent a share of over 40% of the total population. Other important groups are i.a. Peulh, Lobi, Bobo, Senufo, Gurunsi, and Gourmantché. The latter is the dominant group in the eastern province of Burkina Faso (living in the vicinity of the Burkinian part of WAP), and is also found in several villages adjacent to the Pendjari and W Benin. Despite conflicts between ethnic groups associated to different life strategies (see below), the living together in both countries is marked by relative harmony.

Natural resources and their exploitation are of primary importance for 55% (Benin), respectively 74% (Burkina Faso) of the population living in rural areas. The national economies are dominated by the agricultural sector that is essentially based on smallholders, accounting for 32% (Benin), respectively 35% (Burkina Faso) of gross

domestic products (GDP) in 2005, and employing 43% of the population (Benin), respectively 85% in Burkina Faso (including hunting, forestry and fishing) (TWB 2012). The main export commodity is cotton, accounting for 25-40% of official total exports in Benin (TWB 2012b), respectively 12% of the GDP in Burkina Faso (2008) (Kaminski 2011).

The economic dependence on natural resources makes both countries prone to fluctuations and decay of commodity world market prices, with severe effects on local livelihoods and PA integrity: rural income and poverty in semi-arid areas is directly linked to damping international cotton prices caused by subsidies and protectionism in industrialized countries (Minot & Daniels 2002). As a consequence, local demand for cultivable land increases (supported by governmental policies) and facilitates human encroachment into PAs. Especially in rural areas alternative sources of income that rely on sustainable forms of resource exploitation are rare. Tourism, which is of major importance to PAs and their surrounding communities in parts of southern and eastern Africa, is only of minor importance in West Africa due to depleted wildlife populations, political instability, conflict, and lack of infrastructure. Lindsey et al. (2006) e.g. showed that trophy hunting attracts fewer hunters in West than in East and Southern Africa, and generates comparatively modest revenues.

- **Micro/ Regional and local scale**

In the course of decentralisation, surveys and assessments on the level of the new administrative units have been conducted by a variety of different governmental and non-governmental organisations. They were published as monographs on communal, respectively regional/ departmental level. Though sometimes fragmentary and imprecise, this data provides valuable information for the process of decentralisation and also served as baseline information for our field work (e.g. selection of villages and ratio of ethnic groups). Most indicators from the macro-scale, like life expectancy or illiteracy rates, do not differ significantly on the micro scale for the communes and regions covered by this study. However, regionalism is strongly developed and foremost finds its expression in the ethnic composition of the population.

The population of the eastern region of Burkina Faso (*Région Est*) grew with a slightly higher rate than the Burkinabé average and doubled between 1985 and 2006 (MEF

2009). According to their main language spoken, the majority of inhabitants belong to the Gourmantché (autochthonous population, ca. 66%), Mossi (16%) and Peulh (12,9) (MEF 2009). This is a significant difference from the rest of the country, where on a national scale Mossis represent the majority. The Gourmantché society is outwardly egalitarian (Mazzucato & Niemeijer 2004) and relies on a system of hierarchically clustered traditional authorities, with the king of Fada N'Gourma as the highest leader (Monographie commune rurale de Tansarga 2006). Though the influence of the traditional authorities on the social live are quite strong, their power is informal and therefore often is rather representative in nature. They often cooperate with the village delegates as official representatives of the administrative system (Monographie commune rurale de Tansarga 2006). Migration movements have mainly local impact, with the commune of Madjoari (inside Block Arly) being an immigration hotspot. Urban centres also attract relatively high numbers of immigrants (Monographie commune rurale de Fada N'Gourma 2006) and the cotton boom induced migration movements into rural areas in recent years.

In contrast to Burkina Faso, the northern departments of Benin that cover WAP are characterised by a higher ethnic diversity. However, regionalism is also well developed and single ethnic groups often dominate on the local scale (villages). Around Pendjari, e.g, there are villages that are almost exclusively inhabited by Gourmantché, Waama or Biali/ Berba. Only few Peulh settled in the area, wheras around Park W they often represent an important fraction of the population (e.g. 23% in the community of Banikoara) (PDC Banikoara 2002). The western area of W Benin is home to Bariba/ Baatonou (70%), Peulh (23%), Dendi (1,6%), Yoruba (1,3%) and others (PDC Banikoara 2002), whereas the eastern vicinity of W Benin (here:community of Karimama) is dominated by Dendi (63,8%), Peulh (18,3%), Gourmantché (9%), and others (Monographie de la commune de Karimama 2006) . Among these are Mokollé, Djerma, Bariba and Yoruba (Monographie de la commune de Malanville 2006). Transborder migration is quite frequent (e.g. concerning the community of Malanville). The role of traditional authorities on social life is strong in some areas, however, greatly varies across the region. Formal leadership became the principal source of governance in most localities.

- **Hh-survey: socio-demographic and socio-economic variables**

Data collection of our household survey aimed at providing a balanced representation of the social and socio-economic realities prevailing in the respective regions. Field assistants were therefore advised first to discuss some general issues with village elders (e.g. ethnic composition), before starting their assessments and so integrate this information in their selection of households. **Tab. 4.1** displays some of the most important variables and major differences between samples from the different management blocks.

Average age of household-heads varied between 45.8 (W Burkina Faso) to 52.2 years (W Benin). As most PAs were established in some form or the other during the 1950ies, most respondents hence were familiar with some kind of restrictions associated to these PAs during their whole live. The level of education was below the national mean, especially in Burkina Faso, with no single interviewee having received some formal education. The largest part of respondents in all four blocks was born (respectively lived more than 20 years) in the same village. The fraction of immigrants, however, varied from 28.9% in the Arly Block to 3.9% in the Pendjari Block. As immigration can support social conflict and uncertainty (Anderies et al. 2004) and so have negative effects on social capital and successful collective actions (Ostrom & Ahn 2007), this variable will be of special interest in later chapters dealing with participation of local communities in PA management activities. Closely related to this point is the mixture of different life strategies within and between study sites: the percentage of herders in relation to the total sample size ranged from 27.9% (Arly) to 2.0% (Pendjari). As conflicts are often borne by competition between farmers and herders, respectively cultural differences and associated rule systems, Pendjari generally has a favourable context with regard to the latter two variables. The percentage of households growing cotton was highest around W Benin, indicating high agricultural pressure and land shortage in its vicinity. Fewer households in the Arly (33.3%) and Pendjari (41.1%) grew cotton, and almost no household around W Burkina Faso (3.0%) stated to be involved in the cotton market (unfortunately we do not have an explanation for this unexpected finding).

Tab. 4.1: Socio-demographic and socio-economic characteristics of households (own survey)

	Arly	W Bu	W Be	Pendjari
Men	212	102	143	217
Women	279	139	201	240
Children *(mean no per hh)*	7.0	6.1	9.7	6.4
Age *(mean hh head)*	52.2	45.8	44.5	45.4
SD	15.6	21.5	12.3	11.7
Residence time *(% of respondents living less than 20 years in village)*	28.9	18.1	27.3	3.9
Education *(% of respondents that received at least primary education)*	0.0	0.0	21.0	24.5
Life strategy *(% herders)*	27.9	29	25.9	2.0
Cultivated area *(mean per hh, in ha)*	3.3	4.2	5.6	4.2
SD	1.9	2.8	3.3	2.3
Hh cultivating cotton *(%)*	33.3	3.0	69.2	41.2
Cattle *(mean per hh, in ha)*	14.5	10.1	12.3	8.4
SD	18.5	24.6	20.9	13.5
Worked for PA *(% of total)*	19.1	16.0	29.4	63.7
Member of vpb *(% of total)*	6.4	3.9	22.4	74.5

Source: own research, household survey

The variables shown **Tab. 4.1** do not capture full intra-block and inter-village diversity, especially with regard to ethnic diversity or residence time: while households interviewed in Burkina Faso belonged almost exclusively to the ethnic groups of Gourmantché and Peulh (the latter accounting for up to 52% per village), diversity in Benin was much higher. Single villages here were dominated either by Gourmantché, Peulh, Bariba or Mokolé. For more details see **Tab. 4.3** in Annex.

Different life strategies: farmers & herders

As in most rural and poor areas of the world, people living adjacent to WAP are highly dependant on the exploitation of natural resources and small scale subsistence farming. Besides agriculture, main economic activities are agro-pastoralist and transhumant livestock production, fishing, hunting (poaching) and gathering of natural products. Alternative ways of income generation like beekeeping or employment in the tourism

sector can be found, however, are rare. Main subsistence crops are millet, sorghum and maize. Cultivated area was on average 4 ha per family as revealed by our household survey, with higher mean differences between villages than between regions. In addition to population growth (see following paragraph), one of the main drivers of land conversion around WAP is the cultivation of cotton, the single most important cash crop produced in large quantities. Due to its deep root systems (tolerance to drought), its climatic needs (high temperature during fruit maturation), as well as the existence of a structured market and governmental promotion, the cultivation of cotton is highly attractive to farmers (Baudron et al. 2009) - despite all negative effects, including environmental and health aspects (e.g. high pesticide application needs and associated health risks as well as negative impacts on biodiversity), or socio-economic ones (e.g. high dependence on fluctuating world market prices) (Minot & Daniels 2002, Mannah 2008). West Africa (led by Burkina Faso, Mali, Cote d'Ivoire and Benin) (Vitale et al. 2011) increased its cotton production ten-fold between 1960 and 2000 (ECOWAS-SWAC/ OECD 2006).

The sharp increase of agriculture/ cotton production during the last two decades strongly fragmented the natural landscape and consequently lead to increased isolation of remaining wilderness patches (including the ecosystems covered by WAP) (Clerici et al. 2007). The intensification of agricultural land use also collided with extensive forms of pastoral production and intensified competition and conflict among farmers and herders (Schönegg & Martel 2006). Due to high climatic variability and uncertainty, as well as sensitivity of the semi-arid environment to intensive forms of use, extensive and mobile livestock production principally represents a well suited form of exploitation. Actually there are different forms of pastoral activity, characterised by either low/ local mobility or high mobility that often is described as transhumance and might include regional cross-border migration of cattle. The latter is a rather new phenomenon, and evolved as a consequence to the severe droughts in the Sahel region of the 1970ies and 80ies (Toutain et al. 2004). During the dry season (approximately November-May), pastoralists mainly from Niger and Burkina Faso migrate southwards to take advantage of more humid areas with surface water along river systems and green pasture (Schönegg & Martel 2006). They also benefit from the control of TseTse-flies that reduced the risk of infection with trypanomiasis and other vector-borne diseases in the Sudano biome (Toutain 2004). As the land surrounding WAP is intensively used by agriculture and local livestock production, however, the arrival of transhumant

pastoralists often causes conflict – farmers accuse herders to cause damage to their fields, whereas herders accuse farmers not to respect official transhumance corridors. Cultural differences and traditional land-use rights further promote tension between the two groups. Animal husbandry and transhumance in the WAP region is mainly practiced by herders belonging to the ethnic group of Fulbe (or Fulani, Peul). Other ethnic groups and park officials tend to characterize them as politically unstructured, tied to traditions (Turner 1999) and ready to enforce their interests by violence. Due to their cattle acting as capital stock, they are able to make money available in the short term and hence are perceived to be relatively rich. In contrast to the autochthonous population, mobile herders are neither well integrated in official land management issues, nor the institutional and organisational set-up of the respective administrative systems. This holds also true, though to a minor degree, for Peul that practice a semi-nomadic lifestyle (characterized by rather low mobility). (Family) groups hence might stay as agro-pastoralists in one place for years, however, usually separated from (but attached to) villages of other ethnic groups. Like transhumant Peul, their livelihood is characterized by a high degree of adaptability and economic autonomy, based on a well functioning familial production system, as well as low dependency on monetized economy (Bierschenk & Forster 2004).

In this context of conflict and competition, driving cattle into the PA offers an attractive alternative for transhumants and other herders: no property rights of farmers are violated and the pasture offers high quality nutrition in relative abundance. This holds true as long as there is no effective governmental law enforcement exerted by park rangers that have the power to fine or imprison the herders, or even kill the livestock. Especially Park W suffered since long from a high degree of illegal grazing, as effective surveillance was weak (ECOPAS 2004). Toutain et al. (2004) estimated the number of cattle living in the outskirts of park W to reach 3 million, and an aerial survey in 2003 counted more than 20.000 heads of cattle in the park (19.707 in W Benin, 504 in W Burkina Faso, 408 in W Niger; more than 50.000 inside the whole WAP complex) (Bouché et al. 2004). Negative effects to the ecological system, e.g. in the form of enhanced competition between wild and domestic ungulates (Hibert et al. 2010), increased infection risks of wild ungulates with diseases, overexploitation of certain tree species by cutting branches as fodder (e.g. *Pterocarpus erinaceus*, *Khaya senegalensis*) (ECOPAS 2004) or uncontrolled bush fires, hence were imminent. Initiated by the EU funded ECOPAS (Ecosystèmes protégés d'Afrique sahélienne)

project, a multi-stakeholder process was started that aimed at reducing the pastoral pressure (Binot et al. 2009) by acknowledging and formalising the transhumant migration, defining transition corridors and pasture areas, as well as improving veterinary control (ECOPAS 2004). In reality, though, these measures did not work out well in the field, and most stakeholders we talked to denied proper implementation of these agreements. As ECOPAS also improved surveillance and enforcement capacities, however, conflicts between park rangers and transhumants intensified. Herders usually tried to escape and hide when being detected by a patrol. As a consequence, rangers killed large numbers of unattended livestock in the park (especially in W Benin). When caught, herders were punished (also by the use of violence (personal commitment Kesseler 2009, own research)) and usually had to pay a fine. Informal arrangements between rangers and pastoralists seemed to be widespread as well (Schönegg & Martel 2006, own research). Despite these risks, a large number of pastoralists still considered it lucrative to illegally enter the park.

Both kinds of conflicts, between farmers and herders as well as between herders and park rangers were prone to escalation (Schönegg & Martel 2006) and regularly caused fatalities on all sites. In an outbreak of violence several individuals were killed in one of our study villages close to Karimama in Benin, shortly before our household survey was started. Nevertheless, there were also agreements on the local level that seemed to work quite well and help to avoid conflict escalation (between sedentary Peul and transhumant Peul, as well as between Peul and farmers). Farmers also often confide their cattle to Peul pastoralists in a mutually beneficial exchange (Mazzucato & Niemeijer 2004; Schönegg & Martel 2006).

- **For more information on human population densities see Annex Chapter 4: "Human population densities"**

4.4 Methodological approach

General management evaluation

Management of PAs and their resource systems is a complex task that involves a number of stakeholders with diverse interests and mindsets. Therefore, we considered it crucial to integrate all major actor groups and their specific "realities" in our study in order to better understand actual PA management outcomes. However, we laid a focus on resource users and their organisations, as they usually suffer most from changed property regimes and are the ultimate aim of many PA management interventions. This diversity of actors demanded the implementation of a scope of different qualitative and quantitative methodological approaches. We used semi-structured interviews with experts and village committees/ associations, sometimes mixed with participatory elements. For resource users we relied on a quantitative questionnaire with open and closed questions. And finally we took the chance of ero-epic dialogues whenever possible.

Respective chapters provide more details on methodological aspects, e.g. on specific treatments of the data obtained. The general framework, however, is presented in the following paragraphs.

To evaluate management context, we largely relied on literature review, external biophysical (see Annex) and ecological data and a remote sensing approach. These methods will be explained in more detail in respective chapters.

Household survey – a bottom-up perspective.

A large scale survey on local resource users' attitude towards the PA and towards actors involved in management activities had been conducted. Questions covered 1) demographic/ socio-economic characteristics of respondents/hh, like hh size, age of interviewee, educational level, etc., 2) perceived benefits, problems and conflicts associated with the PA, 3) relationship to and interaction with other actors involved in PA management, e.g, their village participatory body, park rangers or private concessionaires, 4) the evolution of key resources and reasons for their decline or rise,

as well as 5) a group of questions that indicated the respondent's attitude towards the PA.

Altogether 26 villages all around WAP were included in the final analysis, with at least five villages per block (10 Block Arly, 5 Block W Burkina Faso, 6 Block W Benin and 5 Block Pendjari) and 16-26 respondents per village (549 in sum). Within blocks, villages were chosen in a semi-randomised manner. Criteria for pre-selection were proximity to next PA (max. 10km), representativeness of ethnic composition (respectively lifestyles) and accessibility by car/motorbike. Furthermore, study villages were spread across PA units within blocks (usually composed of some kind of reserve/national park and adjacent hunting concessions), so to make sure that we captured the whole spectrum of perceptions within one higher-level management unit (i.e. block). For this reason, we also decided to include more villages in the Arly block than elsewhere, as diversity of sub-units was highest there.
Within villages, households (hh) were also selected in a semi-randomised manner. As far as possible, we tried to adapt our selection to the ethnic heterogeneity of the focus villages. As we only had vague official information for most villages, if any, we tried to get respective information of village elders. Additionally, if selected villages were big enough, we did not chose neighbouring hh for interviews, as we considered familial ties to be stronger than for non-neighbouring hh. Interviews were conducted with male household heads, as they represent the primary source of information in a paternalistic society where women are often excluded from direct participation in decision-making processes. Before starting the surveys, we informed formal and informal authorities on site about the scope and purpose of the study.

Actual field work was carried out by local field assistants who knew local languages and particularities (6 altogether). To maximise coherence of their interviewing techniques and results, training workshops have been carried out on how to administer the questionnaire on site. If possible, experienced assistants from other regions that already had carried out their survey participated in these workshops. We then ran a test run in villages that were excluded from further analysis. In another workshop we discussed results of this trial, eliminated any uncertainties and adapted the questionnaire if necessary. Despite this procedure, we had to exclude the questionnaires from two villages afterwards as several key questions have not been posed correctly to

respondents. In this case we intensified training for the respective assistant and selected new villages. However, very few questionnaires from the total sample were excluded afterwards due to missing data. Interviews were conducted in local languages and took approximately one to one and a half hours. Field assistants hence usually stayed two or three days in the village.

The questionnaire included open and closed questions, in some cases in the form of rating scales. We offered the category “I do not know” wherever appropriate, so not to tempt respondents to give wrong answers. Field assistants were advised to note any additional comments of respondents that helped to specify and better understand all answers given. Further details on questions and treatment on the data is given in respective chapters.

Local participatory bodies - mediating top-down and bottom-up interests

Local participatory bodies like village associations and committees have been interviewed and asked about their role and functioning as mediators between local resource users and governmental bodies.

During our last field campaign in 2009 we were able to include 27 village committees, respectively associations in our survey that aimed at revealing the role and actual functionality of village participatory bodies. These interviews were carried during a second visit of our team in the same villages as our household survey (one additional village in the Pendjari region), and were already announced by our field assistants when they conducted their interviews with resource users. In most cases we stayed one night in the villages, and conducted the interview on the second day. This allowed us to get in informal contact with villagers before, and so to create a more relaxed atmosphere for the interviews. However, in some cases the willingness to cooperate was limited, respectively slowly evolved during the discussion. Before starting we always introduced our team and explained the purpose of our visit and the study. Villagers were encouraged to ask any kind of question or express their concerns. In four of the 27 villages only a shortened interview guideline was implemented by one field assistant, Lardia Thiombiano (Burkina Faso, Block Arly).

Usually at least two persons in responsible positions (president, secretary or treasurer) of the village participatory bodies took part in the interviews. In most cases, however, it were up to 10 people that actively engaged in the discussion and sometimes up to 25 people that passively attended the meetings. The character of these meetings hence was very unequal. Usually it were semi-structured interviews with key persons that interacted with each other. However, in some instances only one person dominated the interview and it was very difficult to broaden the interaction to other topics and participants. In contrast, in some other villages the semi-structured interviews evolved in group discussions and focused on specific disputes. At the end of every session, once more we asked the participants if they had any questions concerning our work, or also our personal motivation. Finally we handed over some kola nuts, which is a traditional gift for authorities and chiefs, and compensated the participants with a small amount of money for their time spent.

The interview guideline comprised questions on the organisation of the vpb, their activities, their financial and material participation, their interaction with other PA management actors and the general rule settings regulating resource exploitation in and around the PAs. A focus was laid on the processes of benefit sharing, information flow as well as the general evolution and status quo of their integration in PA management decisions and operations. Interview guidelines therefore were adapted to region-specific circumstances. For evaluating interactions between vpb and other actors, we employed a participatory approach. Participants were given five objects, e.g. small stones, peanuts or pieces of wood, and instructed to indicate the quality of interaction, respectively the degree of conflict with other actors by returning an equivalent number of items. They were told to imagine that they would be in charge to pay the salary of the other actor, and then asked how much they would give. Participants were not only amused by this approach, it also stimulated internal discussions and made it easier for them to potentially criticize other actors as they were not forced to vocalize their criticism. However, when asked to justify their decision, most vpbs willingly did so.
In some cases, interviews lasted more than four hours and participants (and interviewers) got tired. We then left out some parts of our guideline. The same has been done, if interviewees showed only minor motivation to cooperate.

Chapter 5

Output I
Benefits, problems and conflicts
Perceived by local resource users

5.1 Introduction

As discussed in previous chapters, balancing incentives and disincentives experienced by local resource users due to PA establishment/ existence is one of the central challenges of modern PA governance and management approaches. Several case studies analysing the impacts of community outreach programms identified differences in PA acceptance (Infield & Namara 2001; Newmark et al. 1993), knowledge on PA (Fiallo & Jacobson 1995; Anthony 2007) or benefits received due to PA (Spiteri & Nepal 2008) within local communities. Sex, age, education, wealth, ethnic affiliation, period of residence, land shortage, past interactions with PA managers, relation with hunter guides, economic activity, and employment by PA management have all been proven to be determining socio-demographic or socio-economic factors for these differences under specific conditions (Kidegheso et al. 2007; Bauer 2003; Anthony 2007; Infield 1988; Fiallo & Jacobson 1995; Newmark et al 1993; Weladji et al. 2003; Spiteri & Nepal 2008).

Based on literature review and previous research we expected to find a significant relation of block affiliation and benefits and problems perceived in our study region, as management units were quite distinct in their characteristics (see Chapter 3). We also hypothesized to find a significant effect of some context variables on the perception of benefits and problems. In particular, the variable “life strategy” should have an impact as herders often were not well integrated in the institutional and organisational framework of PA management approaches. Fig. 5.1 and the guiding questions summarize the key concerns of this chapter.

5.2 Material & Methods

Data collection and clustering: benefits and problems

The question concerning problems and benefits was regarded as one of the key aspects of our household survey. We therefore used open questions with multiple answers being possible instead of giving pre-defined options for answering. Concerning benefits, we asked two questions. First we wanted to know if the respondent’s community received any benefits due to its proximity to the PA. Then we asked whether the respondent himself gained anything from his proximity to the PA. For analysing the

effect of participation strategies and individual behaviour, we thought it to be crucial separating between individual and community-aimed incentive structures. In reality, however, it showed to be difficult to make this separation in the field. Very often people themselves did not separate between theses categories and answered what was good for their community would also lead to their personal benefit (e.g. the construction of a school where they could send their children). Some people, however, also listed several community benefits, but when asked about their own gains, they refused and said they themselves would not profit at all (this was often true for Peulh herders, but also for members of vpbs). We decided therefore to merge the two categories for our analysis. Concerning our question about problems, we asked in a more open way from the beginning: "Is proximity to the PA causing any problems/ disadvantages?" Field assistants were advised to note as many details as possible and any additional information that was given by respondents.

We then coded the answers and identified key statements (e.g. 37 problem-items for W Benin and 15 for Pendjari). These statements were clustered to logical subcategories which then were clustered again to higher level categories. We used these more abstract levels of categorisation, as they represent the most harmonised, i.e. normalized, way of analysing open-ended questions (while diversity of items differed with block, subcategories and categories were identical for all blocks). An overview of this hierarchical process is given in **Tab. 5.1** for problems and benefits in **Tab. 5.2**.

- **More details and information on these (sub-)categories and their meanings is provided in the Annex of this chapter.**

Tab. 5.1: Overview of problem (sub-)categories

Category	Sub-category	Example-items
sociological	conflict farmers-herders	*"farmers do not respect the zoning in the buffer zone"; "foraging of livestock in cultivated fields"*
	conflict rangers-villagers	*"rangers kill livestock in the park"; " the rangers ask for s.th for issuing the permit to cut grass"*
	institutional/ organisational	*"restricted access to park"; "fines are too high"*
	societal	*"the park makes the young go away"*
socio-ecological	human-animal conflict	*"crop damage caused by elephants"; "presence of predators"*
	limitations concerning agricultural/pastoral activities	*"necessity to permanently guard livestock"; "lack of cultivable land"*
	limitations concerning natural resource exploitation	*"restrictions to cut wood"; "we have to pay for exploitation"*
	limitations concerning spiritual activities	*"problems in having access to fetishes in PA"*

Tab. 5.2: Overview of benefit (sub-)categories

Category	Sub-category	Example-items
resource exploitation	agricultural/ pastoral exploitation	*"allocation of cultivable land in buffer zone"; "water supply for livestock"*
	natural resource exploitation	*"grass/thatch"; "wood"*
monetary	trade	*„money for village bank account via trade of bush meat"; "trade of natural products (straw mats)"*
	direct payments	*"income from trophy hunting"; "money via village hunting zone"*
	employment	*"jobs"; "money earned for surveillance"*
material	infrastructure	*"construction of school"; "construction of pump"*
	goods	*"bush meat"; "food aid"*
institutional/ organisational	informational	*"formations on sustainable use of trees"; "dialogue between authorities and villagers"*
	institutional/ organisational	*"creation of vpb"; "bank account"*

Clustering items to higher level categories causes a loss of information. The items "*allocation of cultivable land in buffer zone*" and "*water supply for livestock*" e.g. both belong to the sub-category "agricultural/ pastoral exploitation". However, they express completely different types of benefits that are important to different groups of resource users. We therefore give complete lists of all benefit- and problem-items and the frequency that respondents cited them in the Annex of this chapter.

Data analysis: the effect of socio-demographic and socio-economic characteristics of respondents on the perception of benefits/ problems (household level)

We used binary logistic regression modelling (IBM SPSS 20) to test 11 socio-demographic and socio-economic variables on their effect size on respondents perceiving benefits/ problems or not. We included "block affiliation" as an important proxy for different management strategies associated with the four different PA blocks. Dummy coding was used to transform the variable into a binary mode, in this case with W Benin as a reference. "Life-strategy" might also be described as main economic activity associated with ethnic affiliation. It basically categorises respondents into the two groups of farmers and herders, which corresponds to the dichotomy of being Peulh or not. Other variables are supposed to reflect social and economic status like "age",

"education" (formal or none), "period of residence" (born and >20 years, or less), "household size", "growing cotton" (yes or no), heads of own cattle, and cultivated area. Two more predictors refer to the respondent's affiliation to PA management activities. These are "having worked for PA" (yes or no) and "membership in vpb" (yes or no). All cases with missing values were not included in the analysis.

As dependant variable we used binary data on benefit and problem perception (yes or no) of categories, i.e. specific classes of benefits and problems. These were "resource exploitation" "monetary" and "material" for benefits, respectively "social" and "socio-ecological" for problems. Due to very few data we omitted the benefit category "institutional/ organisational" from the analysis.

As regression method forced entry was chosen, as this method is less influenced by random variation than stepwise methods (Field 2009). We used several criteria to assess the overall model quality, namely tests based on chi-square statistics and pseudo-R^2. Similar to R^2 in linear regression, the latter try to quantify the explained degree of variation in the model. According to Backhaus et al. (2008) results for Cox and Snell R^2 as well as for Nagelkerke R^2 can be assessed as acceptable for values higher than 0,2 and good for values from 0,4 onwards; values >0,5 for Nagelkerke R^2 are very good. Additionally, the Hosemer-Lemeshow statistic tests the null hypothesis that the difference between observed values and predicted values by the model equals zero. If this hypothesis can not be rejected ($p<0,05$) there is a good fit.

Crucial for the interpretation of the results are the estimates of the coefficients for the predictors included in the model (b, similar to b values in linear regression), the Wald statistics (which tests if the b coefficient is different from zero) and the odds ratio. If this value is bigger than one, it indicates that as the predictor increases, the odds of the outcome increase. Vice versa, if the value is smaller than one, it indicates that as the predictor increases, the odds of the outcome occurring decrease (Field 2009).

Analysis on block-level: disentangling regional differences in benefit/ problem perception caused by specific management approaches

Data was aggregated on village, respectively block level, and expressed in two different ways. The first is the *percentage of interviewees* perceiving benefits or problems

caused by the PA, first in total (percentage of households that perceive at least on type of benefit) and then sorted by benefit type. These figures give good indications of where management strategies do produce what kind of output, and of the degree of their broad impact in the target communities. Second, as respondents were able to give more than one item, we analysed the *abundance of individual benefit / problem items*, respectively categories relative to the total number of items given in each block. If, e.g. few people experience a high number of different types of benefits or problems within one category, the percentage of people experiencing this benefit/ problem category only reflects part of the information content in the data. The relative distribution of items therefore complements the picture by adding a more detailed qualitative aspect of benefit/ problem perception of respondents.

Simple chi-squared tests were performed on every problem/ benefit category to determine the differences between PA management blocks.

Analysis of the association between benefit, respectively problem perception and respondent's attitude towards the PA

Attitudes were measured by asking respondents to agree or disagree with pre-defined statements (see **Box 5.1** in Annex) and subsequent calculation of an attitude index based on this data. The approach had been successfully applied by Infield & Namara (2001) before. We adopted some of their questions, adjusted others to our context or added new ones. As single items measure different dimensions of attitude, the resulting indicator is of rather coarse and global nature, but addresses main subjects that determine local resource users' relationship with surrounding PAs. Responses were scored either +1 or -1, depending whether the answers expressed agreement or disagreement with rule systems, visions and aims of the conservation approaches. Abstention was scored 0. Like Infield and Namara (2001) we divided the potential scoring range from -9 to +9 into five attitudinal categories and hence assigned every respondent to a specific category (-9 to -6= very negative; -5 to -2= negative; -1 to+1= neutral; +2 to +5= positive; +6 to +9= very positive).

We then analysed the associations between respondents' general perception of benefits and problems and their attitudes using chi square statistics. Additionally, the same

method has been used to test whether attitude was connected to the type of benefit perceived. We therefore extracted cases of interviewees perceiving exclusively either natural resource access benefits, or exclusively monetary/ material benefits from the total sample, and omitted those cases that perceived both benefit categories.

5.3 Results

Global overview on distribution of benefits and drawbacks in the WAP complex

The majority of households perceived some kind of problem due to the PA next to their village. Altogether 434 of 549 (79.1%) interviewees cited at least one item when asked if the PA was causing any problems. With regard to quality, socio-ecological problems were much more prevalent than mere sociological problems. Less than 20% of interviewees indicated to perceive the latter, whereas about 70% were affected by problems caused by socio-ecological interactions. The subcategories most often cited were “human-animal conflicts” (47.7% of respondents), “limitations concerning agricultural and pastoral exploitation” (27.1%) and “conflicts between rangers and villagers” (9.8%). The distribution of citation items relative to respective totals is displayed in **Fig. 5.1**. We used this parameter as single values sum up to 100 (due to multiple answers being possible this is not the case for the parameter “respondents”). Restrictions on resource access constituted about one third of all answers given, whereas organisational problems and conflicts with other stakeholders only sum to ca. 20%. However, as respondents might have been reserved to give information on conflicts, especially if governmental actors were involved, we estimate these figures to be rather conservative.

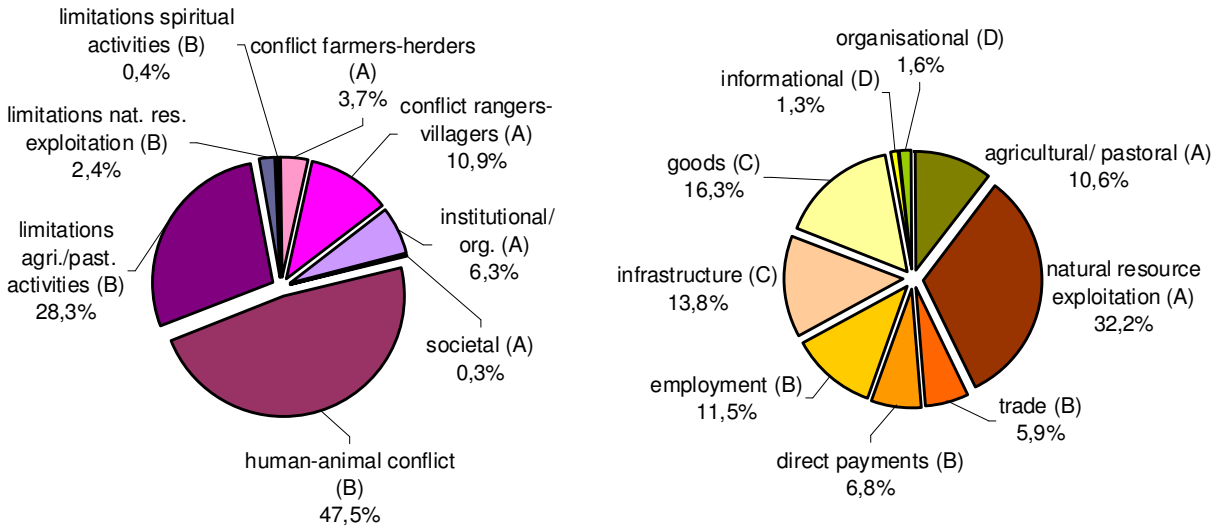


Fig. 5.1: Subcategories of problems (left) and benefits (right) and their distribution relative to total item citations for benefits and problems (benefits total n= 1213; problems total n= 667). For further information on subcategories see Annex. Letters in brackets gives classification of subcategories to higher-ranking categories (for benefits: (A)= natural resource exploitation; (B)= Monetary; (C)= Material; (D)= institutional/organisational; for problems: (A)= sociological; (B)= socio-ecological)

The overall percentage of respondents perceiving benefits (73.6%) is slightly below the number of people experiencing problems. More than half of the respondents perceived it as a benefit to have access to natural and agricultural/ pastoral resources of the PA (57.9%), 42.6% received material benefits, either in the form of community infrastructure or bush meat and other goods, and more than a third (35.0%) associated some kind of community or personal monetary benefit with the PA. Access to information (e.g. on better agricultural techniques) or other organisational advantages were valued only by a minority (5.3%) as well as potential benefits arising from conservation efforts and other non-material forms of support (2.7%). Resource exploitation benefits hence were the most important type of benefits locals perceived, both in terms of the percentage of resource users as well as in terms of percentage of items. However, a relatively high percentage of people that received this kind of benefit, indicated to receive benefits of at least one other category as well (percentage of items is much lower than percentage of respondents for the category resource exploitation, see figures in text and **Fig. 5.2**). Correspondingly the same holds true for monetary and material benefits.

- **Detailed information on the frequency of single benefit- and problem-items is provided in Annex Chapter 5: Tabs 5.7-5.14**
- **A wide range of citations concerning benefit reception is provided in Annex Chapter 5: Citations benefits**

Who wins? Who loses? The effect of socio-demographic and socio-economic characteristics on benefit/ problem perception

Benefits

General quality of the computed models can be assessed as acceptable (benefit "natural resource access") to very good (benefit "monetary"). Details can be found below respective tables. All three models indicate that the perception of benefits indeed significantly depended on block affiliation of the respondent. Management interventions were thus important and their effects obviously differ between blocks. Furthermore, life strategy (being farmer or herder) also seems to have been a key variable in all cases (see explanation below). Finally, in two of the three models (benefit categories "monetary benefits" and "natural resource access") residence time in the village was a significant predictor of benefit perception.

- Results hence revealed that those resource users that perceive benefits in the form of **natural resource access** were three times more likely to come from Arly than from W Benin, respectively were less likely to come from Pendjari than from W Benin. Furthermore they were more likely to be farmers, early comers, respectively natives, and not to grow cotton (**Tab. 5.3**)

Tab. 5.3: Results of logistic regression showing the effect of demographic factors on perception of benefit category "natural resource access". Significant values in bold.

Variable	B	SE	Wald	p	odds ratio
Pendjari	-1.38	0.36	14.27	**0.00**	0.25
Arly	1.09	0.31	12.50	**0.00**	2.97
W Burkina Faso	-0.40	0.36	1.20	0.27	0.67
life strategy (herder)	-1.42	0.33	17.96	**0.00**	0.24
age	-0.01	0.01	1.82	0.18	0.99
education (none)	-0.12	0.31	0.15	0.70	0.89

residence (0-20 years)	-0.79	0.25	9.90	**0.00**	0.45
hhsize	0.04	0.03	2.71	0.10	1.05
worked for PA (no)	-0.42	0.29	2.09	0.15	0.66
membership association (no)	0.37	0.35	1.15	0.28	1.45
growing cotton (no)	1.08	0.26	16.71	**0.00**	2.95
heads of own cattle	0.00	0.01	0.08	0.78	1.00
cultivated surface	-0.01	0.05	0.05	0.83	0.99
constant	0.59	0.60	0.96	0.33	1.81

N= 485; B= logistic regression coefficient; SE= standard error; Wald= Wald statistic; p= significance; odds ratio= if the value is greater than 1 then it indicates that as the predictor increases, the odds of the outcome occurring increase
Overall model quality: Model χ^2= 96.76, p<0.00; R^2= 0.18 (Cox & Snell), 0.24 (Nagelkerke); χ^2= 17.05 (Hosmer & Lemeshow), p= 0.06; Percentage correctly predicted by model: receiving benefits= 81.0%, not receiving benefits= 56.2%; W Benin is reference for block-dummy

- Respondents receiving **monetary benefits** due to the PA were more likely to come from any other block than from W Benin, with odds ratios of approximately 100:1 for Pendjari, 50:1 for W Burkina Faso and 15:1 for Arly. They were also likely to have already done some kind of work for the PA and to be member of their vpb, either as an ordinary member or in the bureau itself. Though the predictor "heads of own cattle" significantly contributed to the model, its effect in reality was very small (with residents owning more cattle lightly being more likely to receive monetary benefits). The very high standard error for the predictor "life strategy" shows, that there was some exceptional error occurring. In fact when looking at this in detail, one finds that there was no single herder receiving any monetary benefit. So in reality there is a significant effect of this predictor, which can not be captured by the model (see **Tab. 5.4**)

Tab. 5.4: Results of logistic regression showing the effect of demographic factors on perception of benefit category "monetary". Significant values in bold.

Variable	B	SE	Wald	p	odds ratio
Pendjari	4.64	0.62	55.21	**0.00**	103.54
Arly	2.73	0.61	19.93	**0.00**	15.35
WBurkina	3.90	0.66	35.44	**0.00**	49.49
life strategy (herder)	-26.55	2792.63	0.00	0.99	0.00
age	0.00	0.01	0.05	0.82	1.00
education (none)	-0.08	0.60	0.02	0.90	0.93
residence (0-20 years)	-0.40	0.34	1.39	0.24	0.67
hhsize	-0.01	0.04	0.03	0.85	0.99
worked for PA (no)	-0.95	0.38	6.33	**0.01**	0.39
membership association (no)	-1.85	0.52	12.43	**0.00**	0.16
growing cotton (no)	-0.01	0.36	0.00	0.98	0.99
heads of own cattle	0.05	0.02	9.26	**0.00**	1.05

cultivated surface	-0.09	0.09	1.16	0.28	0.91
constant	-0.53	0.90	0.34	0.56	0.59

N= 485; B= logistic regression coefficient; SE= standard error; Wald= Wald statistic; p= significance; odds ratio= if the value is greater than 1 then it indicates that as the predictor increases. the odds of the outcome occurring increase
Overall model quality: Model χ^2= 333.36, p<0.00; R^2= 0.50 (Cox & Snell). 0.68 (Nagelkerke); χ^2= 2.42 (Hosmer & Lemeshow); p= 0.97; Percentage correctly predicted by model: receiving benefits= 71.3%; not receiving benefits= 92.3%; W Benin is reference for block-dummy

- Results for the benefit category "**material**" are quite similar to those received for monetary benefits. Again the exceptional status of the Pendjari Block becomes obvious. Respondents perceiving material benefits are much more likely to come from Pendjari than from W Benin, or three, respectively 2.7 times more likely to come from Arly, respectively W Burkina. Herders are much more unlikely to receive material benefits than farmers, as well as people that came to the area during the last twenty years than those that were born, respectively lived more than 20 years in the region. As for monetary benefits, "heads of own cattle" is making a significant contribution, but with an odds ratio of 1.02:1 there seems to be no relevant contribution for interpretation (**Tab. 5.5**).

Tab. 5.5: Results of logistic regression showing the effect of demographic factors on perception of benefit category "monetary". Significant values in bold.

Variable	B	SE	Wald	p	odds ratio
Pendjari	4.90	0.80	37.55	**0.00**	134.52
Arly	1.12	0.36	9.45	**0.00**	3.05
WBurkina	1.02	0.43	5.55	**0.02**	2.76
life strategy (herder)	-3.40	0.64	28.12	**0.00**	0.03
age	0.01	0.01	0.58	0.45	1.01
education (none)	-0.20	0.47	0.19	0.67	0.82
residence (0-20 years)	-0.68	0.28	5.71	**0.02**	0.51
hhsize	-0.04	0.03	1.71	0.19	0.96
worked for PA (no)	-0.25	0.33	0.58	0.44	0.78
membership association (no)	-0.25	0.42	0.35	0.55	0.78
growing cotton (no)	0.33	0.31	1.16	0.28	1.40
heads of own cattle	0.02	0.01	5.34	**0.02**	1.02
cultivated surface	0.05	0.06	0.72	0.40	1.05
constant	-0.82	0.75	1.18	0.28	0.44

N= 485; B= logistic regression coefficient; SE= standard error; Wald= Wald statistic; p= significance; odds ratio= if the value is greater than 1 then it indicates that as the predictor increases. the odds of the outcome occurring increase
Overall model quality: Model χ^2= 260.20; p<0.00; R^2= 0.42 (Cox & Snell); 0.56 (Nagelkerke); χ^2= 26.79 (Hosmer & Lemeshow); p= 0.00; Percentage correctly predicted by model: receiving benefits= 70.2%; not receiving benefits= 83.1%; W Benin is reference for block-dummy

- **Problems**

There was no satisfactory logistic regression model showing the effect of demographic factors on the perception of problems. R^2 statistics assessed model quality for both categories ("social" and socio-ecological") as not acceptable. Predictions of classification were in some cases worse than by chance alone. We therefore concentrated on the analysis of problems by using the means of descriptive and simple analytical statistics in the following paragraphs.

Detailed overview: differences between blocks and life strategies

Logistic regression proved block affiliation and life strategy to be the most important predictors for the perception of benefits. We therefore used descriptive and simple analytical statistics to elaborate these differences in detail, for both benefits and problems. We also subdivided the total sample into the subsamples of herders, i.e. Peulh, and farmers (including all other ethnic groups). As we draw our sample of respondents according to ethnic heterogeneity in study villages, respectively blocks, the variation of life strategies in the data mirrors real world conditions. However, there are major differences between blocks. The percentage of Peulh in the sample varies from around 25-30% (Arly= 27,9%; W Burkina Faso= 29,0%; W Benin= 25,9%) to as little as 2% (Pendjari). As farmers proved to be the main beneficiaries, we first compared differences between blocks using the total sample (farmers and herders), and afterwards just the farmer subsample.

- **Benefits**

In Pendjari almost 100% of all respondents perceived some kind of benefit, whereas in W Benin there were only 58.7% that gave a positive answer. The two blocks in Burkina Faso lied in between (Arly= 77%, W Burkina Faso= 64%). Though, differences between blocks within one country seemed to be higher than between countries, e.g. for the two parts of W in Burkina and Benin. In all parts, the mean number of benefits cited by beneficiaries is much higher than the respective number for problems (see **Tab. 5.6**

below). Again Pendjari holds the first place (4,4 items per respondent), and W Benin the last (2.3 items per interviewee). In Burkina Faso the percentage of herders perceiving benefits was significantly smaller than the percentage of farmers receiving benefits, while there was no such quantitative difference in Benin. However, as there were only two herders in the Pendjari sample, the value for this block is by no means representative.

Tab. 5.6: Benefit perception by life strategy.

Protected Area	Percentage of interviewees perceiving benefits due to PA			Mean no of benefits cited by interviewee perceiving benefits[1]		
	total %	farmers %	herders %	M	SD	cv
Block Arly	77.0	87.1 *(n=147)*	50.9 (n=57)	2.6	1.3	0.5
Block W Burkina	64.0	83.1 *(n= 71)*	20.7 (n=29)	3.0	1.6	0.5
Block W Benin	58.7	57.5 *(n=106)*	56.8 (n=37)	2.3	1.2	0.5
Block Pendjari	97.1	98.0 *(n=99)*	(100.0 (n=2))	4.4	1.8	0.4

[1]total sample

Not only numbers of benefits differed between blocks, but also their relative distribution to different qualitative benefit categories (see **Fig. 5.2**). The item that was cited most often in the Pendjari region belonged to the category of material benefits ("bush meat" that was distributed by private concessionaires respectively governmental authorities), whereas in the other regions the item cited most often belonged to resource exploitation ("grass" in Burkina and the "allocation of cultivable land "in W Benin). Material and monetary benefits were the categories most often cited by respondents in Pendjari. Also in W Burkina a relatively high percentage of all benefits quoted belonged to these categories, whereas in Arly and W Benin access to (resp. exploitation of) natural and agricultural/pastoral resources accounted for more than 50% of all items (Arly 59,3%, W Benin 72,6%) and monetary and material benefits were only of minor importance.

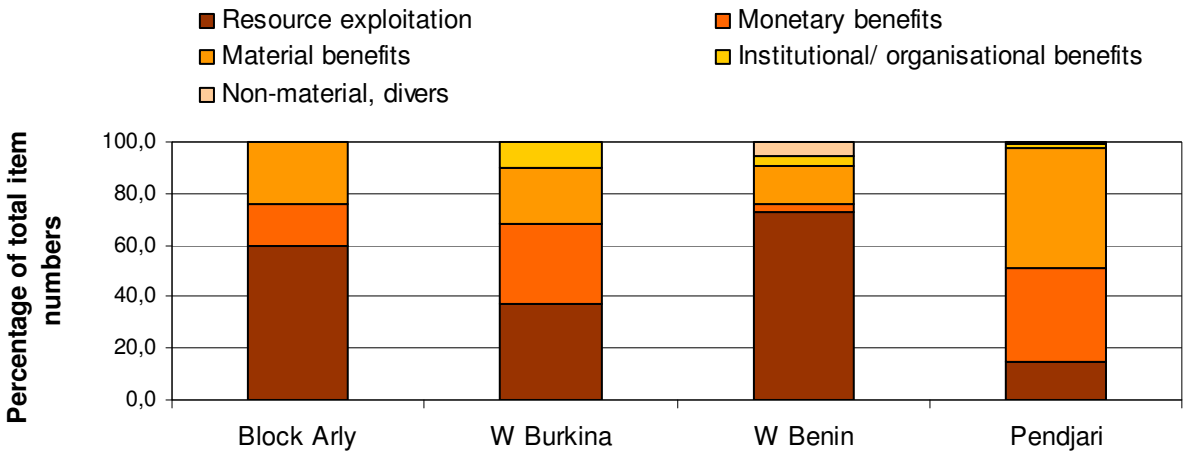


Fig. 5.2: Relative distribution of benefit items (totals sample farmers & herders)

As Peulh herders often were not well integrated in local organisational and institutional frameworks, they were rarely integrated in the action arenas of participation and therefore received fewer high quality benefits than farmers. Indeed they profited from resource exploitation benefits (45% of subgroup), however, there was no single Peulh herder reporting on monetary benefits due to a PA (see **Fig. 5.3 & 5.4**). Though, even if there were major differences in the ethnic composition of local communities around WAP, the general pattern of benefits distribution among blocks did not change when analysing only the subgroup of farmers instead of the whole sample (farmers and herders) (see **Tabs 5.7** and **5.8**). Therefore all percentages given in the following refer to the whole sample if not stated otherwise.

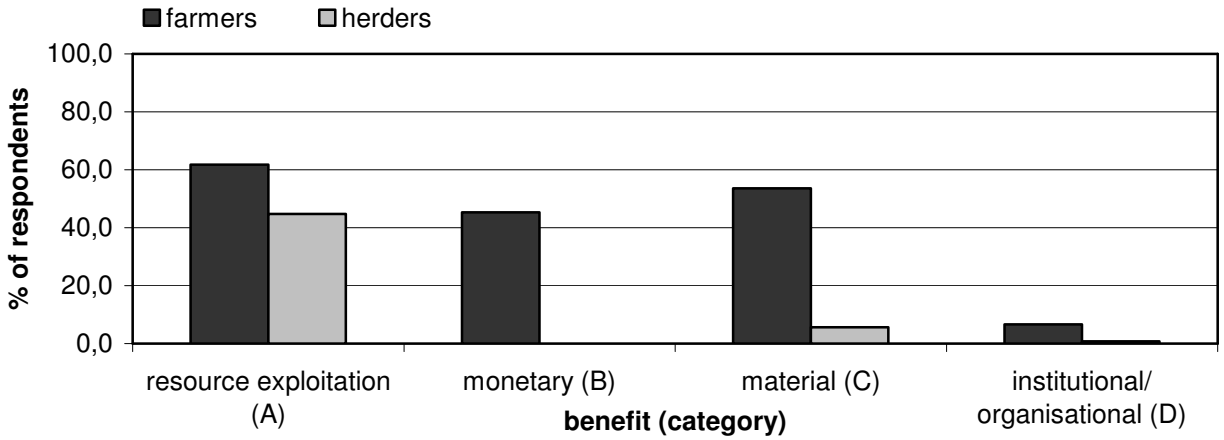


Fig. 5.3: Benefit perception (categories) displayed by subgroups (farmers and herders). All differences on this level are significant (resource exploitation: χ^2= 11,44, p= 0,00; monetary: no Peulh beneficiaries; material: χ^2= 90,72, p= 0,00; institutional/ organisational: χ^2= 6,45, p= 0,01)

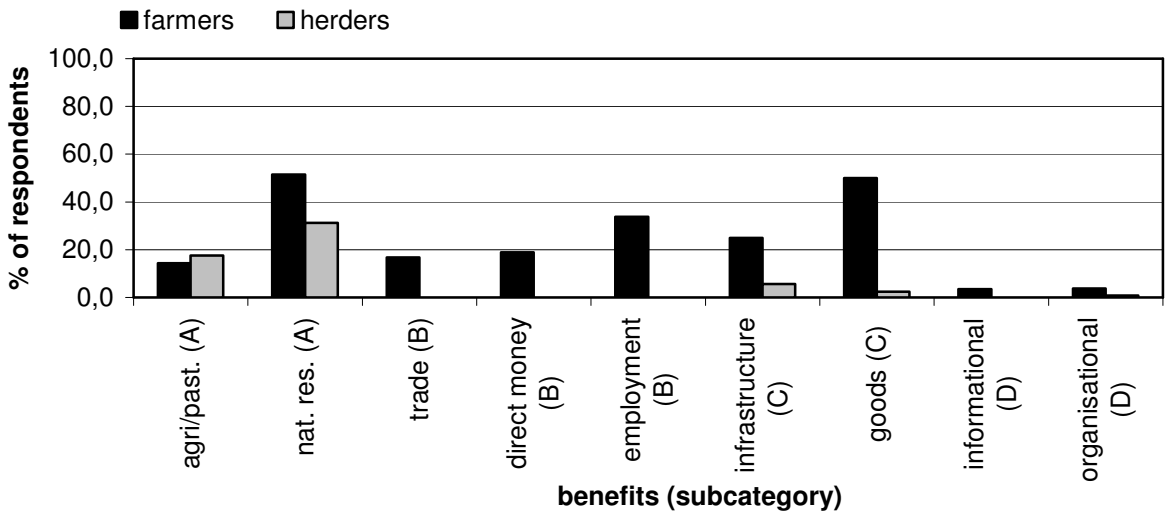


Fig. 5.4: Benefit perception (subcategories) displayed by subgroups (farmers and herders).

For each single type of benefit there were highly significant associations between block affiliation of respondents and their perception of respective benefits for both, the total sample (see Tab. 5.7) as well as for farmers alone (see Tab. 5.8). In other words: There were obvious differences in the distribution of specific benefit types among the four different management blocks.

Tab. 5.7: Benefits perceived by respondents. Numbers give percentage of interviewees (total sample farmers & herders)

	% of interviewees					
	Arly	**W Bu**	**W Be**	**Pen**	**χ^2**	**p**
n=	204	100	143	80/ 102		
(A) Resource exploitation	**76.5**	**50.0**	**51.7**	**37.3**	**51.49**	**0.00**
agri./ past. exploitation	0.5	0.0	51.7	7.8	205.55	0.00
nat. res. exploitation	76.5	50.0	11.9	33.3	149.97	0.00
(B) Monetary benefits	**27.0**	**42.0**	**4.9**	**86.3**	**182.86**	**0.00**
trade	9.8	10.0	0.0	40.2	91.11*	0.00
direct payments	10.3	20.0	0.0	38.2	75.64*	0.00
employment	13.2	28.0	4.9	69.6	157.75	0.00
(C) Material benefits	**36.3**	**34.0**	**18.9**	**96.1**	**158.71**	**0.00**
infrastructure	9.3	6.0	16.1	62.7	142.48	0.00
goods	34.8	30.0	2.8	85.3	179.76	0.00
(D) Institutional/ organisational benefits	**0.5**	**14.0**	**4.9**	**6.9**	**25.11**	**0.00**
informational	0.5	7.0	3.5	2.0	n.a.	-
organisational	0.0	10.0	1.4	4.9	n.a.	-
Non-material. divers	**0.0**	**0.0**	**7.7**	**3.9**	**n.a.**	**-**

n.a.= not applicable; df= 3 in all cases; subcategory “other” in category “monetary benefits omitted due to too few data (only 2% for Pendjari); ; *analysis without W Benin

Tab. 5.8: Benefits perceived by respondents. Numbers give percentage of interviewees (**subsample farmers**)

	% of interviewees					
	Arly	**W Bu**	**W Be**	**Pen**	χ^2	**p**
n=	147	71	106	99		
(A) Resource exploitation	**86.4**	**63.4**	**50.9**	**36.4**	**70.26**	**0.00**
agri./ past. exploitation	0.0	0.0	50.9	7.1	155.64	0.00
nat. res. exploitation	86.4	63.4	13.2	32.3	152.48	0.00
(B) Monetary benefits	**37.4**	**59.2**	**6.6**	**88.9**	**149.10**	**0.00**
trade	13.6	14.1	0.0	41.4	65.81*	0.00
direct payments	14.3	28.2	0.0	39.4	57.82*	0.00
employment	18.4	39.4	6.6	81.8	153.70	0.00
(C) Material benefits	**50.3**	**46.5**	**22.6**	**97.0**	**117.82**	**0.00**
infrastructure	12.9	7.0	18.9	62.6	100.36	0.00
goods	48.3	42.3	22.6	87.9	90.43	0.00
(D) Institutional/ organisational benefits	**0.7**	**19.7**	**5.7**	**7.1**	**28.29**	**0.00**
informational	0.7	9.9	4.7	2.0	n.a.	-
organisational	0.0	14.1	0.9	5.1	n.a.	-

n.a.= not applicable; df= 3 in all cases; *analysis without W Benin; Category "non-material divers" omitted due to too few cases. s.a.

- Resource exploitation

  Benefits from natural resource exploitation were perceived and valued most notably by locals in the Arly region (76.5%), whereas just about a third of respondents from the Pendjari region quoted resource exploitation, respectively natural resource exploitation benefits. Around half of all interviewees in both W parks said to perceive resource exploitation benefits (50.0% for W Burkina and 51.7% for W Benin). However, there is a significant difference that becomes obvious when looking at the subcategories: in W Burkina it were benefits from natural resource exploitation and in W Benin it were benefits from agricultural/ pastoral exploitation that played an important role. This difference is due to the existence of a buffer zone around W Benin where specific rules for agricultural/ pastoral exploitation were applied. Grass/thatch, (fire) wood and buffer zone exploitation were among the most frequent cited items generally.

- Monetary benefits

  Monetary benefits, respectively all its subcategories (trade, direct payments, employment), were cited most often by people living adjacent to Pendjari. In W Benin a remarkable small portion of all interviewees (4.9%) stated to receive monetary benefits (only in form of employment that was in some way associated to PA management). In Burkina Faso people profited from all of the subcategories, however in rather small proportions. As a high portion of land in Arly was used for trophy hunting, a higher percentage of people receiving the benefits of employment or direct payments was expected. W Burkina Faso seemed to be better off than Arly with respect to monetary benefits, especially regarding employment opportunities. Nevertheless, “job opportunities” was one of the most often cited benefit overall (all blocks).

- Material benefits

  As monetary and material benefits were closely linked, it is no surprise that people in Pendjari also perceived high rates of material benefits. Though the construction of public infrastructure (infrastructure) and the distribution of bush meat (goods) are mechanisms that principally were in place in all four PA blocks, they seem not to have worked equally successful in all parts. In W Benin the distribution of goods was actually not existent at all, while at least 16.1% of respondents perceived benefits from infrastructure. On the contrary, in both parks in Burkina there was a higher percentage of respondents that received goods (about one third in both parks), whereas the construction of infrastructure was cited by less than 10% of respondents in these parks. “Bush meat” also belonged to the top five items cited by interviewees in three of the four blocks (Arly, W Burkina and Pendjari).

- Institutional/ organisational benefits

  These benefit types were perceived or acknowledged far less than the others. With the exception of W Burkina Faso, less than 10% of all respondents quoted benefits belonging to this category. In W Burkina Faso 10% perceived it as a benefit that their organisational capacity as a community had increased, 7% said they benefited from information flow in some ways. Especially for Pendjari, where communities and participation bodies seemed to have a relatively high degree of organisation and

power, a higher percentage could have been expected to answer positively. Indeed, none of the top 5 items (items cited most often) belonged to this benefit type.

- **Problems**

In Block Arly and W Benin more than 80% of all respondents said to perceive problems, whereas in W Burkina less than 60% did so (see **Tab. 5.9**). Pendjari lied in between with about 75%. The mean number of problems cited by these people ranged from 1.3 (Arly) to 1.9 in W Burkina, which means that though there was a relatively lower number of people negatively affected around W Burkina, those that perceived problems were impacted by a higher diversity of problems than people elsewhere. In general, like for benefits, the variation in number of citations per interviewee was quiet similar (cv≈0.5) across all four blocks.

Tab. 5.9: Percentage of people affected by problems due to the PA and general intensity (diversity) of negative effects, expressed by the mean number of citations per respondent (total sample farmers & herders)

PA block	Percentage of interviewees perceiving problems caused by PA			Mean no of problems cited by interviewee perceiving problems[1]		
	total %	farmers %	herders %	M	SD	cv
Block Arly	85.3	83.7 (n=147)	87.7 (n=57)	1.3	0.6	0.5
Block W Burkina	58.0	50.7 (n=71)	75.9 (n=29)	1.9	1.1	0.6
Block W Benin	85.6	84.9 (n=106)	86.5 (n=37)	1.7	0.9	0.5
Block Pendjari	75.5	74.7 (n=99)	(100 (n=2))	1.6	0.9	0.6

[1]total sample

Socio-ecological problems were much more prevalent than sociological ones in all of the four blocks. In Arly and Pendjari the five most often cited single items ("top five" see Annex) exclusively belonged to this category, with crop-raiding elephants constituting the most important drawback associated with PAs. In both areas less than 10% of all quoted problems originated from conflicts with other stakeholders. Also in W Burkina Faso their share was quite low (less than 25%), whereas in W Benin almost half of all items (46.1%) belonged to this category, mirroring foremost conflict-prone interactions with local rangers (see **Fig. 5.5**).

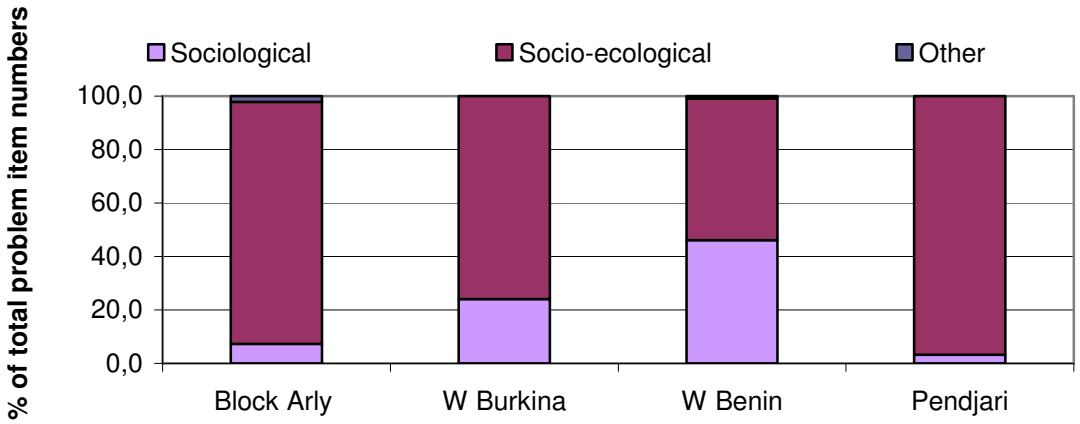


Fig. 5.5: Relative distribution of problem-items (total sample farmers & herders)

Except for W Burkina Faso, there was no major difference in overall problem perception among subgroups in the four blocks. Indeed there was also no statistically significant association between life-strategy and problem perception for the total sample (sociological χ^2= 1.41, p= 0.24; socio-ecological χ^2=2.77, p= 0.10). Again, Pendjari has to be treated with caution as there were only two herders among respondents. When taking a more differentiated perspective and looking at the subcategories, one finds that there was, however, a qualitative difference in the perception of problems by farmers and herders: for farmers human animal conflicts were most pressing, whereas herders regarded limitations concerning their pastoral activities (in the PA and buffer zones) as most important problem (see **Fig. 5.6**).

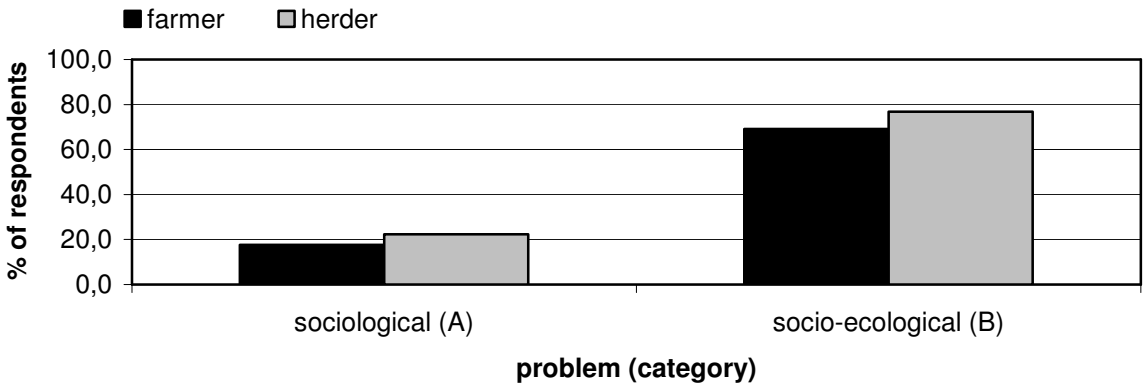


Fig. 5.6: Problem perception (categories) displayed by subgroups (farmers and herders). All differences on this level are significant.

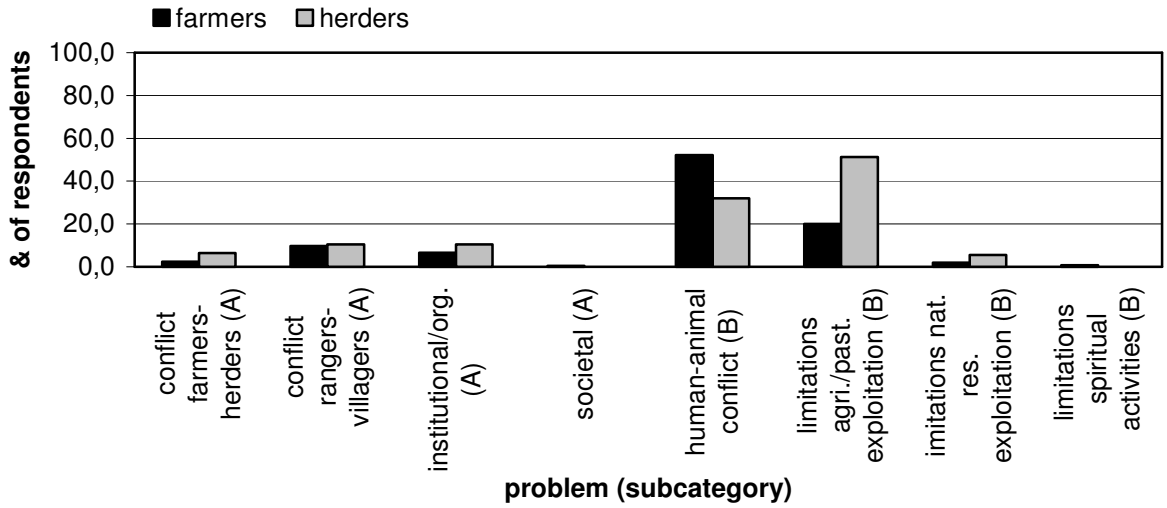


Fig. 5.7: Problem perception (subcategories) displayed by subgroups (farmers and herders).

Also when comparing the percentage of respondents that perceived the different categories and subcategories of drawbacks, we found significant effects between blocks. As there were no major differences between farmers and herders (see **Fig. 5.7**), we yielded the same results for the farmer subgroup alone (exception institutional/ organisational problems; **Tab. 5.10** and **Tab. 5.11** give respective percentages and results of chi-square tests). In the following we therefore only refer to the data of the whole sample (farmers & herders).

Tab. 5.10: Problems encountered by respondents. Numbers give percentage of interviewees

	Arly	W Bu	W Be	Pen	χ^2	p
n=	204	100	143	80/ 102		
(A) Sociological	**7.8**	**24.0**	**42.0**	**2.9**	**84.99**	**0.000**
conflict farmers-herders	0.0	1.0	11.9	0.0	n.a.	-
conflict rangers-villagers	1.0	13.0	25.9	2.0	67.78	0.000
institutional/ organisational	6.4	12.0	10.5	1.0	11.43	0.010
societal	1.0	0.0	0.0	0.0	n.a.	-
(B) Socio-ecological	**82.8**	**55.0**	**59.4**	**75.5**	**38.72**	**0.000**
human-animal conflict	69.1	32.0	18.2	61.8	105.42	0.000
limit.agri./ past. activities	22.1	31.0	43.4	10.8	36.23	0.000
limit. nat. res. exploitation	1.0	7.0	1.4	3.9	n.a.	-
limit. spiritual activities	0.0	0.0	0.0	2.0	n.a.	-
Other	**2.5**	**0.0**	**1.4**	**0.0**	**n.a.**	**-**

n.a.= not applicable; df= 3 in all cases;

Tab. 5.11: Problems encountered by farmers alone. Numbers give percentage of interviewee

	Arly	W Bu	W Be	Pen	χ^2	p
n=	147	71	106	99		
(A) Sociological	**9.5**	**21.1**	**40.6**	**3.0**	**59.90**	**0.00**
conflict farmers-herders	0.0	1.4	8.5	0.0	n.a.	-
conflict rangers-villagers	0.7	14.1	26.4	2.0	55.73	0.00
institutional/ organisational	7.5	8.5	9.4	1.0	6.96	0.07
societal	1.4	0.0	0.0	0.0	n.a.	-
(B) Socio-ecological	**83.0**	**46.5**	**60.4**	**74.7**	**35.66**	**0.00**
human-animal conflict	76.2	36.6	21.7	60.6	83.15	0.00
limit.agri./ past. activities	13.6	18.3	38.7	11.1	31.77	0.00
limit. nat. res. exploitation	0.0	2.8	1.9	4.0	n.a.	-
limit. spiritual activities	0.0	0.0	0.0	3.0	n.a.	-

n.a.= not applicable; df= 3 in all cases; category “other” omitted due to too few data

- Sociological problems

Especially in W Benin a relatively high percentage of interviewees indicated conflict-loaded interactions between farmers and herders (8.5%), and between villagers and rangers (26.4%). Arbitrary arrest outside the PAs as well as other unjust actions by governmental rangers were among the most cited items in W Benin. But also in W Burkina conflicts between these actors was the sociological problem encountered most often (14.1%). In Arly the problems cited by interviewees most often belonged to the sub-category of institutional/ organisational problems (7.5%) and in Pendjari very few people seemed to have been affected by severe negative sociological interactions. However, we generally estimate the percentage of negative encounters with park authorities to be higher than the results suggest. Especially in some areas, like Arly, there was a strong relationship of dependence between rangers and villagers. Such a situation of unbalanced powers might lead to generally euphemized answers by the less powerful.

- Socio-ecological problems

Socio-ecological problems were cited by more than 50% of interviewees in all four PA blocks. Especially in those areas that showed lower levels of sociological problems

(Pendjari and Arly), more people cited socio-ecological problems. This effect might be caused by our methodology: as questions were open-ended, respondents were free to choose and cite those problems that subjectively had the most severe impact on them. So if they quoted pressing problems with park rangers, conflicts with elephants might be of less concern at the time of the interview. This, however, does not necessarily mean that there were in fact less crop-raiding elephants than elsewhere. Indeed human-animal conflicts caused by crop raiding animals, foremost elephants, was the most important problem in Arly (76.2%), W Burkina (36.6) and Pendjari (60.6). Limitations concerning agricultural or pastoral activities (which essentially means a lack of land free for exploitation) was the second most important problem perceived by local peasants. Especially in the W-Area many people were affected by this shortage of land, which also caused the high degree of sociological problems in the W Benin region described above. Comparatively few people considered limitations in natural resource exploitation and access to spiritual places to be problematic.

Consequences of perceived benefits and problems: conflicts & attitudes towards PA

- **Conflicts**

When asked if they were involved in a conflict concerning resource exploitation, a total of 135 respondents gave positive answers (24.6%). The spatial distribution among blocks corresponds very well to the pattern of sociological problems (see Tab 5.12). Most conflicts were cited by respondents in the W region, especially in W Benin (39.9% of all respondents). The reasons were most often disputes over cultivable land and/ or pasture in all four blocks. In Arly, however, wood also played an important role (28.2%) whereas in the Pendjari region there were no conflicts on pasture, but a high percentage (42.9%) of conflicts due to poaching activities. Opposing parties (more than one answer possible) were almost always rangers respectively other governmental authorities (71.5 % for Pendjari up to 100% for both W parks), in some cases private concessionaires or their guards were involved as well (for Arly and both W parks). Only in the Pendjari region, several conflicts between villagers had been quoted (14.3 %) and

in both W parks there was a low percentage of conflicts between villagers and their village participatory bodies (vpbs). In Burkina Faso, mediators were at the same time the opposing parties: mainly governmental authorities, and seldom private actors, or traditional authorities and vpbs. Only in the Pendjari region vpbs played an important role as mediators and were quoted by the majority of respondents that experienced conflicts (85.7%).

Tab. 5.12: Overview of conflicts concerning resource exploitation in the study area.

	n=204	n=100	n=146	n=102
	Arly Burkina	**W Burkina**	**W Benin**	**Pendjari Benin**
Total no. of conflicts	39	32	57	7
Percentage of interviewees involved in conflict *	19.1	32.0	39.9	6.9
Reason/ Resource				
bush meat	0.0	0.0	14.0	42.9
cultivable land	15.4	18.8	38.6	57.1
pasture	28.2	53.1	45.6	0.0
water	0.0	3.1	1.8	0.0
wood	28.2	12.5	1.8	0.0
fish	7.7	0.0	1.8	0.0
herbs/thatch	10.3	3.1	1.8	0.0
animal feed (branches)	5.1	6.3	0.0	0.0
access to PA	2.6	0.0	0.0	0.0
land (other purpose)	0.0	0.0	1.8	0.0
exploitation fee	0.0	0.0	17.5	0.0
Participants				
vpb	0.0	6.3	8.8	0.0
rangers/park authority	97.4	96.9	96.5	71.5
district authority	0.0	3.1	3.5	0.0
concessionnaire/ private rangers	2.6	3.1	3.5	0.0
traditional/ village authorities	0.0	0.0	1.8	14.3
other villagers	0.0	0.0	0.0	14.3
Mediator				
vpb	0.0	6.3	21.1 (35.0)	85.7
rangers/park authority	97.4	96.9	64.1 (30.1)	28.6
district authority	0.0	3.1	0.0 (0.0)	0.0
concessionnaire/ private rangers	0.0	3.1	0.0 (0.0)	0.0
traditional authorities	2.6	6.3	12.3 (20.3)	28.6
major/CA	0.0	0.0	0.0 (3.5)	0.0
vpb UNION	0.0	0.0	1.8 (2.8)	0.0
delegue/ conseiller	0.0	0.0	0.0 (4.2)	14.3
justice	0.0	0.0	0.0 (0.7)	0.0

*Data gives percentage of all conflicts reported in the respective region. Data in brackets (W Benin) give percentage of all interviewees, whether involved in a conflict or not – "Who would play the role of a mediator, if you were involved?"

In W Benin, we asked all participants, whether involved in a conflict or not, who played, respectively who would play the role of a mediator in their opinion. Results showed, that less than half of the people (30.1%) that were not involved in a conflict quoted the rangers to be mediators compared to those that were actually involved in a conflict (64.1%). Instead they rather proposed either their vpb (35% in contrast to 21.1%), traditional authorities (20.3% in contrast to 12.3%), or some other non-governmental actor.

- **Attitudes towards PA**

Results of the attitude indicator revealed quite positive attitudes of local resource users towards "their" PA (see **Tab. 5.13**). With the exception of W Burkina Faso, far more than 50% thus held either positive or very positive attitudes. While the distribution among categories for respondents from Arly and Pendjari was very similar, the W Benin subsample differed in containing a relatively higher percentage of people holding negative attitudes (16%; below 10% for Arly and Pendjari). The highest percentage of negative and very negative attitudes, however, was found among respondents in the periphery of W Burkina Faso with 33%, respectively 5%.

Tab. 5.13: The attitude of local resource users belonging to different management blocks towards the adjacent PA. Numbers give percentage of totals (n Arly= 204, n W Burkina Faso= 100, n W Benin 143, n Pendjari= 102); df= 4

	Attitude				
	very negative	negative	neutral	positive	very positive
Arly	1.5	9.3	12.7	29.4	47.1
W Burkina Faso	5.0	33.0	13.0	18.0	31.0
W Benin	1.4	16.1	17.5	24.5	40.6
Pendjari	0.0	6.9	18.6	27.5	47.1

This very positive general image contrasts sharply to other results and the underlying tenor of our household survey. We hence assume a systematic response bias (social desirability bias), potentially amplified by the method of predefined closed questions that made it easy for respondents to select the answer conforming to official policy and hence regarded as "right" in the context of an interview. As this was a systematic mistake, numbers should not be taken as an indicator on an absolute basis, and interpreted with caution when comparing different management approaches. We

nevertheless used the data to assess the relationship between respondents' perception of benefits and their attitudes on a relative basis (see **Tab. 5.14**). Indeed we found a significant relationship between the two variables, with more than 50% of respondents holding a very positive attitude also perceiving some kind of benefit. The distribution of those receiving benefits showed to be very strongly shifted to positive and very positive attitudes, while the distribution of those not receiving any benefit was much more balanced across categories and centred around neutral (to negative).

When comparing the attitude of those respondents that exclusively perceived either benefits from natural resource access or monetary/material benefits, we also found a significant association of the kind of benefit and attitude. More than 60% of respondents that perceived natural resource benefits showed to have a very positive attitude (more than 80% positive and very positive), and a relatively low percentage was rather neutral or negative. Receptors of monetary/ material benefits were more evenly distributed among the categories neutral to very positive. This might be explained by the fact that monetary benefits usually represent a rather scarce resource and occurrence of these benefits often provokes negative concomitants. However, it also shows the important effect of enabling local resource users to participate in the exploitation of the natural resources the PA offers.

Tab. 5.14: The attitude of local resource users towards the adjacent PA in association with the perception of benefits, respectively benefit category. In the latter case subsamples of respondents perceiving exclusively one category of benefit were extracted; df= 4

			Attitude						
		n	very negative	negative	neutral	positive	very positive	χ^2	p
Benefit perception	**yes**	403	0.5	7.9	9.9	25.1	56.6	162.9	0.00
	no	146	5.5	34.2	29.5	27.4	3.4		
	natural resources	313	0.6	7.0	6.4	23.0	62.9	33.5	0.00
	monetary/ material	75	0.0	12.0	22.7	34.7	30.7		

5.4 Discussion

Resource users represent local stakeholders that have vested interests in exploiting those resources they need to satisfy their livelihood needs (including economic activity) – or alternatively being compensated for the exploitation options foregone in a fair and equitable manner. In this chapter, they are seen as participants of action situations that either assign them the role of receptors of benefits, or as a party in some kind of conflict-situation elicited by PA existence. Our analysis revealed that the majority of local resource users around WAP was affected by PA existence and management interventions, and that they perceived both, a diversity of problems and of benefits (H1 & H2). Both, problem/ benefit qualities and quantities depended on socioeconomic and socio-demographic characteristics of respondents and varied with block affiliation, i.e. the type of governance and management in place.

Understanding benefit and problem perception as outputs of PA management arenas, we hence can assert that exogenous variables like attributes of the community (e.g. ethnic composition) and the rules in use exerted strong influence on the inner structure of these arenas. Arenas themselves also differed in their degree of complexity with quality of benefit and problem category. The construction of a school financed by direct payments (material benefit) e.g. usually involves a higher number of participants assigned to different positions and can be subdivided into a higher number of linked sub-arenas, than (obtaining a permit for) the exploitation of natural resources. The first example indeed creates a new collective choice arena on the micro level (arenas of decision how to spend community income) and linked arenas on the operational level, while the second is an operational arena taking place on the macro level (directly implementing governmental law, respectively directives of the park administration). Our results proved that participation arenas in the Pendjari were more complex and diversified than elsewhere, creating effectively a variety of different forms of output on community as well as on individual level. However, it was still questionable if these benefits did outweigh all the negative aspects and problems encountered by local resource users due to the PA, especially as benefits generally tended to be perceived in a stronger way by local elites (autochthonous farmers). Nevertheless, those resource users that actively took part in participation arenas as beneficiaries also tended to have rather positive than negative attitudes towards the park (H3). As access to natural

resources proved to be a major determinant of this attitude, it can be concluded conversely that restrictions limiting the access were of major concern to them (though limitations concerning the exploitation of agricultural and pastoral activities were cited more often as a problem). Generally, resource users perceiving problems, respectively having been involved in a conflict, had very little control of these situations. Governmental actors often were mediators and conflicting parties at the same time. If possible though, peasants tried to associate either traditional authorities or their vbps as participants to arenas of conflicts, as they usually possessed a relatively higher degree of information and control than peasants themselves. Additionally these mediators had to fear lower costs, but on the other side gained the opportunity to enhance their social prestige.

Surprisingly, monetary and material benefits seemed to be less important in shaping positive attitudes. This might be explained by the fact that additional collective choice arenas are usually associated to increased transaction costs and higher levels of (institutional and organisational) conflict. Additionally, the majority of these benefits aim at the communal and not the individual level.

Some of the problems we identified were rather testifying the absence of PA management arenas than malfunction of existing ones. The high percentage of people perceiving human-animal conflicts as a problem e.g. documents the absence of effective compensation schemes for damages caused by predators, elephants and other animals foraging in the fields. Establishment of effective compensation arenas so far had not been realized, though attempts were made especially in the Pendjari area. As these damages can cause severe risk with regard to food security and economic survival of those individuals affected, future projects should put stronger focus on this issue.

We now focus on a more detailed description of benefit reception from a resource user's point of view by analysing the rules that determine each single component of respective arenas. We here integrate additional information obtained during our hh-survey and interviews with vpbs and other key actors.

Scope rules specify the range of potential outcomes. Here they determine the patterns of benefit and problem perception found as a result of restriction and participation arenas. These outcomes hence have been the subject presented in this chapter: the diversity of benefits that might operate as incentives for enhanced conservation and rule compliance, respectively the problems and conflicts encountered that might have the effect of disincentives (having either a net positive or net negative effect). We found very different scope rules working in the four different blocks of WAP. Starting from these results, we now can deduce further components of the arenas (see Fig. 5.9), supported by additional information we received during our interviews.

Formally, **position rules** for beneficiaries were structured quite simplistic, though often rather imprecise: anybody living adjacent to the PA was regarded as an authorized participant of the participation arena, i.e. as a receptor of benefits. As many benefits were effective on the community-level, like e.g. the construction of community infrastructure, indeed most local resource users were able to take advantage of them. However, as shown, also among receptors different positions were held that were i.a. determined by informal position rules and second-order boundary rules based on ethnic affiliation or time of residence – herders and newcomers usually hold weaker positions than indigenous farmers do. Traditional rule systems and social hierarchies were hence dominating the arenas of participation and distribution on the micro-level.

Only in the Pendjari region there were more specified formal **boundary rules** that determined entry to specific arenas of participation, especially for individual benefits (e.g. bush meat, job opportunities), but also for the participation in decision making within arenas that created community benefits. In order to receive these benefits, resource users had to be part of village associations and pay their adherence and membership fees (see Chapter 7). While in the other areas there were no formal **choice rules** (i.e. activities that a beneficiary must, must not, or may do according to his position) and individual impact on participation arenas was rather low (and again based on informal power relations between participants), in Pendjari formal fora were established and choice rules determined individual rights and duties of association members (e.g. to buy meat at a reduced price (permitted), take part in surveillance activities and decision making assemblies (permitted), adhere to the rules of the PA (required)). There were two main deficits concerning choice rules in the arena of benefit distribution. First, there was no mechanism that linked obligatory activities of conservation in most areas to qualities and quantities of benefit perception (e.g.

reduction of pesticide application, resignation of poaching activities, acceptance of PA boundaries and restrictions), i.e. there was no direct link to pay-off rules (see below). Second, local resource users were not authorized as powerful participants, so they had little opportunity to influence outcomes of the arena (e.g. the share of money they received), and hence no feeling of ownership. The only way to exert control for resource users was to organise on the next higher level, i.e. in the form of village associations. However, this worked only to a certain degree in Pendjari (see Chapter 7).

Aggregation rules (that determine who decides in participation arenas) integrating resource users indeed were absent, respectively highly non-symmetric in most cases, despite respective rhetoric of more powerful actors involved: governmental bodies and private actors were taking all decisions on the collective-choice and constitutional levels. On the micro-level, resource users could only determine who should represent them in these higher-level situations, hence elect a subgroup with assigned capacity to make decisions for the whole group (see Chapter 7). Even these selections often were influenced by governmental and private actors, however, also worked as consent decisions made by resource user communities themselves in some areas.

Another drawback for beneficiaries resulted from **information rules** and/ or their application, affecting the level of information being available for them. In general they had little information on their legal rights of participating in PA benefit arenas and hence often tended to regard their benefits as a present instead of being some kind of compensation. Usually, they also had little insight in preceding action arenas that determined the operational distribution of benefits and highly depended on single channels of information flow (local rangers and/or vpbs). Furthermore a lack of information on rule settings caused at least part of the social as well as socio-ecological problems, e.g. concerning the setting of exact PA boundaries. Often information obtained by resource users seemed to be rather inaccurate and frequencies of exchange were irregular. Communication was further complicated by high illiteracy rates among resource users and French as lingua franca being a foreign language for most peasants.

As described when discussing choice rules resource users had little influence on net costs and benefits of the participation arenas, i.e. **pay-off rules**. Official compensation and direct payment schemes were usually decided upon by constitutional choice levels, influenced by international (donor) policy. Resource users currently had no say in defining distribution keys of PA income among private concessionaires, governmental

authorities and local communities. Also on the micro-level, they had no say, respectively relied upon informal rules and social networks to influence personal pay-off rules.

The arenas of participation and restriction were hence not egalitarian situations – positions and actions held by participants varied widely. The scope was characterized by high levels of power asymmetries between those that e.g. received benefits and those that disseminated, respectively mediated these benefits. These asymmetries between local resource users on the one and governmental, respectively private actors on the other hand had even greater impact on arenas of conflict: resource users were neither able to prevent abuse of formal power by governmental actors, nor to influence restrictive rule settings. The following chapter(s) will examine these different roles of actors and subsequent effects in depth.

Chapter 6: Processes

Activities & interaction

between local resource users and
key actors of PA management activities
as perceived by local resource users

6.1 Introduction

In order to reveal effects of the institutional and organisational set-up on the most basic level, i.e. the level of local communities, we included several questions concerning local resource users' perception of actors' roles and activities in our household survey. Our aim was to specify these roles for the different management strategies being implemented in the four blocks and evaluate potential differences between the rethoric of projects and governmental agencies, and realities on site (6.3). Second, we used this data to analyse the association between specific activities of these actors and the dissemination of benefits to local resource users (6.4). The guiding questions therefore were:

- How were key actors, their activities and roles in (operational) PA management processes perceived by local resource users?
- Were there block-specific institutional and organisational set-ups that lead to functional separation of these actors' roles?

The governance system and its context shape the interaction among actors. The outputs of these interactions and activities in turn are decisive for the effective dissemination of benefits to resource users and for the perception of problems associated with PA management implementation. The action arena of participation/ valuation is hence directly correlated to the perception of benefits, whereas the action arena of restriction is linked to the perception of PA problems. Outputs of respective arenas as well as roles of beneficiaries in the four different blocks of WAP have been analysed in Chapter 5. In the following we hence focus on the role of the other participants in these arenas: governmental and private actors as well as village participatory bodies as corporate community actors.

In tripartite governance systems, each group of management actor is assigned to a specific role and general patterns of interaction emerge: *restricting activities* of governmental authorities and park rangers are mainly associated with the perception of problems from a resource users' point of view, whereas *income generating* activities of private concessionaires and *mediating activities* of village participatory bodies (vpbs) enable resource users to perceive benefits (see also formal stakeholder analysis in

Annex Chapter 3). According to actual rule settings and their implementation, these general roles, however can differ in detail and might be realised in various ways in specific action arenas. Monitoring and potentially sanctioning e.g. might be assigned to vpbs and acknowledged positively by resource users in specific contexts (instead of being attributed to governmental actors and evaluated negatively) as they ensure sustainable exploitation in the long term. However, if any of these actors is not fulfilling its role properly due to a weak implementation of the institutional system, some (or all) action arenas might not produce the desired outcomes. Alternatively other groups may take over and fulfil intermediate roles; park rangers e.g. might organise trainings for promoting more sustainable and effective agricultural techniques instead of vpbs.

- Which actors and activities are associated to the perception of specific benefit types? Did specific constellations/ activity patterns favour the reception of higher level benefits by local resource users?

Hence, there is no "normative" way how to organise interactions in specific action arenas. Some types of benefits, however, require higher degrees of organisation than others in order to be passed on to local resource users ("high level benefits"). Based on above mentioned formal roles and principles of good governance, we therefore assumed that some actors/ organisational structures are more effective for the generation and distribution of specific benefits to local resource users than others.

For a better understanding of success factors, we disentangled the action arena of valuation and participation in two sub-arenas (see Materials & Methods section). The first sub-category "alternative valuation & development" contains activities that are more or less directly associated to "higher level benefit categories" (e.g. activity item "construction of infrastructure"). There are, however, also activities that lead to specific benefits in a more indirect way, e.g. activities related to the management of the village hunting zone (e.g. "delimitation of village hunting zone") or the circulation of information (e.g. "training in bee-keeping"). The second category "Institutional/ organisational" activities are to a large extent even more abstract and indirect as they primarily concern aspects and action arenas that potentially enhance local capacities of participation, like e.g. conflict management or networking activities. However, this category also contains activities that directly impact property right transfers (activity item "authorizes/ enables

resource exploitation"). It is therefore directly linked to the benefit of natural resource access.

Based on this categorisation, we hypothesized the following:

- Benefits derived from exploitation of natural and agricultural/ pastoral resources proved to be of major importance to local communities around WAP (see Chapter 5). Making people directly benefit from natural resources, however, does usually not require complex institutional or organisational set-ups. Access and withdrawal rights are granted to authorized users by others who hold the collective/ constitutional choice rights of management and exclusion (Ostrom & Schlager 1992), i.e. primarily governmental authorities. Associated operational processes therefore usually concentrate on monitoring and enforcement of these rules. Hence, having access to natural or agricultural and pastoral resources is the most basic form of material benefit and mainly should involve the lowest level of governmental hierarchy, i.e. the activity of park rangers. Vpbs might act as intermediaries, and in well advanced systems might be privileged to grant specific withdrawal rights of resources in buffer zones or the PA itself. (Expectation: high influence of "institutional/ organisational" activities of rangers on the perception of resource exploitation benefits as this category contains the activity of issuing permits)
- Monetary benefits include the subcategories "trade", "direct payments" and "employment". Like material benefits, they require a certain degree of organisational and institutional set-up, which is able to generate income and manage issues of distribution. Sources of income usually involve some form of sustainable use of key resources, e.g. in the form of tourism or controlled (trophy) hunting. Private actors (for valuation) and vpbs (for valuation and distribution) should play key roles for local resource users perceiving monetary benefits. (Expectation: high influence of "alternative valuation/ development" activities of concessionaires, as well as high influence of "alternative valuation/development" and "institutional/ organisational" activities of vps on perception of monetary benefits)
- Material benefits are either categorised as "infrastructure" or "goods". Especially the first category "infrastructure" requires a higher degree of organisation and

cooperation among actors, as it usually involves not only fund generation, but long-term planning and fund management as well. We therefore expect a high degree of vpb activity (institutional as well as valuation), as well as strong involvement of the concessionaire (valuation) and governmental actors (institutional and valuation).

- Institutional/ organisational benefits mainly contain the transfer of information as well as the amelioration and introduction of new organisational structures. People that cite these benefits are also expected to indicate high degrees of activity of their vpb and governmental authorities/ rangers in the field of institution and organisation building, as these actors are the principal agents of change in the system. However, as these benefits are rather indirect in nature we expected a priori only a limited number of villagers to cite them.

We excluded problems and the action arena of restriction from the analysis, as the majority of problems perceived by resource users were effects of human-animal conflicts, and not of specific interactions between management actors (see chapter 7).

6.2 Materials and methods

Data collection and treatment

Though time consuming with regard to data collection and analysis, we decided to employ very simple open questions in our survey in order to catch the whole spectrum of interactions (like for "benefits and problems"). Therefore questions were formulated according to the following pattern: "What does actor X (village association/ union of village associations/ park rangers/ governmental services/ concessionaire/ project) do for you/ your community?". According to his own experience and knowledge, each respondent was free to give the information that he himself regarded as being worth to be cited in the interview. This mode of questioning, though, bears some risks. A quite high number of respondents for example seemed rather to cite formal roles and functions of certain groups of actors than their actual activities. Especially for actors that enjoyed high degrees of formal or informal power, like concessionaires and park rangers, respondents might be inhibited to give their real perception and tend to give

normative answers, fearing consequences and sanctions. Nevertheless, we considered these problems as inherent to the system and methodology, which means they could not be avoided. However, by triangulating this data with the help of additional interviews and the analysis of similar surveys, trends were quite clear and differences between the four blocks of PAs become obvious. Additionally, field assistants were advised to note any additional comment given by respondents, and were sensitized to pay attention to rather small semantic differences: “Nothing” for example could mean “No service”, which usually corresponds to some degree of discontent, or could as well be used to express ignorance (“I do not know”) as a rather neutral statement. To distinguish between these different options, field assistants were instructed to specify the question in respective cases. Furthermore we are convinced that any interaction of high intensity, either positive or negative, would be captured regardless of influencing factors like social norms or alike.

As there was a high diversity of items in the answers (e.g. for rangers in W Benin we identified 36 items), the data was analysed in a multi-step approach. First, each single activity identified was given a code and all activities cited by each single interviewee were noted down. In a second step, items given for all different groups of actors were sorted thematically and in a hierarchical way, i.e. harmonised across actor groups. Respective categories were developed in an inductive way, however, stimulated by theoretical knowledge. The level of abstraction rises to the top of the resulting hierarchy: “provides help with infrastructure” and “helps villages by financing infrastructure” for example were clustered to one single item “construction/ financing of infrastructure”. Together with all other items concerning infrastructure (e.g. “maintenance of infrastructure”), the latter formed a new level called “Infrastructure”, which in turn was clustered with “Employment”, “Credits”, “Direct payments”, “Tourism” and “General” into the next higher level of abstraction called “Development”. This in turn belongs to the subcategory “Alternative valuation/ development” and, in a last step of condensation, to the category “Valuation & Participation”. **Fig. 6.1** illustrates this example and **Tab. 6.1** shows the three most abstract levels of categorization. In a third step, the number of citations per sub-category/ category and the number of interviewees making citations per category were counted. As multiple answers were possible, the latter was not an addition of the first. Single respondents quoted up to six different items for one actor.

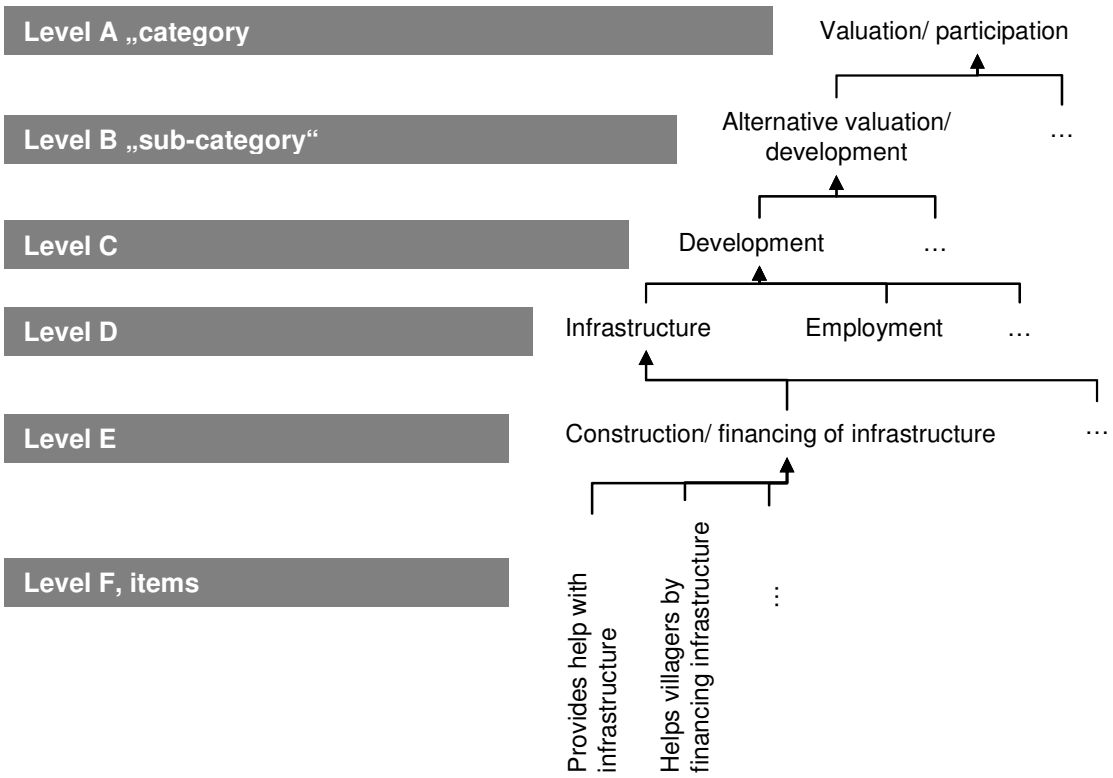


Fig. 6.1: Part of the thematic and hierarchic classification tree of items. For details see text and Annex

For some items, clear classification proved to be difficult. Consequently they were put in a category called “Governance, general”. For reasons of clarity, we excluded this category from further analysis. However, as it was only a small number of items that has not been cited very often, we assume no significant loss or deterioration of our results.

Tab. 6.1: Overview of the three most abstract levels of categorization (Level A (“category”), B (“subcategory”) and C) and corresponding example of items (Level E).

Level			
A	**B**	**C**	**F, items (example)**
Conservation	▪ Activity	General safeguarding	*“surveillance and protection of PA and its animals”*
		Anti-poaching	*“fight poaching”*
		Afforestation	*“(help) to carry out afforestation”*
		Anti-bush fires	*“prevent bush fires”*
	▪ Information		*“sensitize not to poach”*

Valuation/ participation	▪ Institutional/ organisational	BZ management	*"collect exploitation tax for BZ"*
		Conflict resolution	*"mediate in conflicts between farmers and herders"*
		Resource access	*"authorize/ enable resource access"*
		Organisation/ institution building	*"control fund management of vpb"*
		Contact	*"take part in higher level meetings"*
		Information	*"sensitize villagers to formal rules"*
	▪ Alternative valuation/ development	Village hunting	*"maintenance and control of village hunting zone"*
		Trophy hunting	*"distribute bush meat"*
		Organic cotton	*"sensitize to production of cotton"*
		Pasture	*"installed a pasture zone"*
		Development general	*"construction/ funding of public infrastructures"*
Restriction/ excl.	▪ Restriction/ control/ prevention	BZ control	*"restrict cultivation in BZ"*
		Bush meat	*"inform authorities on poaching activities"*
		Deforestation/ wood	*"prevent illegal wood cutting"*
		Pasture	*"prohibit pasture in the park"*
		Agriculture	*"prohibit cultivation of manioc"*
		Park access	*"prevent penetration into park"*
		General	*"constrain resource exploitation"*
	▪ Sanction	Penalising	*"arrest people committing rule infraction"*
		Malpractice	*"arrest people outside PA/ without reason"*

Data analysis: the role of key actors in the institutional and organisational system

To get a first insight into the activities and interaction of different actor groups and local resource users, we assumed a correlation between the number of items being cited per interviewee and the degree of interaction, respectively the perceived importance of the actor to the interviewee. Two values were used as indicators for this general intensity of activity, resp. interaction, on block-level. Both are strictly quantitative in nature and give no information on the quality of the interaction/ activity. First, we chose the mean number of items given for each group of actors per interviewee. This value gives a general overview of the importance of each group of actors in the four different blocks. Second, the coefficient of variation ("standardized variance": standard variation divided

by respective mean of items given per respondent) gives information on the heterogeneity of perceived activity patterns within each block.

We then used binary data (perception of activities in a specific category or not) to calculate the percentage of respondents citing specific activities per block. Chi-square statistics was used to compare activity patterns within actor groups between blocks (is there a significant difference in activities of actor X between blocks?) and between actors within blocks (is there a significant difference in activities of the different groups within each block? Does each actor fulfil a specific role?).

Data analysis: the impact of activity patterns on benefit perception

Logistic regression modelling (IBM SPSS 20) was used to evaluate the effect of actor activity on the perception of benefits. As predictors we hence used the scoring (activity or not) of respondents for each actor in the two subcategories of "participation & valuation", namely "institutional/ organisational" and "alternative valuation & development". We only used those actors that were actively involved in the management of all four blocks (rangers/ governmental authorities/ vpbs/ and concessionaires).

As dependant variables we chose the different quality classes of benefits (natural resource exploitation/ monetary/ material/ institutional & organisational) as perceived by local resource users (yes or no). The modelling approach is analogous to the one implemented for the influence of socio-demographic variables on benefit perception in Chapter 6. We hence used the same criteria to assess model quality as we did before (see Chapter 6).

6.3 Results: The role of key actors in the institutional and organisational system

General overview

As expected, the number of "activity items" (all items without "I do not know" and "nothing") cited by interviewees differed with actor and block affiliation. Except for

governmental actors (rangers and higher hierarchical level), respondents in the Pendjari region consistently quoted more items than respondents in other regions, with remarkably low levels of variation between interviewees. This holds especially true for their vpbs (3.1 items/ respondent, cv=0.4), but also on a lower level for the activities of private concessionaires (1.2 items/ respondent; cv=0.7). Locals, though, seemed to be well informed and integrated in PA management processes.

In contrast, concessionaires around W Benin generally seemed not to play a major role (M= 0.2, cv= 3.0), respectively only to very few respondents as revealed by a high coefficient of variation. Activities of vpbs also seemed to be less diversified than in the Pendjari region. Similar to concessionaires, the vpb UNION only had very localised impact (M=0.4; cv= 1.8). However, respondents in W Benin gave consistently more action items for park rangers than elsewhere (M=1.7; cv=0.5). In both parks in Benin people cited more action items for governmental authorities than respondents in Burkina Faso did for their authorities.

In Burkina Faso, relatively more attributes were given those groups that were active on the local level, like rangers or vpbs. However, numbers still range below (or equal) levels in Benin. There was no vpb Union for W Burkina Faso, and respective structures around Arly were not functional. Activities of concessionaires seemed to be rather uni-dimensional (very few items per respondent) and not to be widespread as well despite their importance in the organisational set-up of PA management (especially in Arly). The same was true for projects in the whole study area with high variation particularly in the Arly region. For further details see **Tab. 6.2** and **Fig. 6.2**

Tab. 6.2: Mean number of "action items" (excluding "No service" and "I do not know") cited per **interviewee**, standard deviation and corresponding coefficient of variation.

	Arly			**W Burkina**			**W Benin**			**Pendjari**		
	M	**SD**	**cv**	**M**	**SD**	**cv**	**M**	**SD**	**cv**	**M**	**SD**	**cv**
park rangers	**1.2**	1.1	0.9	**1.2**	1.0	0.8	**1.7**	0.9	0.5	**1.0**	1.2	1.2
gov. service	**0.4**	0.7	1.8	**0.3**	0.6	2.0	**0.9**	0.9	1.0	**0.9**	1.1	1.2
vbp	**1.9**	1.8	0.9	**1.2**	1.5	1.3	**1.2**	1.1	0.9	**3.1**	1.2	0.4
vpb UNION	**-**	-	-	**-**	-	-	**0.4**	0.7	1.8	**1.3**	1.0	0.8
concessionaire	**0.6**	1.0	1.7	**0.4**	0.8	2.0	**0.2**	0.6	3.0	**1.2**	0.8	0.7
project	**0.1**	0.4	4.0	**0.6**	1.1	1.8	**0.0**	0.0	-	**1.1**	1.1	1.0

M= mean; SD= standard deviation; cv= coefficient of variation (SD/M)

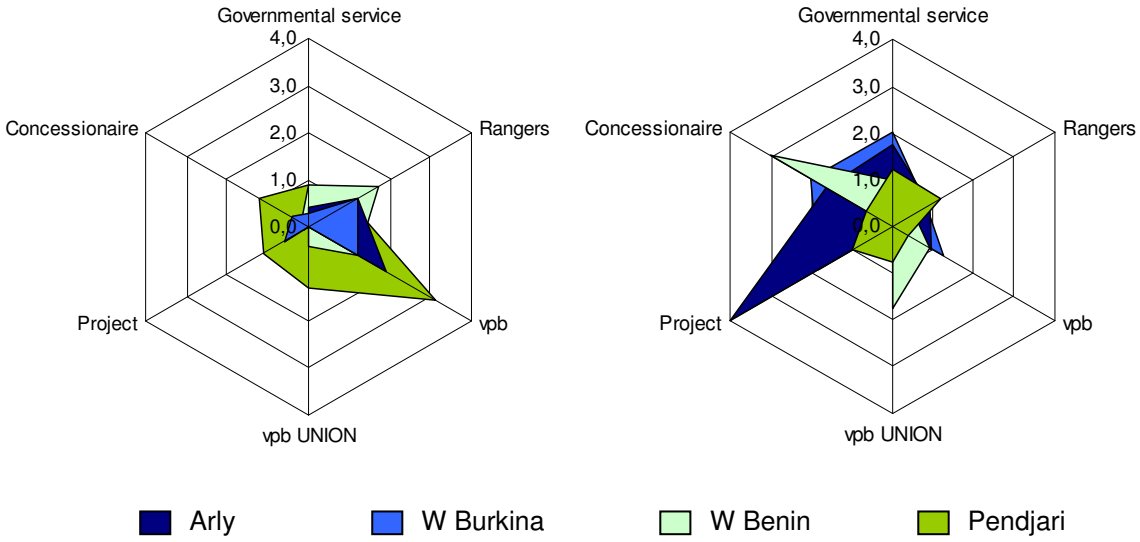


Fig.6.2: **left**: mean number of items given for each group of actors per interviewee; **right:** coefficient of variation, calculated by mean number of items cited per interviewee and corresponding standard deviation. The coefficient hence gives information on the relative distribution of citation among interviewees.

Qualitative and quantitative differences "between blocks, within actor groups"

To find out whether roles of actors were consistent between PA blocks, we used chi-square statistics to test if there was an association between block affiliation (i.e. specific institutional and organisational landscapes) and perception (yes/no) of specific activities of key actors. Each category of activity was tested individually for each single actor group. Results are displayed in **Table 6.3**. In most cases, variables showed not to be independent: actors indeed did play different roles in different PA blocks. For some activities though there were too few data/ too many cases with expected values greater than five to run statistical analysis (cases are referred to as "not applicable" (n.a.)).

In detail we found for the different groups of actors:

- **Rangers**

  In all regions about on third of respondents quoted activities that refer to rangers' principal tasks: the safeguarding of nature, respectively the park. In most of these cases hence, respondents rather cited the normative role of rangers than some kind of interaction or service delivered to them. As monitors of formal rule settings, their

second principal task is restricting access to resources that are protected by the park. However, only in W Benin a majority (71%) of respondents attributed these -often conflict-prone- activities to rangers. At the same time only 13% acknowledged any participation activities of rangers in this region. This picture hence corresponds to the role expected for rangers in the tripartite management. However, the opposite seemed to have been the case in Arly, where 41% unexpectedly attributed participation/ valuation activities to rangers, but only 17% did so for restrictive activities. Still 43% stated that rangers were not delivering any kind of service to them or their community, and thereby expressed some degree of discontent (and possibly avoided to give even more negative statements by choosing this answer). The same percentage in Pendjari reported not to know what rangers were doing, which at first seems to be a weird result. Integrating context information, however, reveals that indeed the frequency of park rangers visiting the villages strongly decreased during the two prior years. We still suppose that a large number of these respondents in fact knew about the rangers' roles, however, in this case expressed the growing alienation between resource users and rangers. As rangers virtually played no role in the action arena of participation there (2.5%), respondents also did not miss services granted by them in other regions (only 3.8% no service).

- **Governmental services**

  This category contains any organisation in the governmental hierarchy on a higher level than "rangers". As their involvement in operational PA management was rather scarce, we expected resource users to have only limited knowledge and interaction with these actors. However we found, that almost half of all respondents in Benin attributed some participation activity to theses actors (44% W Benin, 46% Pendjari), whereas -in sharp contrast- corresponding values for Burkina Faso ranged below 5%. Here a quarter of respondents (26% in Arly, 22% in W Burkina Faso) associated conservation activities with provincial, respectively regional authorities. The vast majority in Burkina, however, did not know about any activity of these services (56% Arly, 71% W Burkina Faso), as well as 47% of respondents in Pendjari. In W Benin only 18% declared not to know about the role of governmental services, however, more than twice as much stated to perceive no service emanating from these actors.

- **Village participatory bodies**

  Due to their role as intermediates between local resource users and other actors, vpbs were supposed to be involved in all action arenas of PA management to a certain degree. Their primary purpose, however, especially from the point of view of resource users, should be to carry out a wide variety of tasks associated to participation and alternative valuation. Indeed in all blocks participation activities were scored by a relatively high percentage of respondents. Variance, though, is quite large, with 43% quoting participation activities of their vpb in W Burkina Faso to almost all respondents doing so in Pendjari (94%). Generally, vpbs do not seem to take a serious role neither in the action arena of restriction nor in the arena of conservation, with a maximum of 15% of respondents relating their vpb to the first, respectively 23,8% to the latter (both W Benin). In Burkina Faso the role of vpbs seemed to be unclear to 25% to 40% of respondents (Arly, respectively W Burkina Faso) indicating low levels of activity and/or information flow. In Benin respondents were better informed, however, in W Benin a quarter said to perceive no service from their vpb at all and thereby possibly expressed their dissatisfaction.

- **Vpb UNION**

  Like governmental services, vpb Unions represent higher level PA management actors, and interaction was often mediated by local vpbs. In Burkina Faso these actors did not play any role for local resource users as they only existed as formal, but inactive constructs (Arly), respectively did not exist at all (W Burkina Faso). In Benin, they were perceived very differently. Like for local vpbs, their work was mainly associated with participation activities in the Pendjari (71%), and to a much lesser degree in W Benin (23%). Just a quarter of respondents was not able to specify the role of their UNION (Pendjari), whereas for W Benin 32% did not know more details on vpb Union activity and 33% said to perceive no service. Differences between blocks that suggest different modes of operation were hence quite distinct.

- **Concessionnaires**

  Concessionaires were primarily responsible for generating income through sustainable sports hunting. As local communities also benefited from their business, the highest percentages of respondents citing activities of concessionaires were found in the category of participation. Again the highest percentage was found in the

Pendjari region (82%), followed by Arly (33%), W Burkina Faso (25%) and finally W Benin (10%). According to the judgement of local resource users, they did not show high levels of activity in the other spheres of action (with a maximum of 12% of respondents citing restriction items in Pendjari). Indeed around park W in both countries, high percentages of respondents did not know anything about concessionaires (52% W Burkina Faso, 79% W Benin). In Arly, where most of the area was denominated as hunting zone and leased to private actors, 47% said to perceive no service. As discussion with respondents showed, a large part of these respondents in fact expected more benefits coming from these private operators.

- **Projects**

  Projects played an important role in the area for at least the last 10 years. At the time of the survey, in all areas (except Arly) there were active projects being implemented that aimed at promoting at least financial and operational participation of local communities. However, our survey showed that high percentages of local resource users did not know anything about the projects (97% in W Benin, 66% in W Burkina Faso, and 39% in Pendjari). Obviously in most areas it was difficult for respondents to separate between governmental actors and project agents. In fact cooperation of these actors often was very close and/ or some individuals represented the project and governmental authority at the same time. So even for well informed local peasants it was not possible assigning management activities to specific actors.

Tab. 6.3: Activities of key actors in the four blocks as perceived by respondents: differences between blocks. Highest number in each row in bold

	% of interviewees					
	Arly	**W Bu**	**W Be**	**Pen**	χ^2	**p**
n=	204	100	143	80/ 102		
rangers						
conservation	35.3	34.0	**38.5**	36.3	0.6	0.90
participation/ val.	**41.2**	25.0	12.6	2.5	62.6	0.00
restriction/ excl.	17.2	36.0	**70.6**	36.3	102.4	0.00
other	1.5	2.0	0.0	**5.0**		
I do not know	4.4	15.0	1.4	**43.8**	106.8	0.00
no service	**43.1**	37.0	23.1	3.8	48.0	0.00

gov. services						
conservation	**25.5**	22.0	4.2	14.7	28.8	0.00
participation/ val.	3.9	3.0	44.1	**46.1**	134.7	0.00
restriction/ excl.	0.0	1.0	**3.5**	1.0	n.a.	-
other	0.0	2.0	**12.6**	2.9		-
I do not know	56.4	**71.0**	18.2	47.1	77.9	0.00
no service	15.7	4.0	**39.2**	2.9	75.2	0.00
vpb						
conservation	15.2	10.0	23.8	21.6	9.6	0.02
participation/ val.	59.8	43.0	48.3	**94.1**	69.8	0.00
restriction/ excl.	12.7	9.0	**14.7**	2.0	11.9	0.01
other	0.0	1.0	0.7	5.9		-
I do not know	26.5	**40.0**	14.0	2.9	49.2	0.00
no service[1]	11.3	9.0	**25.9**	2.0	34.1	0.00
vpb UNION[2]						
conservation	0.0	0.0	6.3	8.8	n.a.	-
participation/ val.	0.0	0.0	23.1	**70.6**	248.0	0.00
restriction/ excl.	0.0	0.0	0.0	0.0	n.a.	-
other	0.0	0.0	**11.9**	1.0		-
I do not know	0.0	0.0	**31.5**	25.5	1.0	0.2
no service	0.0	0.0	**32.9**	1.0	38.4	0.00
concessionaire						
conservation	0.5	1.0	0.0	**5.9**	n.a.	-
participation/ val.	33.3	25.0	9.8	**82.4**	145.5	0.00
restriction/ excl.	0.5	0.0	3.5	**11.8**	n.a.	-
other	0.0	0.0	0.7	**1.0**		-
I do not know	21.1	52.0	**79.0**	12.7	158.4	0.00
no service	**47.1**	24.0	9.8	5.9	89.3	0.00
Project[3]						
conservation	4.4	**8.0**	0.0	2.0	n.a.	-
participation/ val.	0.5	31.0	0.0	**55.9**	54.9	0.00
restriction/ excl.	0.0	0.0	0.0	0.0	n.a.	
other	-	-	-	-	-	-
I do not know	4.9	66.0	**97.2**	39.2	99.0	0.00
no service	0.0	1.0	0.0	2.9	n.a.	

n.a.= not applicable; df= 3 in all cases; [1]= items "no service" & "does not work" summed;[2]analysis only for W Benin and Pendjari; [3]analysis without Arly

Qualitative and quantitative differences "within blocks, between actors"

As we have seen, roles of actors differed between blocks. We therefore used the same data to test whether individual activities are attributed to specific actors within blocks. We hypothesized that for each kind of activity, one or two actor groups should be more important than the others, i.e. tasks ought to be well defined resulting in some kind of

functional separation. We hence used chi square tests to analyse the associations of actor group and activity classes within each PA management block. Only those actors that were active in all of the four management blocks have been included in the analysis. Results are displayed in **Table 6.4**.

Tab. 6.4: Activities of key actors in the four blocks as perceived by respondents: differences within blocks. Highest number in each row in bold

	% of interviewees					
	rangers	gov. service	vpb	conc.	χ^2	p
Arly						
conservation	**35,3**	25,5	15,2	0,5	86,7	0,00
participation/ val.	41,2	3,9	**59,8**	33,3	146,2	0,00
restriction/ excl.	**17,2**	0,0	12,7	0,5	65,7	0,00
other	1,5	0,0	0,0	0,0	n.a.	-
I do not know	4,4	**56,4**	26,5	21,1	146,0	0,00
no service	43,1	15,7	11,3	**47,1**	100,2	0,00
W Burkina						
conservation	**34,0**	22,0	10,0	1,0	44,4	0,00
participation/ val.	25,0	3,0	**43,0**	25,0	44,1	0,00
restriction/ excl.	**36,0**	1,0	9,0	0,0	83,4	0,00
other	**2,0**	**2,0**	1,0	0,0	n.a.	-
I do not know	15,0	**71,0**	40	52,0	66,8	0,00
no service	**37,0**	4,0	9,0	24,0	44,6	0,00
W Benin						
conservation	**38,5**	4,2	23,8	0,0	99,0	0,00
participation/ val.	12,6	44,1	**48,3**	9,8	86,4	0,00
restriction/ excl.	**70,6**	3,5	14,7	3,5	249,6	0,00
other	0,0	12,6	0,7	0,7	46,8	0,00
I do not know	1,4	18,2	14,0	79,0	254,8	0,00
no service	23,1	**39,2**	25,9	9,8	33,7	0,00
Pendjari						
conservation	**36,3**	14,7	21,6	5,9	19,6	0,00
participation/ val.	2,5	46,1	**94,1**	82,4	214,0	0,00
restriction/ excl.	**36,3**	1,0	2,0	11,8	51,6	0,00
other	5,0	2,9	5,9	1,0	n.a.	-
I do not know	43,8	**47,1**	2,9	12,7	67,0	0,00
no service	3,8	2,9	2,0	**5,9**	n.a.	-

n.a.= not applicable; df= 3 in all cases

All tested associations of actors and activities within individual blocks proved to be highly significant. Functional separation though was well established in all blocks with rangers being the most active participants in the action arenas of conservation and restriction, and vpbs in the arena of participation. As described in the previous section,

however, there were also well established differences in the functional roles of these actors between blocks.

Summary: the functional role of PA management actors based on item distribution

As respondents could give multiple answers, we also analysed the relative distribution of items given for each block and actor group. Like for benefits and problems, these values correlated with the number of respondents giving answers and are used here to summarize and graphically illustrate the findings of this chapter so far (Fig. 6.3).
Respondents associated the majority of actors with some kind of participatory activity, rangers generally less than vpbs. Actors that were assessed at the lower end of this axis also tended to be more involved in conservation efforts. Each block has a specific pattern of stakeholder activity (as perceived by resource users).

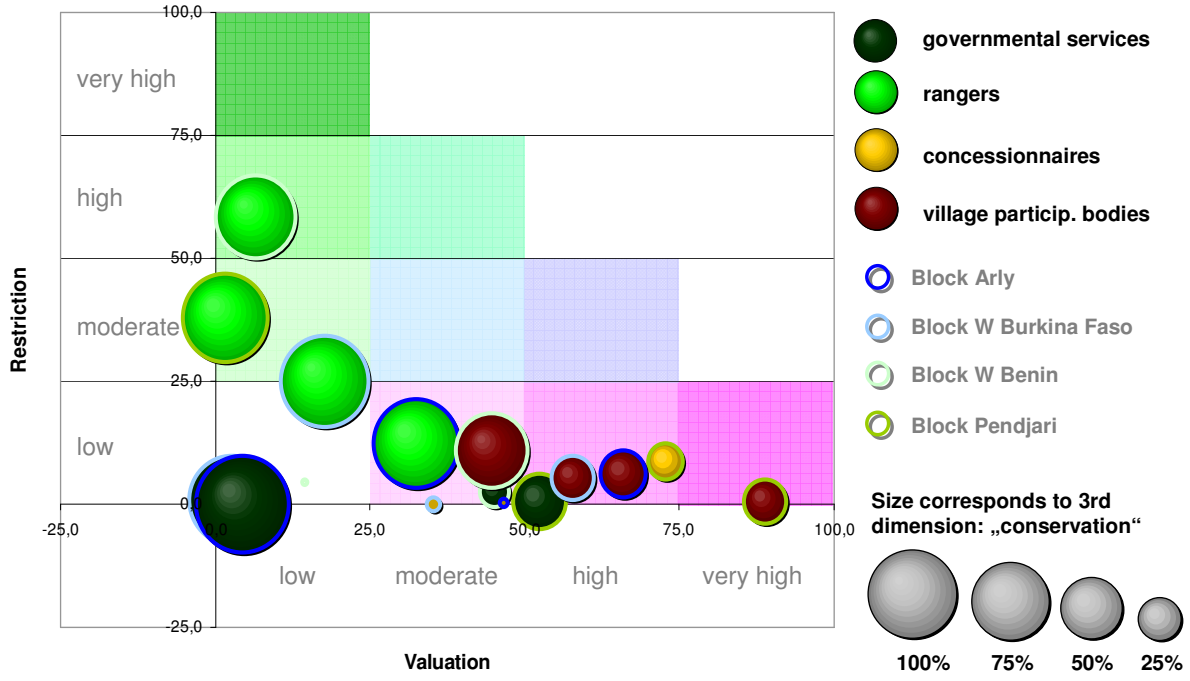


Fig: 6.3: Actors in a three-dimensional activity space: restriction, valuation and conservation. Graph is based on item distribution to these categories.

- **A list of activity items that were cited most often (“Top 3”) is given in Annex Chapter 6: Tab. 6.9**

6.4 Results: The correlation between actors' activities and benefits & problems

The previous chapters have shown that both benefit perception as well as activity patterns varied between blocks. We analysed the correlation between the two variables using logistic regression. Our aim was to reveal any underlying patterns and answer the question which settings of functional roles were best in making local resource users perceive specific kinds of benefits.

Overall quality was very good for the models using monetary and material benefits as dependant variables, however, it was bad to acceptable when using resource exploitation respectively institutional/ organisational benefits as outcome variables. Nevertheless we kept these models and interpreted results with caution in a rather indicative way. Details about model quality are displayed below tables.

- **Resource exploitation model**: Results for the "resource-exploitation model" suggest that those respondents that quoted institutional/organisational and/or alternative valuation/ development activities of park rangers were more likely to perceive resource exploitation benefits (see **Tab. 6.5**). As hypothesized, institutional/organisational activities seem to have had stronger impact than development activities. Though overall model quality is rather bad, this result tentatively confirms our initial hypothesis of resource exploitation issues being mainly managed by local ranger units.

Tab. 6.5: Results of logistic regression showing the effect of participation activities on the perception of benefit category "resource exploitation". Significant values in bold.

Variable		B	SE	Wald	p	odds ratio
rangers	institutional/ organisational	1.94	0.36	29.66	**0.00**	6.92
rangers	alternative valuation/ development	0.96	0.37	6.64	**0.01**	2.61
governmental authorities	institutional/ organisational	0.53	0.30	2.99	0.08	1.69
governmental authorities	alternative valuation/ development	-0.30	0.29	1.08	0.30	0.74
vpb	institutional/ organisational	0.34	0.23	2.13	0.14	1.40
vpb	alternative valuation/ development	0.36	0.21	2.78	0.10	1.43
concessionaire	institutional/ organisational	1.70	1.09	2.40	0.12	5.46

concessionaire	alternative valuation/ development	0.13	0.24	0.31	0.58	1.14
constant	institutional/ organisational	-0.34	0.14	5.74	0.02	0.71

N= 549; B= logistic regression coefficient; SE= standard error; Wald= Wald statistic; p= significance; odds ratio= if the value is greater than 1 then it indicates that as the predictor increases. the odds of the outcome occurring increase
Overall model quality: Model χ^2= 74.95; p<0.00; R^2= 0.13 (Cox & Snell), 0.17 (Nagelkerke); χ^2= 17.79 (Hosmer & Lemeshow); p= 0.01; Percentage correctly predicted by model: receiving benefits= 76.4%; not receiving benefits= 47.6%;

- **Monetary benefit model:** Local resource users' reception of monetary benefits mainly depended on activities of three actors: rangers, vpbs and concessionaires (see **Tab. 6.6**). Beneficiaries, respectively respondents citing monetary benefits, were more likely to quote development activities of rangers (3.3 times), organisational (5.3 times) and development (6.5 times) activities of vpbs and alternative valuation/ development activities of concessionaires (9.4 times). These results also confirm our predictions and highlight the importance of well functioning business models that generate income in combination with well-working organisational structures that help to distribute benefits to the local level.

Tab. 6.6: Results of logistic regression showing the effect of participation activities on the perception of benefit category "monetary benefits". Significant values in bold.

Variable		B	SE	Wald	p	odds ratio
rangers	institutional/ organisational	-0.19	0.32	0.34	0.56	0.83
	alternative valuation/ development	1.19	0.40	8.94	**0.00**	3.30
governmental authorities	institutional/ organisational	-0.51	0.40	1.65	0.20	0.60
	alternative valuation/ development	-0.06	0.39	0.02	0.88	0.94
vpb	institutional/ organisational	1.66	0.31	29.49	**0.00**	5.26
	alternative valuation/ development	1.87	0.28	44.78	**0.00**	6.49
concessionaire	institutional/ organisational	-0.47	0.87	0.29	0.59	0.63
	alternative valuation/ development	2.24	0.27	70.92	**0.00**	9.40
constant	institutional/ organisational	-3.16	0.27	135.07	0.00	0.04

N= 549; B= logistic regression coefficient; SE= standard error; Wald= Wald statistic; p= significance; odds ratio= if the value is greater than 1 then it indicates that as the predictor increases. the odds of the outcome occurring increase
Overall model quality: Model χ^2= 298.66; p<0.00; R^2= 0.42 (Cox & Snell), 0.58 (Nagelkerke); χ^2= 15.91 (Hosmer & Lemeshow); p= 0.01; Percentage correctly predicted by model: receiving benefits= 78.1%, not receiving benefits= 89.4%;

- **Material benefit model:** The perception of material benefits was in many ways closely linked to monetary benefits. Results hence are similar for both models (see **Tab.6.7**). Like for monetary benefits, respondents were more likely to receive material benefits if rangers were active in the field of alternative valuation (4.1 times) and vpbs showing a wide spectrum of activities (3.0 times for institutional/ organisational and 5.4 times for alternative valuation/ development). If concessionaires generated alternative valuation options and promoted development, the odds of respondents receiving benefits even grow to 23:1. And, as predicted for the more complex processes associated with material benefits, governmental actors also did have a significant effect to the overall model. If respondents quoted alternative valuation/ development activities of these actors, they were also 9 times more likely to perceive material benefits, whereas institutional/organisational activities did not have significant effects here.

Tab. 6.7: Results of logistic regression showing the effect of participation activities on the perception of benefit category "material benefits". Significant values in bold.

Variable		B	SE	Wald	p	odds ratio
rangers	institutional/ organisational	-0.06	0.35	0.03	0.86	0.94
	alternative valuation/ development	1.42	0.46	9.75	**0.00**	4.14
governmental authorities	institutional/ organisational	-0.42	0.43	0.96	0.33	0.65
	alternative valuation/ development	2.18	0.43	26.27	**0.00**	8.87
vpb	institutional/ organisational	1.08	0.31	11.95	**0.00**	2.95
	alternative valuation/ development	1.69	0.28	35.77	**0.00**	5.40
concessionaire	institutional/ organisational	-1.32	0.87	2.32	0.13	0.27
	alternative valuation/ development	3.13	0.31	99.47	**0.00**	22.91
constant	institutional/ organisational	-2.87	0.26	124.85	0.00	0.06

N= 549; B= logistic regression coefficient; SE= standard error; Wald= Wald statistic; p= significance; odds ratio= if the value is greater than 1 then it indicates that as the predictor increases. the odds of the outcome occurring increase
Overall model quality: Model χ^2= 370.25; p<0.00; R^2= 0.49 (Cox & Snell), 0.66 (Nagelkerke); χ^2= 7.89 (Hosmer & Lemeshow); p= 0.25; Percentage correctly predicted by model: receiving benefits= 79.9%, not receiving benefits= 89.5%

- **Institutional/ organisational benefit model**: Though some indicators assessed the fit of the "institutional/organisational benefit" model as acceptable, its predictive power is not satisfactory. Again, activities in both categories for vpbs as well as for concessionaires seemed to be important. However, against our prediction institutional and organisational activities of governmental actors did not make a significant contribution to the model (**Tab. 6.8**).

Tab. 6.8: Results of logistic regression showing the effect of participation activities on the perception of benefit category "institutional benefits". Significant values in bold.

Variable		B	SE	Wald	p	odds ratio
rangers	institutional/ organisational	-0.58	0.67	0.76	0.38	0.56
	alternative valuation/ development	1.13	0.59	3.68	0.06	3.09
governmental authorities	institutional/ organisational	0.80	0.52	2.32	0.13	2.22
	alternative valuation/ development	0.91	0.49	3.41	0.06	2.47
vpb	institutional/ organisational	1.52	0.48	10.18	**0.00**	4.58
	alternative valuation/ development	1.48	0.48	9.30	**0.00**	4.39
concessionaire	institutional/ organisational	2.34	1.00	5.53	**0.02**	10.40
	alternative valuation/ development	-1.33	0.50	7.08	**0.01**	0.27
constant	institutional/ organisational	-4.48	0.48	86.10	0.00	0.01

N= 549; B= logistic regression coefficient; SE= standard error; Wald= Wald statistic; p= significance; odds ratio= if the value is greater than 1 then it indicates that as the predictor increases. the odds of the outcome occurring increase
Overall model quality: Model χ^2= 43.69; p<0.00; R^2= 0.08 (Cox & Snell), 0.23 (Nagelkerke); χ^2= 10.66 (Hosmer & Lemeshow); p= 0.10; Percentage correctly predicted by model: receiving benefits= 13.8%, not receiving benefits= 100%;

6.5 Discussion

This chapter generated two important results. First, interaction of PA management actors and resource users differed in various ways: in intensity, in dependence of block affiliation and in dependence of actor type. Functional separation was well developed, with specific actor groups fulfilling different roles within and between blocks. Second, effective dissemination of benefits to local resource users depended on these activity patterns (H4). While rangers played the decisive role for enabling access to benefits

derived by natural resource access, economic activities of concessionaires delivered the basis for monetary and material benefits. The mediating role of village participatory bodies proved to be vital for the reception of higher level benefits (monetary and material) (H5). If these vpbs did not work effectively, resource users received far fewer high level benefits - despite extensive exploitation of adjoining hunting zones by concessionaires.

One of the most striking results was the difference of the organisational systems within one country: though sharing the same national legislation and receiving current support by external donors in both regions, the implementation of management approaches differed significantly between W Benin and Pendjari.

In W Benin the arenas of restriction and exclusion controlled by park rangers were widely dominating management implementation. Despite the existence of vpbs as well as participation activities of the governmental services, only few benefits were perceived by the average hh. Consequently, from the point of view of local resource users, PA management largely resembled a fines and fences approach, in particular as park rangers often were perceived to abuse their formal power and sanction villagers haphazardly. Indeed arbitrariness and harshness of rangers' actions, unclear rule settings (e.g. concerning exploitation of the buffer zone) and a general lack of information, left resource users with very limited control in arenas of restriction and exclusion on the local level. Another factor contributing to this difficult situation was the limited capacity of the W Benin system to generate economic benefits by trophy hunting activities. In relation to total PA and population size, hunting areas and generated funds were much too small to make all communities and resource users take part in participation arenas. Consequently, the two concessionaires did not play a significant role in this block, neither in the arenas of restriction, nor in the arenas of participation (however, very locally they did). Indeed resource users often did not even know of their existence.

In contrast, around Pendjari, respondents were quite aware of the important role concessionaires played in participation arenas. This was presumably also an effect of high project and vpb activity that fostered the flow of information and made local resource users understand the principles of the management approach. Vpbs themselves were acknowledged to play an outstanding role in distributing and managing different kinds of benefits by almost all interviewees. This unique status resulted from

ongoing project animation and support, as well as the associative structure of the vpbs there (see following Chapter).

Local contexts of Pendjari and W Benin differed (see Chapter 4) as well as project philosophies and strategies being implemented in respective regions. These differences in context had stronger impact on the implementation of participation and PA management than did the shared national formal rule system of the constitutional level. Governmental services (here: park administrations) strongly influenced the definition and implementation of operational rule systems as results of collective choice arenas on the regional and local level. Especially when compared to the system in Burkina Faso, the relative importance of governmental actors in these arenas of participation in Benin is noteworthy (both parks). Indeed, these higher ranking officials were more closely linked to the local level and participated in a larger scope of participation arenas than their counterparts in Burkina Faso did. One of the main reasons for the relative importance of this "collective choice" level and governmental actors was the semi-autonomous status of the governmental organisations in charge of national park management. However, this staus in turn was due to higher involvement of projects that i.a. reinforced governmental staff. As a consequence, local resource users often did not differentiate between these actors, and attributed participatory activities to governmental actors instead to project staff. This effect was encountered also for other groups, though to a minor degree: vpbs that tried to enforce rule compliance e.g. were sometimes called "rangers". Depending on context, resource users hence classified actor groups during the interviews according to their role instead of their real formal status.

In Burkina Faso the role of rangers in the two systems (Arly and W Burkina Faso) differed quite strongly as well. Arly was the only block where rangers were perceived to be more active in participation arenas than in restricting ones – in contrast to their formal role in the tripartite management system. Nevertheless comments made by interviewees revealed that simultaneously conflict levels with rangers also were quite high. Often they were not addressed because interviewees feared negative consequences if they articulated criticism openly. The results of Chapter 5 showed that access to natural resources was by far the most important benefit local resource users received: we found that besides legal ways of obtaining exploitation permits, various

informal ways of negotiation, including fraud, had developed between resource users and rangers on the very local level. Rangers were often perceived to have total control over these arenas. They were organised in a paramilitary way and usually the only representatives of the governmental administrative system. So getting along with them well was a necessity and consequently also guaranteed the access to natural resources and other benefits (or at leased minimised risk of getting in conflict). Additionally we found, that vpbs depended to a large degree on the animation and power of rangers, as projects that could have acted as catalysts and partners of vpbs were not operating in this block on a large scale. Also concessionaires, though playing an important role in Arly, rarely filled this gap: despite their formal obligation to actively take part in local arenas of participation and development, most of them did this only to a minor degree and many local resource users around Arly argued that their concessionaire would not deliver any service to them.

Though vpbs in W Burkina Faso were supported by a large-scale internationally funded project (like in W Benin), their activity levels were remarkably low in all three management arenas, respectively resource users did not have any knowledge about their activities. Presumably it was a mixture of both, as resource users generally seemed not to be well informed about actors' activities in general. Average resource users had no linkage to higher level governmental authorities. Like in Arly, interaction usually was restricted to rangers operating directly in the field and was more intense, if ranger camps were in the village or close by. In contrast to the Arly Block, the largest part of W was managed as a national park: while virtually the whole area of Arly was leased to concessionaires (either hunting or tourism), direct interaction of concessionaires and local resource users was limited to some villages neighbouring the hunting zones in the north and south of the W Burkina. In this respect, the situation hence corresponded to the one experienced in/ around W Benin.

Summary

There was hence a broad range of the way arenas of conservation, participation and restriction were implemented in the field. Functional separation of actors' roles indicated a truly cooperative approach in the Pendjari region where vpbs worked relatively well. Interaction with governmental services and concessionaires were predominantly

positive and cooperative, whereas interaction with rangers was rather scarce. Due to high vpb activity, they only played a minor role in participation arenas; results also indicated that they might have underperformed in their general function (see next Chapter). The situation in W Benin was vice versa. The management approach resembled a fines and fences setting, with relatively weak concessionaires and vpbs, but strong rangers dominating restriction arenas.

In most areas there were only few arenas on the local level in which concessionaires took part. Though they were formally obliged to participate in village development activities (in addition to the lease and other fees they paid for this purpose), their main interest towards resource users usually was to limit access to the hunting areas and suppress any (illegal) exploitation activity there. Virtually all management systems hence failed to integrate concessionaires in participation arenas more tightly. They usually were allying with governmental actors in order to strengthen their own position and enlarge their room for manoeuvre. In most cases they did not only have a high degree of financial power, but due to their social status also were well imbedded in important political and economic networks on the national level. Consequently it was quite easy for them to break rules and disrespect their obligations.

The arena of conservation was largely seen to be the affair of local rangers. In all parts of WAP about a third of interviewees attributed this function to them. The whole organisational and institutional system in Burkina Faso was still strongly dominated by foresters (hunting department) at the time of our study, though it was actually in a phase of restructuring. Most interviewees did not know much about the role of the governmental services, however, tended to see their purpose in conservation rather than coordinating compensation and participation mechanisms (in contrast to Benin). Institutional changes that provoked heavy debates in the national capital were started to be implemented on the regional and provincial level, but still had not yet reached the knowledge and perception of local resource users. The low number of interviewees that assigned their vbps the function of conservationists, are an indicator of the insufficient coupling of participation and conservation, as well as the weak performance (or interests) of vbps in this central arena. Despite their dual role of spreading information (on rule systems) as well as monitoring rule compliance on the one side, and making local resource users participate in the arenas of PA management on the other side, they

rarely took part in the arenas of conservation and restriction. If they did so, they usually had little control to influence outcomes, respectively lacked incentives other than their personal cost and benefit ratios (see next Chapter).

Benefits

Rangers managed withdrawal rights almost exclusively, while vpbs did not hold any formal property rights for resources within PAs, and only to a limited degree for resources in buffer zones. As expected, resource users hence mainly depended on rangers' activities in order to gain access and/ or limited withdrawal rights. Higher level benefits required valuation activities by concessionaires. Transfer of property rights and economic exploitation of game multiplied the economic gains from these natural resources and laid the base for (financial) participation of local residents. As these funds were not directly transferred to local communities, however, well functioning vpbs that enhanced the institutional capacity of villages were necessary for effective dissemination. These benefits were implemented only to a minor degree on an individual level. Most funds were rather invested in community infrastructure and therefore served as collective benefit. Their realization often required additional coordinating activities of governmental services. The main function of vpbs then was to redistribute funds that had been paid by concessionaires, respectively revenues from tourism in general. Keys for distributing these benefits among villages were in most cases determined by governmental service, however, in some areas at least influenced by vbp activities. In fact, the dissemination of benefits was a result of distribution keys on several levels: on the constitutional level, where laws determined the share of each party in the tripartite management approach (influenced by donor intervention), on the constitutional choice arenas, where governmental actors (park administrations) largely decided on the distribution of benefits among villages, and finally among resource users in each village. Resource users directly participated only in the latter arena in direct interaction with other resource users, their vpbs and potentially rangers; they might also have participated via their vpbs in arenas on the constitutional choice level. The perception of benefits hence depended significantly not only on existence of vpbs, but rather on their quality and their capacity to negotiate and interact with other actors on the constitutional choice level (especially for higher level benefits). Their strategies to obtain and manage information, organise themselves and ally with other actors

therefore should significantly contribute to achieving the aim of making resource users perceive benefits. Their structures and modes of functioning are therefore analysed in depth in Chapter 7.

Conclusion

Privatisation of certain property rights (here commercial withdrawal and management rights) hence might help to regulate exploitation of natural resources, however, also capitalises benefits generated by resource exploitation. If the institutional and organisational system lacks monitors and is characterised by power and information asymmetries, however, it does not support dissemination of benefits to those bearing the negative consequences of restricted access and exploitation. Benefits rather circulate between those groups holding formal property rights and possesing enough power to defend these rights against informal exploitation interests. The dissemination of high value benefits (material and monetary) depend on the existence of well working vpbs.

[*It is important to note that facts and figures given in this chapter were derived from subjective views of local resource users. By interviewing more than 500 hh, we tried to counteract subjectivity with high sample size. Interviewing actors from all levels and groups, however, revealed that very different views of the current situation of management arenas existed. We acknowledge these "other realities" as well. Still, these views often were based on a lack of place and time information or biased by political considerations. In each group (governmental and private actors) we found several (i.a. high-ranking) individuals supporting the views given by local resource users in our interviews.***]**

Chapter 7

Cut-points in PA-governance

The role of village participatory bodies

7.1 Introduction: local participatory bodies - mediating top-down and bottom-up interests

The management of protected areas (PA) is often inefficient due to poorly defined responsibilities and conflicting interests of central governments, private entrepreneurs and local resource users. The legislative authority over (nationally) classified areas usually rests with governmental services and is carried out by central and deconcentrated services. These services might grant different forms of access and usufruct rights to third parties, often to private entrepreneurs, with the aim of economic valorisation. *Local* governments, formally representing needs and aspirations of local resource users most directly, are new actors on the scene in many developing countries, however, often lack capacity to fulfil the multitude of different tasks entrusted to them. People living adjacent to these areas in buffer and transition zones therefore usually participate in the arenas of PA management via village committees and associations (in the following called *village participatory bodies*, vpb).

For most action arenas of PA management, these village participatory bodies link the crowd of local resource users to operational PA management activities and possibly decision making processes. As corporate bodies they are supposed to represent the cumulated interests of their communities with respect to resource exploitation, and so to be the primary contacts not only for villagers themselves, but for governmental and private actors alike. Local communities, however, are complicated and heterogeneous networks of resource users, social groups and cliques heavily influenced by traditional hierarchy structures. Due to this complexity, effective mechanisms of collective choice – or hierarchy- are thought crucial for vpb functioning. This raises the question of legitimacy and representativeness of the committee/ bureau itself, as well as the problem of (s)election and formation of its members. The establishment of vpbs creates distinct groups with specific privileges (and obligations) that exclude non-members by definition. If communities do not trust their representatives or feel being well represented by their vpb, bottom-up interests and initiatives might be channelled by some alternative constellation (e.g. traditional authorities), or are likely not to come up at

all. Elite capture and non-transparent recruiting mechanisms seem to be widespread among these local bodies (Kippes 2007[3]).

These bottom-up functions of vpbs hence mirror community concerns and usually involve issues of legal resource access as well as compensation mechanisms for exploitation options foregone by restrictive rule settings (including alternative valuation options). Vpbs also do play a critical role as mediators in conflict resolution mechanisms, either within the community or between resource users and governmental or private actors.

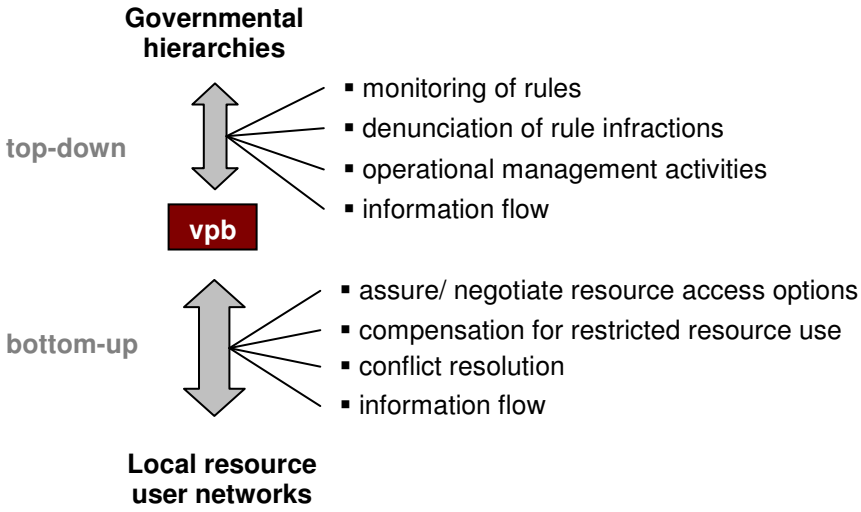


Fig. 7.1: The role of vpbs: mediating top-down and bottom-up interests

Village participatory bodies, however, have another important function (see **Fig. 7.1**). They are supposed to act as formal partners of governmental authorities as well. Their primary task here is to set-up a regime of social control by monitoring exploitation behaviour and (formal) rule compliance of local resource users as well as denunciation of wrongdoers to governmental authorities. As members of vpbs are embedded in local social networks themselves, this function usually puts them in a serious area of conflict between top-down-and bottom-up interests. Other management tasks assigned to vpbs, like prevention of bush fires, or dissemination of information (e.g. on formal rule settings), are usually less conflict-loaded. Vpbs are also well suited to integrate local knowledge, e.g. on resource dynamics, into higher level formal decision making. Their

[3] Citation of a vpb member in BF :«S'il y a des bénéfices, en partie pour ceux du comité [en parlant du CVGF], j'aimerais faire partie du comité. Mais il n'y a pas eu de réunion pour prendre les gens, les responsables de Boumoana ont pris ceux qu'ils voulaient ».165 (Kippes 2007)

interaction with private actors is often less concerned with decision making than with handling day-to-day operational tasks. This might include the offering of guide services to tourists, or the distribution of material benefits provided by concessionaires (e.g. bush meat) to local resource users.

In a collaborative management network, there are various forms of relation between local communities and governmental authorities (Carlson & Berkes 2005). Vpbs, however, play a major role in the action arena of PA management. The concentration and diversity of tasks as well as their direct linkage to governmental hierarchies, networks of local resource users and PA associated markets, put them in a very special position. According to neutral network theory, they represent cutpoints in the network of collaborative management (Jansen 2006). If they are absent or not fulfilling their tasks, there is no functional linkage between the subcomponents (*here* gov. hierarchies, markets and social resource user networks) (see **Fig. 7.2**). Under these circumstances, participation endeavours are likely to fail. Due to very different, sometimes antagonistic expectations directed at vbps, they often act in arenas full of tension. Social pressure can even lead to social isolation of vpb members within their villages. On the other side, their position endows committees and individual members with potential bargaining power. They can act as brokers of information or generate benefits by using their relatively high degree of decision making power on the local level (e.g. by mediating job opportunities or denunciating community members to rangers). Social prestige might also be associated with membership in a vpb.

In Burkina Faso and Benin, vpbs are present in almost all the villages surrounding WAP. They are indeed primary partners of governmental authorities and receive significant amounts of income. However, beyond this general observation, knowledge on their actual functioning is rather superficial and sparse. We here aim at addressing this gap and drawing a more differentiated picture of the actual status (2009). Our guiding questions hence were:

Do local participatory bodies fulfil their role as cut points between resource users and governmental authorities in the institutional and organisational set-up? Do they effectively participate in the relevant action arenas of PA management? (H5)

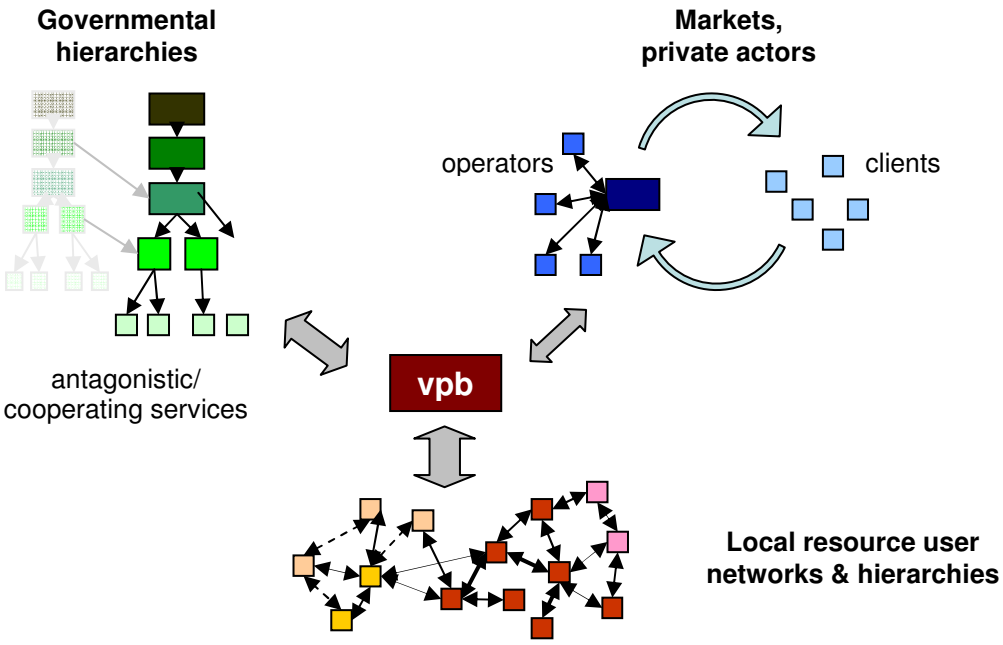


Fig. 7.2: Vpbs as cutpoints in the PA management network that includes governmental hierarchies, PA associated markets and networks of local resource users as subcomponents.

We approached these global overarching questions by specifically investigating vpb organisation and functioning in eight dimensions: (1) Organization & Structure, (2) Conflict & Conflict management, (3) Trust & Power Relations, (4) Participation in operational PA management, (5) Financial/ Material participation, (6) Participation in strategic decision making processes, (7) Communication and Information flow, (8) Resource Access: Options and Restrictions. A comprehensive list that highlights these theory-based dimensions and their rationales can be found in the *Material & Methods* Section. As we were more interested in general functioning of vpbs and their organisational capacities, we rather emphasized these overarching dimensions than specific action arenas. However, it is obvious that there is a significant degree of overlap between these different modes of categorisation. We therefore often refer to the arenas of PA management that we identified during our study and that are described in detail in Chapters 3 and 6. Figure 7.3 gives a short overview of the most important arenas in which vpbs in the WAP area take part.

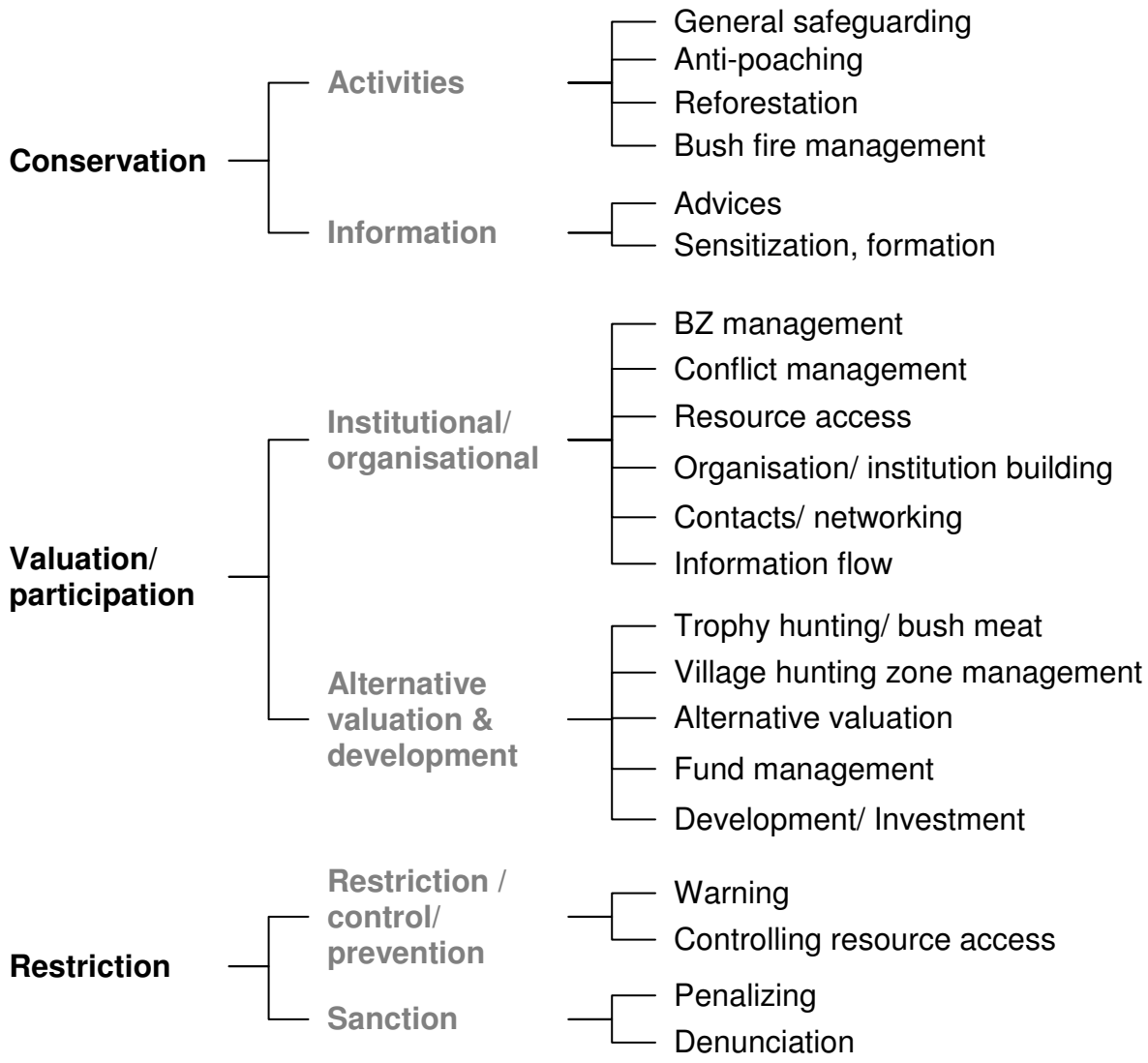


Fig. 7.3: Most important action arenas in which vpbs around WAP take part. (BZ= buffer zone)

The remaining chapter is organised as follows. After this introduction, section two details data acquisition and analysis. Section three first analyses the context of vpb activity in Burkina Faso and then describes the functioning of vpbs in the two blocks of Arly and W Burkina Faso in depth. Section four provides respective information for vpbs in Benin. Finally, a synthesis of the results is presented in the final discussion chapter (Chapter 9).

7.2 Material & Methods

Our research was based on extensive field studies. We qualitatively interviewed vpbs in 27 villages and triangulated the comprehensive data with results from our household-survey in the same villages, as well as interviews with local governments, concessionaires, representatives of governmental services and project staff. Intensive literature survey complemented the approach. More detailed information on data acquisition can be found in Chapter 4.

Data analysis

Transcription of the recordings was literally. We then used qualitative content analysis by structuring and summarizing the information given (Mayring 2010) according to below listed dimensions. Led by theory, these dimensions were further divided to sub-dimensions. In a first step we used single interviews as unit of analysis: statements were paraphrased and reduced to key elements. In a second step, the resulting information was clustered and generalized on PA block level.

1. Organisation & Structure

Well organised and structured vpbs are supposed to be more effective in negotiating with external formal stakeholders of PA management as well as in mediating top-down interests. Executive and strategic roles are associated to well defined positions within steering committees. They have a spectrum of tasks that defines their overall mission, and actively engage in their execution. Their internal legitimacy is based on strong embedding in their communities and broad participation of its members. Their external legitimacy is based on formal agreements and regular meetings with external PA management partners.

2. Conflicts & conflict management

The central task of vpbs is to mediate between actors that often have diametrically opposed interests: conservation and exclusion from resources contra vital exploitation needs. Their mediation function in reality hence often means taking an active role in negotiating conflicts and developing strategies for conflict prevention. We therefore analyzed all relevant internal (i.e. on a horizontal level: within vpbs, between vpbs and

resource users/ local governments/ other vpbs) and vertical (between vpbs and authorities/ concessionaires) conflicts cited by vpbs during the interviews and their associated strategies to handle these conflicts.

3. Interaction with other PA management actors: trust & power relations

Besides conflicts, there are other forms of interaction that appear rather neutral or aim at an enhanced cooperation. As prescribed operational processes or rather informal exchanges, these interactions help to build trust between actors and level imbalanced power relations. Principal subjects and course of exchange, frequency and a rating of cooperation quality as well as overall assessment of the actual degree of conflict between vpbs and other actors are central to this dimension.

4. Participation in operational PA management

Apart from exchange of information, the involvement of local resource users in operational management tasks is the most basic form of participation. For governmental authorities it offers the option of "outsourcing" specific tasks and to take advantage of operators having local place and time information. The most important effect for resource users usually comes along in the form of alternative sources of income, e.g. being employed as assistant-rangers. As these activities are often carried out in cooperation with other actors, they can promote positive interaction, create stronger ties between resource users and the PA and therefore increase PA acceptance. Vpbs are central in mediating and supervising these activities.

5. Financial/ material participation

Financial and material benefits proved to be strong incentives to influence behaviour of actors (on any level). If resource exploitation patterns of local users shall be influenced positively in order to enhance conservation outcomes by financial participation, two aspects are critical. First, to work as incentives, beneficiaries must positively associate the benefits they gain by changing their behaviour (e.g. by testing alternative forms of income via installation of village hunting zones) to PA conservation/management efforts. Second, dilemmas of equitable benefit sharing and distribution have to be solved, both between and within stakeholder groups. For vpbs this means foremost engaging in the respective action arenas on constitutional and collective choice, but also on the operational level. Financing e.g. public infrastructure is a common way to solve

distribution problems on the community level, however, brings along its own challenges (e.g. long-term fund management).

6. Participation in strategic decision making processes

Participating in higher level decision making arenas requires capacity and well organised and structured vpbs that know actual rule settings. If there is no, or limited willingness of authorities to accept vpbs and their claims on this level, they have to demonstrate their legitimacy and (political) power that arises from representation of high numbers of local citizens. The best way to do so is by joining forces and build unions of vpbs. We therefore analysed the actual degree to which vpbs are integrated in higher-level decision-making processes and the channels they use to make their claims being heard and pushed.

7. Communication & Information flow

Communication and the flow of information between actor groups is an integral component of any form of conflict management, interaction and participation. Being a key element though, actual integration in (and mastering of) upward and downward information flows was being analysed in form of an additional dimension.

8. Resource access: options and restrictions

PAs change property right regimes and usually exclude local users from resources. As shown in Chapter 5, benefits resulting from relaxation of these rules (e.g. in the form of quotas, spatial zoning or temporal limitations) are the most widespread form of benefit that local resource users perceive. We therefore asked vpbs about restrictions and options with regard to resource access and about their role in mediating these benefits.

7.3 Results

Burkina Faso – context

Village participatory bodies in the arena of PA management in Burkina Faso were called *Comités villageois de Gestion de la Faune (CVGF)*. Since reforms of the environmental

sector in the late 1990ies (*Code forestier* coming into force in 1997), they were established as primary actors representing local communities in the tripartite management. In fact they were often seen as the local "formal" authority with respect to any issue concerning natural resource exploitation. However, reality was somewhat more complicated.

Jurisdiction in Burkina Faso emphasizes the importance of community participation in PA management (Borrini-Feyerabend 2002) in quite explicit and equitable ways. The implementation of this objective, though, has to be seen in the global framework of national decentralization and deconcentration processes that also started at the end of the 1990ies, as well as reform processes that even started in the 1980ies. Due to their complexity these processes often lagged-behind in their scheduled proceeding (Borrini-Feyerabend 2002, Ouedraogo 2003, Champagne & Ouedraogo 2008) and often suffered from a lack of cross-sectoral coordination, despite heavy support from international partners and donors.

As a late outcome of the Land Reform Act (*Reforme Agraire et Foncier/ RAF* 1984) and renewed dynamism of decentralisation fuelled by the adoption of several new and important framework laws (*Textes d'Orientation de la decentralisation*; Law No 040/98/AN), the government promoted the establishment of Village Land Management Commissions (*Commission Villageoise de Gestion de Terroir /**CVGT***) and respective inter-village committees (Hillhorst 2008) from the year 2000 onwards (Dramé-Yaye et al. 2007) in a national programme funded by i.a. UNDP and The World Bank (*Programme National de Gestion des Terroirs /PNGT*). These commissions embodied often both, new formal and traditional informal institutions, and were meant to improve local capacity and governance by taking responsibility for all issues of local development (UNDP/ GEF 2005). One of their main tasks was to produce village level development plans. However, due to legal reforms in the forestry sector, the ministry in charge of PAs already began in 1996 (Dramé-Yaye et al. 2007) to establish specialised committees that should focus on the management of natural (faunal) resources, called *Comités Villageois de Gestion de la Faune/ CVGF*, with both initiatives being poorly coordinated (UNDP/ GEF 2005). In the surroundings of PAs, though, CVG**F**s evolved to key actors being receptors and managers of a certain percentage of governmental income generated by trophy hunting (via concessionaires). These revenues represented in some rural localities the major source of financial influx, and therefore backed local

power of respective organisations. They derived from the taxes that concessionaires paid for their usufruct rights of big game cropping: 50% of these funds were designated for local communities, and 50% for the state. The 50% for the communities were further subdivided with 30% being directly versed to village committees and 20% being transferred to the forestry administration to feed a management fund (*Fonds d'Interet Collectif/ FIC*) (Poppe 2011). The funds that directly went to the villages were foreseen to be invested in local infrastructures most needed, e.g. schools, pumps or afforestation measures. Moreover, via CVGFs village communities were given the opportunity to establish officially recognised village hunting zones (*Zones Villageoises d'Intérêt Cynégétique/ ZOVIC*), and to receive ¾ of the bush meat resulting from sports hunting in adjacent concessions. Both could significantly contribute to enhance village alternative income.

Establishment of CVG**T**s in the East of Burkina Faso, on the other hand, proceeded rather slowly (Borrini-Feyerabend 2002, Compaoré 2003) and generally only reached minor importance, even if some analysts and bureaucrats classified CVGFs as subsidiaries of CVGTs (Compaoré 2003). As officially recognized rural decentralised community structures did not exist in Burkina Faso until 2006, both initiatives were closely linked to the deconcentrated governmental organs on provincial/ departmental-level (UNEP/UNDP/DUTCH 2001). With the upcoming of these local governments (regional council & president; municipal councils & mayor) that legally and directly represent their citizens, this linkage proved to be difficult: composition of the committees should "be representative of village interest and not party politics" (Hilhorst 2008). Since 2007 the tasks of the CVGT have therefore been transferred to new organisations that were hierarchically linked to their local governments, and called Village Development Commissions (*Commission Villageoise de Développement/CVD*) (Decree No ° 2007-032/PRES/PM/MATD JO N° 07 DU 15 FEVRIER 2007)). CVGFS henceforth should stay in charge and act as a specialised sub-commission of these new groups, respectively be recreated by the new CVDs and also operate under a new name (Commissions de Gestion de la Faune/ CGF) (Decret no. 2008-312).

These changes were meant to clarify competences and further emphasize autonomy of the new local governments. In reality, though, they failed to regulate some important issues and were poorly implemented to date (Sama 2012). Key to understand resulting conflicts is the analysis of financial transactions associated with the institutional and

organisational set-up: being subsidiary to the new local governments instead of the deconcentrated provincial services means that all financial transaction should pass the financial administration on community level instead of bypassing it. It seemed that neither CVGFs were keen on these changes, as they would loose their privilege of being direct recipient and manager of these PA-associated funds, nor were governmental services that also would loose part of their political and financial power. Local governments, on the other side, wanted to consolidate their role as legal actors on behalf of local needs and funding issues. Formally they were in charge of construction and maintenance of local socio-economic infrastructure. This competence obviously interfered with activities of CVGFs in the villages. Furthermore, the decentralised bodies were also in charge of natural resource management on their territory (Law No 055-2004). As some of the areas in Burkina Faso that were contracted as hunting concessions have not yet been classified as protected areas according to national law, the actual status and political competences for these areas remained disputed (status quo 2009).

CVGFs hence found themselves in a difficult formal institutional and organisational context, with several actors struggling for competences and financial participation. Additionally, with formal law and order being extended to local resource user level, the role of customary governance structures had been undermined (Hilhorst 2008). Besides customary rights over natural resource exploitation being not (or just to a limited extent) recognised by formal laws, this weakening was further aggravated by general social and socio-economic trends like migration to larger settlements or fragmentation of large family structures (Hilhorst 2008). CVGFs hence had to find ways how to best integrate traditional systems for controlling the management of natural resources. Borrini-Feyerabend (2002) and Poppe (2010) also point to the problem of CVGFs being legitimate representatives of local communities, as they tend to exclude Fulbe farmers and women, and instead might serve local elites to further extend their spheres of influence.

Projects and international donors usually also focused on these issues of local empowerment, equity and good governance. In fact they played a key role in all of these arenas in Burkina Faso and around WAP. Despite official organs that were in charge of looking after and coordinating these different policies and their implementation approaches (e.g. the *Secrétariat Permanent du Cadre National de Concertation des*

Partenaires du Developpement Rural Décentralisé/ SP-CNCPDR; or the *Conseil National pour l'Environnement et le Développement Durable/ CONEDD*), there was no or little systematic cross-sectoral interaction that showed effect on the ground. Sometimes even antagonistic processes, overlapping competencies or horizontal competition were promoted by different projects by empowering specific actors (see above) and further aggravating conflict potential.

At the time of our study, several projects were active that in some way or the other influenced activities of vpbs in charge of natural resource management, i.e. foremost CVGFs, around WAP. We here concentrate on initiatives that were cited by CVGF-members during our interviews. (In 2003 IUCN identified four hundred (!) community-based organizations in Burkina Faso that aimed at the promotion of local development and conservation, many of which were backed by the aid of projects and programmes (UNDP/GEF 2005).)

- For the W region (both Burkina and Benin) the ECOPAS (*Ecosystèmes Protégés en Afrique Soudano-Sahélienne)* project was just about to end after two phases of EU-funding. This project aimed at implementing a harmonised regional management of all three national parts of the W transfrontier biosphere reserve, i.a. by strengthening collaborative approaches and local participatory bodies.
- For the Arly region in Burkina Faso, PAUCOF (*Projet d'Appui aux Unités de Conservation de la Faune*) was an important project funded by the French GEF and the French development agency (AFD), however, ended in 2005. Among its major achievements was to improve water distribution inside the WAP PA (Arly block) system (UNDP/ GEF 2005), but also had at least local impact on CVGF organisation.
- Still active during our field work was the project ADELE, financed by the Swiss Cooperation. Its main objective was to strengthen local communities' management and planning capacities. Like another Swiss initiative, driven by the NGO ADAP (*Association pour le Développement des Aires protégées*), it also worked with local populations to establish village hunting zones (including management plans and better working relations between village committees and concessionaires) and generate options for alternative valuation of natural resources.

Since the reform of the forestry and conservation sector in 1996/97 the establishment of inter-village committees was planned (The World Bank 1996). After intensive effort of several projects and NGOs (Compaoré 2003), foremost IUCN, unions on *Département* and *Province*-level were installed in the provinces of Tapoa, Kompienga and Gourma in 2006 (Ouedraogo 2006). Until then inter-village cooperation and thereby enhanced power in higher-level action arenas was very limited in the WAP region of Burkina Faso (Compaoré 2003, Borrini-Feyerabend 2002, UNDP/ GEF 2005). Locally, however, independent inter-village committees also evolved in the WAP area, e.g. kept together by the management of a shared village hunting zone (Kippes 2007).

In other areas of Burkina Faso there have been similar and to some extent more advanced approaches in place (Nazinga, Comoé-Leraba). The multi-donor programme PAGEN (*Projet de Partenariat pour l'Améloration de la Gestion des Ecosystèmes Naturels au Burkina Faso*, 2002-2007) e.g. aimed at improving biodiversity conservation in four specific sites (excluding WAP). One of the major achievements was the creation and animation of an inter-village association (*Association intervillageoise de gestion des ressources naturelles et de la faune/ AGEREF*) that became entrusted concessionaire of the partial faunal reserve of Comoé-Leraba, in the southeast of Burkina Faso (TWB 2008). The members of AGEREF were representatives of the CVGTs of all villages adjacent to the reserve.

Synthesis

According to literature review, though, above mentioned constraints impeded a proper functioning of vpb in the sector of natural resource management in Burkina Faso (UNDP/ GEF 2005, Kippes 2007, Vermeulen 2004, Poppe 2010). Shown by our own household survey and research by Poppe (2010), local resource users were disappointed by vbps ineffectiveness in pushing their needs and aspirations into respective arenas of action, even though they did recognize an amelioration of interactions between stakeholders and acknowledged progress in benefit sharing achieved so far. One of the main problems of CVGFs that limited their bargaining power was the lack of inter-village coordination and the creation of effective departemental/ provincial unions. Locally and/ or concentrated on specific interests, these unions did exist (e.g. Kippes 2007, Borrini-Feyerabend 2002), however, generally there was no

systematic cooperation on larger scales (Compaoré 2003, UNDP/ GEF 2005). For the WAP area, especially IUCN has been working on setting-up departmental and provincial unions. These unions have been formally introduced as new actors in 2006 (Ouedraogo 2006), however, during our field work we could not find any operational activity that impacted the conditions in the villages, nor did any of our interview-partners autonomously mention these associations as important stakeholders in Burkina Faso.

The role of CVGFs in *Burkina Faso*

- **Organisation, structure & legitimacy.**

Sharing the same national institutional framework, some basic characteristics of CVGFS in the W Burkina Faso and the Arly Regions were more or less identical. They…

- …were created by rangers at the mid/end 1990ies shortly after the tripartite management approach came into force
- …involved 12-15 persons in similar positions as in the W region, among them a president, a secretary and a treasurer, which were the key positions also legally prescribed (Law No 014/99/AN) for any assemblage. They usually consisted of several complementing positions, e.g. an informant being in charge of spreading important news and announcing meetings, one or several advisers (a position that seemed to be an entry point for new adherents to the committee), a seller of bush meat and members that were in charge of organising meetings. This usually included two women who prepared meals for their reunions.
- …did well integrate local traditional authorities in their decision making processes but failed to equally represent Fulani herders or women: in none of the study villages women, respectively Fulani herders filled any of the key positions
- …did not have any written bylaws that defined rights and duties of interaction. All information they possessed about their roles, tasks and duties was passed either by rangers, concessionaires or project staff. In fact there were not any written rule settings or contracts known on this local level.

However, a more complex institutional and organisational context of the Arly Block lead to a higher degree of diversity in other aspects: while there was only one deconcentrated provincial authority directly involved in the management of the W park, Block Arly stretched across three provinces and involved twice as many communes as W Burkina Faso. Additionally, as all areas of the Arly block were either contracted as hunting or tourism concessions, there was a much higher number and heterogeneity of private actors involved. These different contexts also lead to a higher variety of rules in use and operational processes associated to PA management in the region.

Several CVGFs around Arly indicated that they lacked official recognition (at least vpb 1, 2 & 5) as they did not possess a memorandum of association (see paragraph "problems"). This document can be considered as an entry ticket to take part in the action arenas of financial participation and project intervention. Hence, lacking this document could cause severe problems to the villages and CVGF existence. As the procedure for official recognition was quite complex and required e.g. the formulation of written bylaws, the process was difficult to handle for villagers without external support from projects: "*We do not know the procedures…how to get the memorandum of association. We have been at the provincial capital, but we did not know how to organise the process*" (vpb 2). These vpbs did not receive any support form governmental services in charge and consequently reduced, respectively stopped all their activities (vpb 2 & 5). They reported neighbouring villages did so as well: "*It became very quiet, they are no more functional*" (vpb 2). Official recognition either of the committee itself, or their ZOVIC (see below) was one of the key issues in this area. CVGFs in the W region received their official certificates of association (recognising them as legal entity, "*groupement*") signed by the deconcentrated service on departmental level in 2003 and indicated first steps of the ECOPAS project to empower local communities.

As long as the ECOPAS project was active in the W Block and sent its staff to the villages, meetings of the CVGF bureau were regular at up to three times per month. Several villages reduced the frequency of their meetings or even stopped totally when the project was terminated (vpb 13). Also in Arly, meetings were either internal (only committee) or involved the whole village, but in most cases not on a regular basis and generally seemed to be rather rare.

Generally there was little turnover in CVGF personnel, especially in key positions, and regular intervals for elections were virtually absent (according to Law No 014/99/AN: term of office 3 years). If elections were held, they usually involved the whole village and took place in a plenary meeting. Some CVGFs in the W Area, however, installed different boundary rules for entering the committee: potential entrants had to apply for their membership and, if the committee agreed, had to pay an admission fee (vpb 14 & 15). Village elders were tightly integrated in any decision making process, be it the admittance of new CVGF members or on questions how to spend funds. Also community members often were consulted if major decisions had to be made. Generally, there were no major conflicts between CVGFs and community members ("*We belong together*." vpb 14), however, in one case there had been conflicts due to one delegate embezzling money that was entrusted to him (Vpb 11).

Also there was only little interaction between CVGFs and local governments on communal level, usually restricted to first, sporadic contacts, e.g. when a new development project was introduced. Only one CVGF in the Arly Block (vpb 9) reported to be in regular contact with the mayor. He was involved in the money transfers taking place at the end of the hunting season. Furthermore he gave advices on how to develop their ZOVIC and informed them about development projects. In return, together with the other CVGFs of their local union, the village committee funded a motorbike and office equipment for the local government. The cooperation was assessed to be good ("*We eat together*", an expression that is often used to paraphrase unity among actors).

Around W CVDs were not yet established, respectively functional. CVGFs knew about the role of these commissions and confirmed that CVDs theoretically should serve as umbrella associations also for them. In contrast, around Arly all committees reported that CVDs had recently (1-2 years) been established in their villages ("*The mayor decided to install a CVD two years ago*" vpb 2), however, their actual operational status greatly varied between villages. Generally there was a high degree of personnel overlap between CVGFs and CVDs (vpb 1, 2, 5 & 9). Defining and distinguishing the competencies of each organisation proved to be difficult for most CVGF members, also as in several villages the CVD had not taken up its work yet. No CVGF confirmed to be a sub-committee of the CVD ("*The CVGF is not a sub-committee of the CVD as it is older*." (vpb 3 & 7); "*For us the CVD is a sub-project of the CVGF, as we have started our work, the development of the village, before the CVD came*" (vpb 10)). One village

(vpb 5) emphasized the important role of the CVD as mediating agent between the village and development projects ("*All queries pass the CVD, also all projects. (…) If there is a development project, the CVD acts like a mediator. Any time they need something, they first ask the CVD*." (vpb 5)). The CVGF of another village further specified its role and connection with the CVD: "*Both work for the development of the village: the CVGF is in charge of the surveillance outside the village, and the CVD takes care of the interior. If, e.g., a house collapses, the CVD asks the CVGF for financial support. Or, if there is someone in the village who wants to go on an educational trip, he informs the CVD. But as the CVD has no money at the moment, they ask the CVGF for cooperation*" (vpb 9). The two village organs hence arranged some kind of division of labour that differed from the formal framework but reflected power relations on the ground: the CVGF acted as a donor and hence held decisional power over the activities of the CVD.

As major structural impediments for a proper functioning of their committee, CVGFs in the W Burkina Faso region identified foremost financial and material constraints: no salaries or funds to cover their operational costs, e.g. for transports or to buy and repair working equipment ("*We do the same job as rangers do, but are not paid",* (vpb 11)). According to their view, they needed a new project like ECOPAS to support them, as governmental actors so far just promised help, but did not deliver it. Only one village also raised institutional constraints in the form of a lack of information flow and capacity building: "*First of all, we have to be informed, but our information has to be heard as well*." In contrast to the CVGFs in the W region, major constraints for a proper functioning of the committees in Arly were often seen in institutional and organisational shortcomings. Apart from the lack of official recognition either of the committee itself or its ZOVIC (vpb 1,2,3,4, 5 & 8), they missed proper trainings on how to run their hunting zones and establish fruitful cooperation with other actors. One CVGF also cited the lack of trust between private actors and committees: "*We want that the concessionaire has confidence in us*." (vpb 7). Economic interests though were prevalent: "*We need someone reliable who procures clients for our ZOVIC, and information on how to find hunters ourselves (…). We need a workshop on financial and administrative issues as well as a formation on how to contact "big persons" and ask for their help*" (vpb 9). Material impediments (lack of waterholes, no signboards, etc.) were also seen as an important obstacle to effectively run their ZOVICs: "*We want help for the management*

of our ZOVIC, so that we can preserve it for the future, so that our children know they will also be able to benefit from it in the future." (vpb 3)

- **Conflicts**

Probably due to the very limited degree of restrictive activities realised by CVGFs, village internal conflicts between committees and resource users were not of major importance in the area. However, several respondents of our hh-survey in the W area accused their own vpbs to have taken land for the creation of a village hunting zone. The vpbs themselves in these cases established new property right regimes on the micro level and accepted to bear the burden of restricted resource access on individual community members.

External conflicts, i.e. vertical conflicts with village-external stakeholders, mainly concentrated on land/property right issues, the operation of village hunting zones and the distribution of bush meat. The change of property right regimes due to the classification of the PAs/hunting zones had tremendous effect on local communities, especially in the W area. After the Forestry Act coming into force in 1997/98, several villages in the area were resettled (Poppe 2010) and one of our study villages had to abandon some of their land. However, they acknowledged that each year they received compensation via direct payments (vpb 12). Two other villages also claimed to have lost some land that either was used or foreseen as ZOVIC, and blamed either governmental services or the concessionaire (vpb 11 & 15). These areas used as village hunting zones were also often highly attractive for agricultural purposes. The village accusing the concessionaire to have taken their land foreseen as ZOVIC ("*On the paper it is our land*", vpb 11), still hoped to find a compromise. In reality though, they had no solution strategy – in fact they had not even started a negotiation process with the concessionaire. In contrast to W Burkina Faso, a high degree of dissatisfaction and open conflict in the Arly Block resulted from institutional and organisational shortfalls. Even when CVGFs were officially recognised, respective documents were kept by deoncentrated services under lock and key, often without CVGFs even knowing they existed. Several CVGFs complained about direct disadvantages resulting from this lack, i.a. that they did not receive bush meat or direct payments (vpb 2), could not establish

cooperation with projects (vpb 5), or were not able to lease their ZOVIC to a concessionaire (vpb 1).

At least four vbps (vpb 3, 4, 5 & 9) in the Arly region accused governmental services and/or rangers of fraud. Being true or not, it showed the high degree of distrust between these actor groups: one committee suspected governmental authorities to embezzle money that was given by projects to be invested on the local level. The same CVGF also reported that they had to withdraw money from their bank account when governmental services accommodated guests for meetings in the provincial capital. Two other vpbs accused local rangers, respectively governmental services, not to acknowledge the CVGF's book-keeping on the hunters that visited their ZOVIC. Rangers/ governmental services instead relied on their own statistic, which always differed from the one recorded by the CVGF, so that villagers received only a smaller amount of money (the rest was presumably kept by rangers). Only one of these CVGFs hence insisted on changing the procedure of money disbursement, and so managed to exclude governmental services from the process. Instead they directly claimed their money each time the hunters left their ZOVIC: "*The rangers did not agree at first, but then accepted it*." (vpb 9).

The creation of village hunting zones was an important strategy to promote alternative valuation of natural resources. Unfortunately it was not possible to receive reliable data on the number of hunters visiting ZOVICs or income generated for specific villages. In fact, it showed that CVGFs were in no way integrated in the business operations and though they received money, they had no options to separate their revenues according to source and so exert any kind of control. They were not even informed when hunters came to use their ZOVIC. Two CVGFs in the Arly area therefore went to their ZOVICs every time they heard gunshots and checked the number of hunters (vpb 4 & 9), respectively had also other sources of information: "*And as there are also assistant rangers that are members of the CVGF, we also get information from the other side*." (vpb 9). Furthermore, CVGFs usually did not receive a share of the animals killed on their land, which should be one third (vpb 12), respectively two thirds (vpb 13) according to their information. The situation got even more complicated when several villages shared a joint hunting zone and distribution conflicts arose. All committees in the W Area received support from projects to manage their hunting zones, but also complained about unfulfilled promises made by other actors (vpbs 13 & 15). Most of

these problems were discussed with rangers, and CVGFs actively demanded their help, but in none of these cases they could find a satisfying solution. When being asked for assistance in road maintenance and the construction of a waterhole e.g., rangers gave them Eucalyptus trees for afforestation measures (vpb 14). In one case (W Region) they even uncovered that rangers kept the day rate that hunters had to pay for using their ZOVIC. In this case the concessionaire intervened and henceforth paid the money directly to the village (vpb 12).

Distribution conflicts also arose in the context of bush meat. Two problems were prevalent: (1) the concessionaires did not transport the meat to the villages (vpbs 5 & 9) and/ or (2) they did not receive their ordinary proportion, as presumably rangers took either some parts (1/4) of individual animals or kept the complete game (vpbs 1, 3, 8, 9 & 10). According to formal rule settings, ¾ of an animal killed had to be given to local communities. In both regions, however, they only received ½ of a carcass and ¼ was taken by local rangers. As this procedure seemed to be backed by the concessionaire in the W region, CVGFs accepted it ("*We do not have a choice*", vpb 11, 14 & 15; "*We have to accept it, because it is a gift*", vpb 14), though at least one discussed the issue with the concessionaire (vpb 14), but with no consequence. Also in the Arly region, this was considered to be unjust, but nevertheless accepted: "*Since three years we only get ½, ¼ is taken by the rangers. Rangers take all the decisions; they have to get their share. We do not have a choice…it is the law. For us it is the law*." (vpb 9). Individual CVGFs, however, found solution strategies or were still actively struggling for some kind of remedy: one CVGF adjacent to another concession decided not to accept this kind of fraud and instead deliberately accepted the resulting conflict: "*Once we took the ½, but after that, we decided to refuse the reception in the future (…). There are several villages that do it like that (…). We are not happy with that and there are ongoing discussions, even the Chef UPC is integrated as well as the king and the mayor. We repeat our claims at every meeting*." (vpb 1). Though at first this committee experienced direct drawbacks (no meat) and despite the future development of the issue was highly unsure, it chose one of the very few strategic options available: protest that potentially lead to an escalation of the conflict. By taking collective action with neighbouring villages and keeping the conflict on the agendas of all reunions, they added a political dimension to the conflict that was difficult for officials to ignore. Also in Arly one CVGF (vpb 5) reported that the concessionaire stopped delivering meat to the villages in 2006

as the fuel became too expensive. As they themselves had no means to transport the meat before it decayed, they fixed a price for each animal and the concessionaire sold the meat for them. Though the CVGF was content with this solution, they admitted to have no control on how much meat, respectively money, they were entitled to: "*But they* (concessionaire and rangers) *refused to give us a list of all killings. As we are not informed about each killing, we have no control. We proposed to send someone from our committee to the camp, so he could survey how much hunters there are and how many killings take place, but the concessionaire refused*" (vpb 5). The CVGF hence achieved some kind of compromise that included a severe drawback (no control), but nevertheless guaranteed at least a minimum of income (output) despite severe lack of information and a high degree of intransparency.

For some CVGFs also direct payments have been reason to complain. Distribution processes were rather intransparent for local CVGFs (see below) and in the Arly Region they reported to receive the money very late, long after the end of the hunting season (vpb 3 & 9), respectively in some years not at all (vpb 2 & 4; "*He* (the concessionaire) *said the money would be given to the authorities in Fada, but we have never seen anything.*" (vpb 4)). As we could not verify these statements, and due to their potential impact, we leave them uncommented. However, a high ranking official confirmed that in the past there have been irregularities and locally money had not been disbursed in some years (GS-ml1 2009). He also admitted that there were delays in some areas in handing over the money, especially in the year before our study. Unequal and unfair selection criteria for the distribution of direct payments (50% of concession lease) among villages were highlighted by one CVGF in the W Region we interviewed. According to them each CVGF received the same amount of money there. Villages that were closer, however, should have received a higher amount than the others as they suffered more from restrictions and crop-raiding elephants (vpb 11). Another CVGF often did not receive its money after the hunting season, so they actively started claiming it by contacting the major's office and the deconcentrated service on departmental level. They were also supported in this process by a project (vpb 12).

One CVGF (vpb 9) had a serious conflict with the neighbouring concessionaire. Due to their proximity to a game-rich area, they possessed a ZOVIC that was highly attractive as hunting ground. Their actual conflict arose over the amount of the daily tax: the concessionaire only wanted to pay 5.000 CFA per hunter per day, while they demanded

10.000 CFA (formally fixed price was 7.500 CFA). As a consequence, the concessionaire took his hunters to the ZOVICs of other villages: "*The concessionaire said that he did not want his hunters to visit our ZOVIC (…). Now they go to other villages, but there are no animals (…).The hunters were not happy and took back almost the whole daily tax and gave only 2.000 CFA to the village*". This was one of the rare cases that we encountered a CVGF that used its bargaining position (backed by a high quality ZOVIC) in a conflict with a concessionaire and even accepted financial losses: "*We accept that there will be no hunters in our ZOVIC this season. We do not need them (…). We cannot accept the reduction of the daily tax*." (vpb 9).

Forms of alternative income generation for the CVGF, based on sustainable exploitation of natural resources other than hunting, were generally rare. We found no indication of any successful self-mobilised economic activities of CVGFs neither in the W nor in the Arly region.

Human-elephant conflicts were locally very strong, especially in the enclave of Madjoari as well as in some villages close to game-rich areas (Namoano 2009, own research). There were no formal decompensation mechanisms in place. Nevertheless two CVGFs tried to find solutions to this problem (vpb 5 & 9), however, without success: both committees complained that rangers just came to certify the damage but no compensation was paid afterwards. In 1999, one of these CVGFs (vpb 9) invited all relevant stakeholders (governmental services and user groups) to come to their village and see the damages. They even paid the fuel and transport, as they hoped that if the decision makers saw the problem and its dimensions, they would react. Since then they still claim their disappointment, but did not start any further initiative to remedy the problem.

CVGFs in Arly hence faced similar problems like those of W Burkina Faso, however, showed a higher frequency of actively pursuing opposition strategies and a higher degree of diversification in their solution approaches. As unions had not been functional yet, there remained a high imbalance of power between CVGFs and other actors though. Consequently, they were able only in a small proportion of all cases to successfully push their claims and induce a positive change. Capacity of CVGFs to handle conflicts considerably varied among villages and administrative units, but was generally rather low. In the W Region, there were no concerted, well organised solution strategies in place. CVGFs in some cases started these processes by articulating their

opposition either vis-à-vis concessionaires or rangers, however, did not achieve any changes. They did not see any options to further push their claims due to the high imbalance of power between them and the other stakeholders. Even if they knew that formal rights were on their side, they accepted compromises to their disadvantage. Projects sometimes intervened, foremost by building capacity and explaining formal rule settings. Consequently, CVGFs were rather frustrated due to many unfulfilled promises given by other stakeholders, or the low level of help they received especially from governmental services. When they asked the rangers at the local post e.g. to help them with crop-raiding elephants, the rangers sent them to the local capital to ask higher levels for help.

This inability of CVGFs to push their own claims and skillfully mediate in conflicts also was mirrored by the evaluation of resource users' conflicts during the course of our household survey: only 6.3% of respondents in the W region that were involved in a conflict on natural resource use quoted their CVGF to act as a mediator.

- **Interaction with other management actors: trust & power**

Governmental actors. While local resource users interacted with the lowest level of governmental hierarchy (rangers), CVGFs also participated in action arenas of PA management with higher level governmental services, usually on provincial or even regional level. CVGF members sometimes did not differentiate between local rangers and those working in the administration, "they are all the same". Also, for most CVGFs it was difficult to differentiate between different functions that some rangers fulfilled, either as representatives of the governmental administration or as project delegates.

Main objectives of interaction with local rangers centred on basic operational tasks, foremost the establishment and management of village hunting zones, the problem of crop damage caused by elephants, the distribution of bush meat and also the disbursement of funds. Except for the village being closest to a ranger post or to provincial capitals, all CVGFs said that direct interaction between them and local rangers were very rare, as "*they change very often*" (vpb 14 & 15). Some villages also reported of a decreasing frequency during the last years (vpb 1 & 2) in the Arly Region. There was a rotation system in Burkina Faso that transferred rangers after a certain period of duty to another region. Rangers hence usually were strangers, potentially

belonged to another ethnic group and sometimes were not even capable to communicate in the local languages. This system is meant to foster neutrality of officials and counteract the establishment of corruption in administration structures. However, on the other side it inhibits any kind of long-term interaction and so the evolution of trust between villagers and officials.

The relation of CVGFs in the Arly region and park rangers was generally assessed to be moderate, whereas the cooperation with higher level deconcentrated services (*Direction Provinciale*) was even more conflict-loaded and evaluated as bad: "*We are disappointed as too many promises were made and not fulfilled*." (vpb 2); "*At first we were told that it is our forest. But then, all that the white hunters give… they pay well, but it passes the rangers and they do not give enough to the communities*" (vpb 3). Main subjects of interaction on this level focused on fund management and formal legitimacy (recognition of formal status for ZOVIC/ committee itself). If CVGFs wanted to contact governmental services on the next higher level (*Direction Provinciale*), they had to respect the hierarchies and first get in contact with local rangers. All CVGFs were usually called to the provincial capital after the end of the hunting season to receive their share of the lease rent that the concessionaire paid. Due to their limited, sometimes imprecise knowledge on formal rule settings, CVGF members seemed to feel rather uncomfortable with these situations. As they had no control and did not know the details of the financial transactions taking place, they tended to perceive the money that was given to them as a gift. Finally CVGFs acknowledged the role of governmental authorities as being coordinator/ entry point for new development projects that intervene on village level.

Rangers on site gave instructions or advices on how to manage the ZOVICs, but only little practical support ("*There is no help from the rangers…we help the rangers! The rangers only give advices.*" (vpb 9)). As rangers were usually supported in some form or the other by concessionaires, they often formed a kind of alliance making it even more difficult for CVGFs to find partners for their suits. Like resource users, CVGFs hence accepted the authoritarian formal role of rangers, but complained about a lack of willingness to understand their situation, e.g. when rangers killed livestock that divagated in the PA ("*Sometimes we explain them not to kill livestock in the PA. The rangers tell us that they do not have a choice – they have to…as it is the law. But we also do not have a choice* (other than using the resources of the PA)." vpb 12). CVGFs

hence rarely established fruitful cooperation with rangers. Except for their assistance in conflicts with transhumant Fulani and formal assistance in ZOVIC establishment/ management, their relation was marked by distrust and frustration with rangers often using the imbalance of power for their own benefits (e.g. by taking chicken from villagers for issuing resource use permits or taking bush meat coming from the hunting camp). One CVGF, however, stated that before the committee existed, there was an even higher degree of conflict between villagers and rangers.

Denunciation events were rare, though one CVGF in the Arly Region (vpb 8) reported to receive a share of the penalty paid by delinquents as a prime for their support. Generally the relation between governmental services and CVGFs was marked by distrust:"*The rangers believe that the poachers are coming from our village.*" (vbp 8) versus: "The *cooperation is very bad and the conflicts are very strong. We are not happy about anything they* (rangers) *do. They embezzle money. If there is some money coming from Fada* (regional capital)*, they will keep their part.*" (vpb 4). As in most cases legal documents were kept by governmental services and fund management was tightly controlled, there was no autonomy of village participatory bodies. Individual CVGFs, however, did not accept these conditions and deliberately revolted against this form of guardianship: "*We stopped to inform the Environement (Direction Provinciale) when we withdraw money, as now we know that it is our money. It belongs to the village.*" (vpb 9).

Other CVGFs. Most CVGFs had positive (informal) relations with committees of neighbouring villages. They met several times a year to discuss their common problems ("*We are the same family. If one village has a problem, all surrounding villages have a problem.*" vpb 14). Some of them also met during official ceremonies at the hunting camps or when the provincial director called them to hand over their payments. These interactions though were poorly organised and did rarely result in common activities. Only in the study village that shared its ZOVIC with two other villages (W Region), coordinated interaction was organised by park rangers (and possibly a project) (vpb 13).

There were no Unions in the W Region, and amid the existence of CVGF-unions on *Département*- and *Province*-level in the Arly Region, inter-village cooperation remained poorly developed. The main objective of the unions there was seen in circulating information, as so far no practical activities had taken place (vpb 1,4,5,6,7,8 & 10),

which lead to disappointment among some CVGFs: "*The union gives its best, however, there is no progress*" vpb 4; "*We discuss our problems, however, this leads to nothing. Also the king of Pama is integrated, but there is no effect, everything is decided by the Environment (Direction Provinciale) (…) The union will have its benefits in the future. Already now the information is circulating better.*" vpb 1). Most CVGFs were well aware of the hierarchic structure of their union on *Département*- and *Province*-level, but interaction usually was restricted to partners on the *Département*-level. Meetings were rare and took place one to two times per year (exception vpbs 4 & 5 stated to have meetings every month) which were attended by the president, the secretary and the treasurer of the local CVGFs. The bureau of the Provincial union in turn was recruited of the members of the *union départementale.* As these unions were relatively young at the time of our field work, some CVGFs reported to have met only twice. There was only one CVGF we interviewed that had established cooperation based on the common implementation of operational tasks with three surrounding villages (vpb 9), including e.g. the distribution of bush meat and the management of their ZOVICs. Similar cooperation among villages in the area have been described in detail e.g. by Kippes (2007). These cases were usually animated by some kind of project intervention on a very local level.

Concessionaires. Concessionaires were seen to be on the same hierarchical level as governmental authorities. In fact several CVGFs had not even been in direct and actual contact with their concessionaire (except from official ceremonies) either due to persisting conflicts (vpb 9) or because they were not invited and/or did not manage to establish contact due to the social and economic position and power held by concessionaires (vpb 1, 4 & 5). All CVGFs knew that the money they received from the state originated from private economic activities. They also acknowledged that concessionaires not only procured hunters for big game hunting, but also for their small game village hunting zones. Nevertheless, CVGFs assessed their cooperation with concessionaires as bad, because he was/ they were (1) taking their land (vpb 11 & 12), (2) overhunting the concession (vpb 12), (3) backing the rangers when they take the bush meat determined for the villages (vpb 14), (4) not telling the CVGFs how many hunters he/they send/s to their ZOVIC (vpb 15), (5) not paying well and regularly for the workforce villagers provide (vpb 11), and (6) making unfulfilled promises (vpb 12). The

CVGF that feared overhunting of the concession also voiced its disappointment as they said it was foreseen that they should be authorised to control the concessionaire's activities, however, this did not become reality ("*It was foreseen that the committee could also control the concessionaire. But, they (concessionaire and governmental actors) do not respect this. We can do nothing*", vbp 12).

While there were only two private concessionaires in the W Region, there were seven concessionaires involved in the management of the eight hunting concessions (+ one tourism concession) of the Arly block at the time of our study. The ten villages of our survey covered the spheres of five, respectively six different concessionaires (attribution of one village remained disputed). Relations with CVGFs hence differed to a high degree between concessions and actors. Only two villages (belonging to the same concession) had a direct and positive contact to "their" concessionaire (vpb 3 & 6): "*The cooperation is very good. He is … correct: he gives all the information and does not hide anything, gives bush meat and money*." (vpb 3). He also supported the local schools and gave working equipment for the pupils. This kind of support was missed by all the other CVGFs: "*He only makes promises. (…). At every meeting we are told that the concessionaire has to develop the village, e.g. by the construction of a borehole or a school. But nothing has happened so far*" (vpb 2, similar vpb 5); "*There is no help from the concessionaire*." (vpb 5, 8 & 10). Several CVGFs complained about the intransparency of the concessionaires' activities, e.g. they were not informed when hunters came to their ZOVIC (1, 4, 5, 7, 8 & 10), and the disrespect of decisions made by CVGFs (vpb 5 & 9). Like for governmental services, the relation between CVGFs and concessionaires was hence characterized by a high level of distrust: "*The concessionaire thinks that we ourselves are poachers.*" (vpb 7).

Like for governmental authorities, the gap in economic and political power between private actors and village committees was large, and hence lead to imbalanced action situations: CVGFs lacked information and control and hence had no options to influence outcomes. In fact, a more suitable interpretation was that CVGFS were excluded from e.g. the business operation of their ZOVICs, from the outset. As a result, CVGFs attitudes were somewhat ambiguous: on the one hand appreciating and acknowledging the outcomes in the form of financial benefits on the other hand frustrated and unsatisfied with respective processes. As they feared to loose the privileges they enjoyed, they accepted these situations. At the same time, there was deep-rooted

opposition and feeling of injustice as someone else was enjoying usufruct rights of their land, who only attached economic values to resources and depended only to a limited degree on them – in sharp contrast to local resource users ("*When all animals are killed, he has the choice of leaving or staying*", vpb 12). Most process-related problems associated to these activities were attributed to rangers rather than concessionaires.

NGOs. At the time of our study there were at least two projects working with CVGFs in the W Region. The kind of intervention as well as the intensity of interaction strongly varied between villages. Central issues were different measures of capacity building and alternative valuation activities. Often they made trainings in the villages to inform CVGFs on the institutional settings of important action arenas, administrative issues like fund management or proper management of their ZOVICs. They also conducted practical trainings on alternative income generation, e.g. on bee keeping (vpb 15) or the production of soap (vpb 11), and offered job opportunities by financing road maintenance or survey activities (vpb 12, 13 & 15). In some instances they also organised and financed afforestation measures or the construction of local infrastructure (11, 12 & 15).

The key role that projects played in animating vpb activity in the W area of Burkina Faso became most obvious by the statement: "*When the project existed, ECOPAS, we had meetings. But as the project was terminated we stopped as there was nothing to do*." (vpb 13). Like members of CVGFs, many villagers tried to directly profit from project intervention, and even in 2009 (months after ECOPAS had been terminated and payments of assistant rangers alike), several villagers kept close contact with rangers at the entrance of the park, still hoping to receive some kind of reward for their surveillance activities. Also, for trainings organised by projects, CVGF members usually received a per diem for their attendance. This sometimes seemed to be a stronger incentive for taking part than the content that was passed on. Alternative valuation, e.g. in the form of soap production, was principally seen positive by CVGFs, however, they were not able to keep these initiatives going and generate relevant village income on their own. We hence encountered high expectations from CVGFs towards project support to ameliorate their situation, and several interviewees expressed their disappointment that ECOPAS had been terminated, respectively that some projects made unfulfilled promises.

In Arly, there was no project focussing on PA management and working on a block-wide scale at the time of our study. The last one of this kind was PAUCOF and ended in 2005. Several villages in the central (enclave Madjoari) and northern parts part of our study area, received support from this project in form of material help, e.g. bikes (used for surveillance activities) and signboards for ZOVICs (vpb 4, 5 & 9), or in form of trainings on formal rule settings and ZOVIC management (vpb 5 & 9). Especially the CVGF working close to one of the main entrance points of the complex seemed to profit a lot of the proximity to project staff which was revealed by the high level of information they possessed and the way they pursued their interests in respective action arenas. There were several other projects and NGOs working on natural resource management in the vicinity of the PAs. It proofed difficult for some CVGFs to clearly identify them and attribute specific activities to these actors. Among them were ADAP and/or ADELE that promoted establishment and management of ZOVICs in at least three of our study villages (3, 4 & 9), as well as IUCN that organised formations and the establishment of CVGF unions. Most committees rated the cooperation with projects (as far as existent) to be good.

- **Participation in operational PA management**

The CVGFs were well aware of the diversity of their tasks and attributed their activities to all spheres of management activities: conservation, participation and restriction ("*We were elected for the surveillance of our ZOVIC, the fight against poachers, bush fires and illegal wood-cutting. If there is some poaching, we tell the rangers, as we are not trained for cases like these.*" (vpb 6)).

In those villages with a ZOVIC (all except one), activities were concentrated on the management of these zones and ranged from anti-poaching, fire management, ecological surveys, and control of illegal wood-cutting activities to guide services for hunter tourists. Especially those committees that were in spatial vicinity to ranger posts or hunting camps extended their activity space from village territory and the ZOVIC to the interior of adjacent PAs, by joining rangers, respectively private game guards, on their surveillance patrols (vbp 1,9, 11 & 15). They usually were only paid by hunters or the concessionaire, but not by governmental services.

It showed that the majority of these tasks were rather carried out by sensitization of local resource users than by real operational activities in the field. Several CVGFs hence emphasized their important role in mediating information and sensitizing the villagers on conservation issues (vpb 4 & 5), and so to indirectly fight illegal activities. Our survey on household level showed that denunciation events were rare (only 3% of all respondents cited respective activities of their CVGF in the Arly Region). So most CVGF members said to inform rangers in the case of uncovering rule infractions, but admitted in some cases that these were rare events. One CVGF explained that "*villagers cut their wood illegally, but as long as nobody catches you, you will not have a problem*" (vpb 13), meaning that everybody in the village knew they would have nothing to fear. ("*The CVGF is between the population and the rangers. The rangers say they see that the population is cutting wood. We do not say anything. The population also tells us…not to inform the rangers. We do not make a report.*" (vpb 13)). One CVGF (vpb 3) reported of a lack of support when they identified poachers and asked rangers for help. The CVGF itself evaluated this as a serious problem as the risk associated with denunciation (e.g. revenge acts, social isolation) was taken all in vain.

Among their activities were also the selling of bush meat as well as the realisation and maintenance of local infrastructure. To a large extent these activities were also driven by project activity, especially in the W Region. During the lifetime of ECOPAS, they were paid for road maintenance work in the PA, and so to provide labour force by employing young men to carry out the task. Ten percent of their salaries were kept and put on the village bank account. As ECOPAS just ceased before we started our study, CVGFs complained that governmental services offered them much less money for the same work. All these activities hence contributed only very little to promote positive interaction and equity among actors.

- **Financial participation**

There were four main sources of income for CVGFs in the region: (1) direct payments originating from the lease rent the concessionaire paid per annum to the state, (2) daily tax if hunters used their ZOVIC, (3) money earned via the commercialisation of bush meat that was given to CVGFs as a by-product of trophy hunting and (4), only valid for the W Region, 10% of the salaries paid by the ECOPAS project for road maintenance

were kept for the bank account of the village. Usually deconcentrated services (*Direction Provinciale*) were integrated in most money transfers and CVGFs received both, payments for their ZOVIC and direct payments during a ceremony after the hunting season. Usually local and regional authorities as well as the press were invited to these ceremonies in order to increase "transparency", at least in the Arly Region.

Direct payments. Not all villages financially participated to the same extent and benefitted from all of these resources. As well, we found very different levels of information held by CVGFs concerning processes and administrative details of financial participation. In general, CVGFs of the Arly Region seemed better informed about the principals of financial participation than those in the W Area. In fact only one village of W and few of Arly were aware of the principal financial transactions taking place between the concessionaire and governmental services, and within governmental hierarchies (vpb 12). The village in W had received some effective training on administrative issues by a project several years ago and, as a consequence, was the only one that actively claimed its payments vis-à-vis governmental authorities as it realized that direct payments were considered to be compensation payments for "*occupying*" their land (vpb 12). In general, however, CVGFs did not have explicit knowledge on these processes and were neither able to differentiate how much money they received from which source, nor to explain the concept of direct payments they received. Several CVGFs also stated that the amount they received strongly varied from year to year (e.g. vpb 3,4, 9 & 5), and –in most localities - also between villages. They had different explanations for these fluctuations. Reasons were identified in (1) the distance to the park (those lying closer receiving more) (vpb 3); (2) the number of hunters (which of course was true at least to some extent if money from all different sources of income were paid at the same time and CVGFs did not separate between these sources) (vpb 3, 4 & 5) and (3) the quality of the ZOVIC management. This hence was the only criterion that depended on the work of the CVGF itself and could serve as a performance-based indicator. One other CVGF of the Arly Block explained that the number of CVGFs officially recognised increased over time, so that the fixed amount of money that was paid by the government had to be shared by an ever growing number of interested parties.

Though villages indeed did benefit financially (up to 200.000 CFA per year (in total) and some were able to save quite high amounts on their bank account (1.500.000 CFA, vpb

14)), the lack of information, transparency and clear linkages between benefits and conservation success, did not generate incentives for self-mobilisation and conservation activities on CVGF-level.

Village hunting zones. Money earned via village hunting zones was comparatively less, but still was incentive enough for villagers to reserve some territory for this land use purpose (Arly: all villages had some kind of village hunting zone. However, at least two of them missed official recognition (vpb 2 & 3) and at least three ZOVICs (vpb 2, 4 & 5) were not in use at the time of our study.; W: 4 villages possessed a ZOVIC and the one without had already demarcated the land). However, this process seemed to a large extent be driven by governmental actors and projects, and raised exorbitant hopes of CVGFs and villagers. Individual ZOVICs were usually used by only one concessionaire (except vpb 1), but several CVGFs were interested in better promotion and new acquisition of clients. At least for those high quality hunting zones that lied in a strategically good position, this option might hold potential to increase village income in the future. As described above, most CVGFs did not know about the number of hunters coming to their ZOVIC (the village best organised quoted a maximum of six hunters per season (W Area) (vpb 12), respectively 20 (Arly Area) (vpb 9)) nor do they have any influence on business operation of their hunting zone. CVGFs were supposed to receive 7.500 CFA for one day, and 3.750 for half a day that hunters used their ZOVIC. But as there was rarely any contact with villagers, this money was administered by the concessionaire. For transferring the money to CVGFs, different modi operandi evolved for the two concessions belonging to W Burkina Faso. In one case, it showed that local rangers that were supposed to hand over the money to CVGFs, simply kept it for their own benefit (vpb 12). As a consequence, the concessionaire himself was giving the money to CVGFs during the closing ceremony of the hunting season. This was one of the rare cases that intervention of CVGFs seemed to have been successful and positively influenced the outcome of an action situation. In the other case, the money was transferred via the *Direction Provinciale,* and so made it even more difficult to separate between income generated by their ZOVIC and direct payments (which were handed over by the *Direction Provinciale* as well) (vpb 13 & 14). The same process was implemented in the Arly Region. There hence was no uniform, transparent procedure how to treat and transfer the income generated by village hunting zones to the villages. Additionally, these procedures changed over time without CVGFs being informed in

advance (vpb 14). Like for direct payments, the operational system in several cases did not provide incentives for individual CVGFs to improve the quality of their ZOVICs: concessionaires paid a global amount of money to deconcentrated governmental services for the number of hunter/days, without listing details on the localities, i.e. the income generated by all ZOVICs of a specific sector were pooled and all CVGFs received an equal share. Usually villagers did not receive the killed animals and generally had no opportunities to systematically participate in the business operation, e.g. by providing guide services or the like. Also they did not know if there were any rules that tourists had to follow when using their ZOVIC, e.g if there was a quota system.

Bush meat. The most direct and widespread form of financial/ material participation was the distribution of bush meat. CVGFs received 2-5 times/hunting season game from the hunting camps and then sold it in small quantities to villagers. They made meat skewers and sold them for 100-250 CFA per unit. However, the quantity of meat they received per delivery very much depended on the type of animal (a buffalo yields more meat than a cob) and rarely was sufficient for the whole village community (vpb 11). As described above, none of the committees received the ¾ of an animal which should go to the villages according to formal texts. Transport from the hunting camps also sometimes proved to be problematic. So one CVGF in the W Region decided to sell the meat to the concessionaire directly from times to times (vpb 15). One CVGF (vpb 9) in the Arly Region that organised the selling of bush meat in a union of four villages chose to sell bigger pieces to individuals who retailed it in their village – which was a practical solution but also potentially lead to unequal distribution as CVGF members lost control on this mechanism. Another CVGF (vpb 1) also said to distribute bush meat in certain cases for free, indicating that they used it as an incentive –mechanism in their network of interaction with villagers and local authorities. The maximum income generated by one single animal could be up to 30.000 CFA (vpb 3 & 9).

Fund management. All these revenues generated by PA management activities were meant to be invested in local public infrastructure. Indeed, CVGFs gave many examples for this kind of investments, with the most common being the construction and maintenance of water infrastructure (wells, boreholes, and waterholes), educational infrastructure (schools, school kitchens) or health infrastructure (maternity). Besides the government and (international) development projects, CVGFs hence were one of the

most potent and important investors on the local level. They also matched co-funding requirements of some projects on the local level and thereby leveraged even higher investments (e.g. vpb 2,4,5 & 9). The fund management of all CVGFs was controlled by multiple actors, of which the *Directeur Provincial* held the key position as he had to give the final approval. According to province, we found slightly different mechanisms, but procedures seemed also to vary to some degree between villages. Usually the whole village decided in a meeting on what to spend their money, but also here some key persons (president of the CVGF, village elders) had more impact than others. If the village was in need of some construction or maintenance, usually the village elders/ chiefs asked the CVGFs for funding. They afterwards discussed the propositions internally or organised a reunion with all the villagers to further evaluate the propositions. After the CVGF then had taken its decision, it first contacted the local rangers and afterwards the *Direction Provincial*. Often this process also involved the *Préfét* and the *Chef UPC*, and finally the *Directeur Provincial (DP) in the Arly Region*. After withdrawing and spending the money, CVGFs again had to present receipts and their bank book to the DP for control. The DP of one province in the Arly Region even kept all the saving books of the CVGFs in his province in his office. It was obligatory to inform these governmental actors before withdrawing any money from their bank account, and also after having done so. Though so far these actors rarely rejected the requests by CVGFs, this procedure meant that there was no financial autarky and the decision-making power of village committees was to some degree restricted.

Conclusion. Despite this system of graded control, there remained a high level of distrust and frustration on both sides, especially in the Arly Area ("*Sometimes the officials say: when we give you the money, you are not going to use it for the purpose you tell us*." (vpb 4) versus "*We are not happy, because we have no control. We would like to have all our documents, but we do not know how to achieve this*." (vpb 4)). Several governmental authorities also expressed their objections and referred to bad experiences concerning fund management capacities by CVGFs. One DP of the Arly Region e.g. gave several examples of CVGFs wanting to spend their money for personal purposes or some subtle form of bribery on the local level. He expressed his general concerns of local autonomy by saying: "*What has to be said: This bad form of management has started with decentralisation*." (GS-ml2 2009). In fact, at the time of our study several CVGFs around Arly began to deliberately break the rules of control

and stopped informing the rangers, respectively to hand in their saving books at the DP: "*We have stopped informing the DP. We now know it is our money (…). The government also does not inform the population, when it withdraws money from its account*." (vpb 9). The DP of another province said that in the year before, all CVGFs did not return to his office for approval of their deposits, after they received their money. According to his explanation, however, the reason was not discontent with governmental control, but conflicts that appeared with local governments. Due to the implementation of decentralisation and the foundation of CVDs, one mayor told all CVGFs to pay 20.000 CFA to the local government. They now feared that the mayor could confiscate their savings (some villages had more than 400.000 CFA saved on their bank account).

Despite all the caveats of not being able to influence or even control the described arenas, CVGFs in the W Area evaluated the status quo of financial participation as very positive. Some compared the situation to conditions several years ago (before any institutionalisation of financial participation procedures), when they had no benefits at all (vpb 15). This improvement, however, was not coming along with increased capacity of village communities to actively engage in respective action arenas, and to secure their gains also in the long term: "*The money is given to us, we do not have to do anything for it. Of course we are happy*." (vpb 11). So even if CVGFs largely saw that they gained these benefits due to the adjacent PA in some form or the other, there was only little need for them to link their activities to increased conservation success, or to induce changes of resource exploitation behaviour in their communities.

- **Participation in PA management strategy & decision making**

CVGFs in the Burkina Faso region did not participate in action arenas on the constitutional choice level, and rarely on the collective choice level. If CVGFs took part in meetings or workshops that assembled higher level governmental and private actors, they usually were recipients of advices how to fulfil their duties. In these situations they often did not even raise their requests.

There were no functional unions that could concentrate the low levels of power held by village CVGFs and so be powerful participants in these arenas. "*We discuss our problems with the union, however, this leads to nothing (…) everything is decided by the*

Environment". The creation and formal existence of theses units in the Arly Region though represents a first step in this direction that has to be followed by massive investments in capacity building measures, both, on village as well as on union level. As we encountered not only high expectations, but also growing self-confidence and readiness to go into conflicts, it will only be a question of time until CVGFs and local populations will actively start claiming their positions in respective action arenas of PA management.

- **Communication and information flow**

Within villages CVGFs useed traditional fora for their issues or even organized village meetings with village elders/ chiefs. However, the frequency of these events was rather rare and cheap talk as well as informal arrangements did play an important role on this level. Like the general level of activity, also the frequency of meetings of CVGFs was stimulated by project staff visiting the villages (vpb 13). Our household survey showed that 40% of respondents in the W Burkina Faso Region did not know anything about the activities of their CVGF, whereas in the Arly Region only a quarter of all respondents did not have any information on CVGF activities. This quite impressively showed that either CVGFs were rather inactive in the W Region, or that there was no well managed downward flow of information (according to our assessment both was true), though each CVGF had an informer who was in charge of disseminating information to resource users. Indeed most CVGFs of the Arly Region were better informed and knew the basic processes and rules well. And even if unions were not involved in operational tasks, they enhanced the level of inter-village communication (vpb 5 & 9).

Communication of CVGFs and other actors of PA management generally was poorly coordinated and lacked adequate (regular and formal) fora. Spatial proximity to ranger posts or hunting camps stimulated the frequency of exchange. Generally governmental services as well as concessionaires themselves rarely visited the villages, and if CVGFs wanted to contact higher levels of the governmental hierarchies, they first had to make their way through low level instances. As described above, CVGFs rarely fulfilled their role as whistleblowers in case of rule infraction by villagers. In the W Region, this function was rather taken over by individual assistant rangers that were attracted by

salaries paid by the ECOPAS project. These people hence had a direct financial incentive, and often were new-comers not well embedded in social village structures.

Major conflicts between CVGFs and other actors arose due to the lack of information, possibly on both sides, e.g. concerning the actual official status of CVGFs in some areas. Generally governmental services and especially private concessionaires informed CVGFs rather about restrictions and their tasks than about their rights. So they mainly received the latter kind of information from projects/ NGOs. The level of communication between CVGFs and private actors was remarkably low, especially in relation to the important role that concessionaires played in the Arly region.

- **Resource access: options and restrictions**

Resource exploitation benefits were the most often cited benefit category by respondents of our household survey, with 50%-75% of interviewees perceiving this kind of benefit. However, exploitation rules, respectively their implementation on site were quite strict ("*If you need a medicinal plant from the protected area, you are going to die. Exploitation is forbidden*.", (vpb 13); "*There are only white hunters in the park, for locals even entry is prohibited*." (vpb 4). "Whites" here can describe also Burkinabé nationals of high social status.) with only certain extractive activities allowed if rangers have given a permit. Some of these permits had to be paid (e.g. fishing permits) others were for free (e.g. for cutting grass), respectively should have been for free ("*Well, it is for free. But if you have…e.g. a chicken that you can give…to the rangers…but you do not have to pay, it is not obligatory*.",(vpb 13)). Additionally there is a high rate of illegal exploitation activities ("*What do you do if you need some big logs for the construction of a house?*" "Y*ou have to do it clandestine, you cannot ask for permission…but if they catch you, they arrest you (…). It is true that everybody, in the village cuts wood illegally*.", vpb 13; "*But many villagers do not know the rules. They think it is their territory, so they go poaching*." (vpb 9).).

Generally though, CVGFs were not involved in these resource access and withdrawal issues if PAs or hunting concessions were concerned. CVGFs foremost were supposed to control resource exploitation in the village hunting zones. As the nature of these zones varied from pristine habitat to rather intensively used agricultural area, there were very different rules for exploitation in place as well, also depending on the degree of

organisation of the respective CVGF. Usually any kind of land conversion or agricultural activity was not allowed in ZOVICs (except fields had already been present when the ZOVIC was established). For any other form of extractive use, including pastoral activities, there were either “no rules at all” or CVGFs had to be informed, respectively asked for allowance.

Key findings vpbs Burkina Faso

Organisation & Structure	▪ All CVGFs formally recognised (**W**), resp. some CVGFs/ ZOVICS not officially recognised, respectively missed official documents (**Arly**) ▪ Little personnel turnover ▪ Very little interaction with local governments ▪ Major constraints: institutional & organisational (**Arly**), respectively financial shortcomings (**W**) ▪ Animated mainly by project activity (**W**) ▪ Well embedded in local social structures ▪ Women & Fulani underrepresented No perceived competition with decentralised actors (only **W**) ▪ Main tasks: management of ZOVIC, selling of bush meat; denunciation is rare
Conflicts and conflict management	▪ Land/ property right issues: concessionaire occupied village territory (**W**) ▪ Lack of official documents (**Arly**) ▪ ZOVIC operation: CVGFs not at all integrated in business operations ▪ Bush meat: villages received only ½ of the game instead of ¾; rangers kept ¼. ▪ Intransparent financial transactions ▪ Competition on financial benefits with decentralised actors lead to first latent conflicts ▪ CVGFs had no effective conflict solution strategies; CVGFs rarely acted as mediators in resource use conflicts ▪ Supposed fraud of governmental authorities & rangers (**Arly**) ▪ Individual CVGFs in Arly actively pursued solution strategies, however with limited success
Interaction with other PA management actors	▪ Governmental authorities: interaction rare and marked by distrust from both sides; role ambivalent, both positive and negative; needed for animation, however, no frequent interaction. ▪ CVGFs of other villages: low degree of organised interaction; no inter-village union (**W**); Inter-village unions in **Arly**: circulation of information, no operative activities ▪

	▪ Concessionaires: revenue generating activities acknowledged; cooperation though bad to absent ▪ Projects: played key role in animating CVGFs; aimed at enhanced self-mobilisation capacities (**W**); success limited ; in **Arly** only locally engaged, and focussed on ZOVIC
Participation in operational PA management	▪ Mainly concentrated on management of ZOVIC ▪ Provide workforce for projects/ concessionaires ▪ Whistle-blower function not realized
Financial/ material participation	▪ Villages mainly benefit from direct payments, income generated by their ZOVIC and the selling of bush meat ▪ Procedures of revenue generating activities as well as distribution issues do not follow uniform formal rules/ are implemented in different ways ▪ Processes are intransparent to, and poorly understood by CVGFs; in **Arly** CVGFs know basic principles and procedures, though processes remain intransparent as well ▪ Several CVGFs deliberately seek more autonomy (**Arly**) ▪ Strict system of graded controls to ensure correct fund management. ▪ Benefits not linked to CVGF performance
Participation in strategic decision making processes	▪ Not existent; though unions at least formally existent in Arly
Communication & information flow	▪ Intra-village: community members are not well informed on CVGF activities in **W**, better informed in **Arly**; CVGFs use traditional forms and fora of communication ▪ Inter-village: enhanced by unions (**only Arly**) ▪ Between other PA management actors: there are no established arenas for the exchange of information; power imbalances further aggravate differences in information held by single actors
Resource access: options & restrictions	▪ CVGFs are not involved in resource access issues concerning the PAs ▪ Some CVGFs back illegal activities in PAs, e.g. wood cutting ▪ Some CVGFs restrict resource access in ZOVICs
Motivation: benefits of taking responsibility	▪ Personal material benefits: most members of CVGFs worked for the project and received per diems for trainings (**only W**) ▪ Social prestige: CVGF members hold decision making power in village internal action arenas, e.g. when selecting co-workers for project-financed jobs

Benin - context

On a first glance and on a rough scale, the context for vpbs in the field of PA management in Benin resembles conditions in Burkina Faso: after the end of Marxist rule in 1989, nation wide deconcentration and decentralisation processes were meant to anchor democracy and participation in all sectors of the political system, including the management of natural resources. (Some) Key events of these institutional and organisational changes impacting PA management were the adoption of a new forestry code in 1993, a National Environmental Action Plan in 1993, a strategic plan for the conservation and management of protected areas in 1994, a new law providing guidelines in the environmental sector 1999, and Law No 2002-016 concerning the management of the Fauna in Benin coming into force in 2004. Participation of local communities is made explicit in most of these texts. Law No 2002-016 e.g. says in its article 51: "(…) *Local communities that are neighbouring protected areas are integrated in the management, in all cases where this is possible, and/ or benefit from income or products derived from their valorisation*.". But who is representing "local communities" and hence is capable and legitimate to act in the arenas of co-management with governmental and private actors?

The general transfer of executive and decision-making power to local governments proceeded only very slowly and produced rather institutional disorder (Mongbo 2008). The institutional and organisational gap hence growing in the 1990ies was addressed by a multitude of programmes and projects, heavily depending on external donors (M'barek et al. 2005). Often these interventions followed different philosophies, lacked inter-project coordination (Borrini-Feyeravbend 2003, Michel 2009), and nourished competition and conflict by supporting different actors. First communal elections were held in 2002, however, further aggravated political disorder by consolidating old power games and hierarchy structures (M'barek et al. 2005). Additionally decentralisation laws so far missed to regulate "relations between communal councils and pre-existing local centres of legitimate power such as committees, user associations and customary authorities." (Mongbo 2008). As a result, also in the context of PA management there were several actors on the local level that gained importance, among which the Village Associations for Wildlife Reserve Management (*Association Villageoise de Gestion des Réserves de Faune*, AVIGREF) evolved as a key player in Benin, in parallel to the upcoming of local governments and specified deconcentrated governmental services.

As official representatives of local resource user interests, AVIGREFs took part in PA management action arenas on different levels and were recipients of compensation payments and other means of material participation: their main financial sources were a 30% share of income generated by the PAs which mainly derived from trophy hunting in adjacent hunting zones, but also included other sources (e.g. income derived from commercial fishing or from buffer zone management in the W region) (CS-o1 2009, CS-o2 2009, Tiomoko 2010). Additionally, they were entitled to receive meat from the hunting camps.

In contrast to Burkina Faso and despite above mentioned caveats, two major interdependent factors shaped the organisational landscape in the sector of PA management in Benin: (1) attraction of long-term multi-million dollar funding for national programmes focussing on PA management, and (2) early (vivid and controversial) implementation of institutional reform processes on all levels of management. Though there was a long history of project and donor intervention in the sector of nature conservation and resource use dating back several decades, two projects played a key role for the evolution and implementation of co-management strategies.

The first of its kind was the Natural Resources Management Project (*Projet de Gestion des Ressources Naturelles*, PGRN) that started in 1992 and closed in 1999 (TWB 1999) with total project costs of 25.04 Mio. US $ funded by a multi-donor consortium[4]. Its main objectives were "*(1) institution-building including the review, enactment and enforcement of legislation, policy design, strengthening of the planning, monitoring and evaluation capacity; and (2) pilot actions that promoted sustainable uses of agro-sylvo-pastoral resources (…)*" (TWB 1999). During the lifetime of this project, the new National Centre for Wildlife Reserves Management (*Centre National de Gestion des Réserves de Faune*, CENAGREF) was established in 1996 (Decree 96-73) and became a public-law institution in 1998 (Decree 98-487), thus enjoying a relatively high degree of financial and decision-making autonomy. This was a condition imposed by donors in order to bypass the forest department which was seen as corrupt and inefficient (TWB 1995; Le Meur 2006). Since then CENAGREF was in charge of the management of faunal reserves in Benin (national parks, hunting zones, and their buffer zones) – in liaison with surrounding communities and the civil society. Besides its directorate-

[4] It was co-financed by IDA (International Development Association, The World Bank), AFD (Agence Francaise de Développement), gtz (Gesellschaft für Technische Zusammenarbeit, Germany) and UNDP (United Nations Development Programme)

general in Cotonou, it comprised two deconcentrated park administrations, one for each national park (Pendjari and W). Due to its relatively flat hierarchy and deconcentrated structure (TWB 2000), its organisational set-up seemed promising for effective action on the ground. In its starting phase, however, CENAGREF was a rather lethargic player and lacked relevant capacities (TWB 2006).

The component "Wildlife Management" of the PGRN concentrated on the two national parks and locally stimulated pilot initiatives in order "*to promote socioeconomic development, conservation of nature, wildlife management, agro-silvo-pastoral equilibrium, small livestock or game farming, and tourism possibilities*." (TWB 1999). In 1994, first local bodies of participation were the Village Hunters Association (*Association Villageoises de Chasse*, AVC) in the Pendjari region (Abalo 2006) that were also established in the W pilot site (MDR 1999; ECOPAS 2005a). Their purpose was to ensure the integration of local hunters in (commercial) hunting as well as surveillance activities. They were also organised on an inter-village level by the creation of a union. As their tasks expanded to other resources (and user groups), and included sensitization work of local resource users as well, their mandate was enlarged: they were renamed as Village Associations for Wildlife Reserve Management (AVIGREF) in 1996 and became official partners of CENAGREF in the co-management of the Pendjari region at first (CENAGREF/DPNP 2005), and later as well of the W region (from 1999 onwards; UNDP/GEF 2005). Constitutions and internal rules assured their legitimate status. The principal actors of the co-management approach - CENAGREF as governmental service on the one hand, and AVIGREF as representative of the local communities on the other hand - were hence established at the end of the PGRN, but not yet fully functional.

With the end of important operational activities of PGRN in 1997, the Government promoted its new National Parks Conservation and Management Program (*Programme National de Conservation et de Gestion des Aires Protégées*, PCGPN) as a follow-up to PGRN. Responsibility for the planning, implementation and monitoring of the program was already carried by CENGAREF (TWB 2000). The program consisted of three components. One focussed on common actions on the national level (capacity building for CENAGREF and other institutional support), and the other two on the management of the Pendjari block (component 2), respectively the W block (component 3). In addition to the Government's own resources, main co-funders and providers of technical

support were the Global Environment Facility (GEF), France, The Netherlands, Germany (via gtz and KFW) and the EU. The total budget of the program was 25.9 Mio. US$ (TWB 2006). The partners agreed to concentrate their (funding) activities to specific topics and regions, so that the Government of Benin and GEF funded component 1 and the operational costs of CENAGREF, Germany and France funded component 2 (gtz being the implementing agency for both), the EU sponsored the management of W, and The Netherlands financed rural development around both parks, in association with IUCN (TWB 2006). All these activities were in some form interrelated. As respective actors integrated their activities into their own bilateral development programs, however, they were sometimes only poorly coordinated in reality. German development assistance, e.g. started the Pendjari component at the end of 1999 (DPNP/ CENAGREF 2005) and then integrated its divers activities of the Pendjari Project from 2004 onwards into the larger framework of its Conservation and Management of Natural Resources Program (*Programme de Conservation et de Gestion Durable des Ressources Naturelles*, ProCGRN).

Box 7.1. AVIGREF's tasks

AVIGREF's tasks as defined in the management plan (DPNP/ CENAGREF 2005) of the Pendjari were:

- Sensitize local resource users to the necessity of protecting wild game and its habitat
- Inform villagers on actual rule settings of nature conservation and hunting activities
- Assist governmental services in assuring the surveillance of hunting zones adjacent to PAs
- Control the compliance of local resource users with rules in use
- Support sustainable management of faunal resources that generates benefits for resource users
- Participate in the management of buffer zones

Start and end of individual funds differed by donor (TWB 2006). While the official closing of the programme was 2005 (DPNP/ CENAGREF 2005), some donors continued their engagement. The GEF grant e.g. became effective in August 2000 and ended in 2005, while the W component of the EU suffered from administrative problems and was released in 2001 (EC 2005) and ended in 2008 (Michelot & Ouedraogo 2009);

ProCGRN was foreseen to last until 2014, but ended its engagement with CENAGREF in 2011 (the AVIGREF UNION was still supported by an adviser paid by German development assistance until 2014).

These details are important here as they shaped the context for participatory action and had direct consequences on the evolution of participatory bodies on the local as well as on the regional level. The programme generally strengthened and animated the role of both, CENAGREF and AVIGREF, but also induced different concepts of the co-management strategy in the two sites, Pendjari and W. While in the Pendjari area the organisation of AVIGREFs in the villages as well as the thriving of their union was intensively accompanied, both in terms of financial as well as technical assistance, ECOPAS did not work as effectively on these aspects and focused rather on scientific studies and park infrastructures. It must be mentioned, however, that socio-demographic and socio-economic contexts of both regions varied tremendously: there were about 30.000 people living in 23 villages next to Pendjari (DPNP/CENAGREF 2005) belonging to only few different ethnic groups (virtually no Peulh farmers), whereas there were 200.000 (TWB 2006) to 380.000 (CENAGREF 2010) inhabitants in 78 villages close to the W Benin that belonged to a multitude of different ethnic groups, associated also with a high degree of ethnic tensions between Peulh herders (transhumants) and sedentary farmers. These contextual factors surely facilitated the integration of local resource users in the management of the Pendjari.

Nevertheless the Pendjari region benefitted from well coordinated adaptive management. With the beginning of the Pendjari Project, a special unit was established that exclusively aimed at inducing activities that released human exploitation pressure on the reserve and organising the cooperation between local resource users and governmental services (Kobilke 2004). In particular it realized micro-projects (via micro-credits) and reorganised the AVIGREFs (via capacity building and formations) (Kobilke 2004). This Village Action Cell (*Cellule Action Villageoise*, CAV) was composed by two national and two international experts and based at the park administration of the Pendjari (in Tanguieta) (CENAGREF 2002). Principal partner in the villages were the Village Development Committees (Comité Villageois de Developpement, CVD). They were composed of representatives from local authorities, all village groups and associations (including AVIGREF) and socio-professional groups (CENAGREF 2002), so a broad legitimacy of action was guaranteed. In 2006, the CAV and all its equipment

were integrated into the AVIGREF Union (U-AVIGREF) as an executive office (*Secrétariat Exécutif*, SE). Funding of this entity continued by development assistance, and so greatly improved capacity of the union to take part in higher level action arenas.

This also involved (partly conflict-loaded) interaction with local governments (two communes adjoining Pendjari: Tanguieta & Matéri) which centred on the sharing of income generated via the PA, and the coordination of investments in public infrastructure undertaken with this money. Respective outcomes have been fixed in a contract, signed by all participants and showing the relatively high degree of organisation and transparency: from 2005 onwards the two communes received 20% of the money that was distributed to the AVIGREFs on village level (CS-o3 2008, Tiomoko 2010). Communes, AVIGREF and the park administration furthermore created a forum to discuss all relevant issues several times per year (Development Committee, *Comité de Développement de la RBP*) (Tiomoko 2010). Besides the existence of an externally funded and highly qualified executive office of its union, another key feature of the AVGREF structure was its organisational form as an association. It enacted boundary rules for membership: everyone in the villages was free to become a regular member, but had to pay an admission fee and a yearly membership fee. Members not only enjoyed the privilege of taking part in decision making arenas, but also to have access to material benefits (e.g. to buy bush meat at a reduced price). At the end of the PCGPN, AVIGREF was an important player in the Pendjari Region that not only was represented in all surrounding villages (23), but also in higher-level action arenas by its union. Income for these AVIGREFs generated by hunting activities and the commercialization of bush meat between 2001 and 2005 was about 190.000 US$ (TWB 2006). Fig. 7.4 (Annex) gives a simplified organisational chart of the AVIGREF structure in the Pendjari Region at the time of our study.

Though formally enjoying the same position in the W region, AVIGREFs there did not have the same capacity (TWB 2011) and hence were not able to fulfil their role as effective mediators (CS-o1 2009). Also a union was quasi non-existant (CS-o3 2009) when compared with the status quo of the Pendjari. Others, however, claimed that at the time of our study AVIGREFs were also in the W region "*thoroughly involved in management activities*" (TWB 2006) and functioning according to the same rules and structures as in the Pendjari region (CS-o2 2009). ECOPAS indeed started a restructuring process of the AVIGREFs initiated during PGRN (CS-o4 2009).

Provisional bylaws simply declared all villagers surrounding W to be legal members of the association, and bureaus in the villages seem to have been established in a rapid and overhasty manner without further animation (Borrini-Feyerabend 2002; CS-o1 2009)[5]. At the same time, the deconcentrated services of the Ministry of Rural Developpment (*Ministère du Developpement Rural*, MDR), the Regional Action and Rural Development Centers (*Centre d'Action régionale pour le développement rural*, CARDER) organised local user- and interest-groups in a participative manner (Borrini-Feyerabend 2002), with a focus on the periphery of the W block (Compaoré 2003). Among these bodies were the consultation committees (*Comités de Concertation*, CC) that assembled delegates of all user groups, including AVIGREF where they existed (Borrini-Feyerabend 2002). Though the mission of the CARDER was principally to promote and implement good agricultural practice, its task was also to take care of natural resources and their preservation. Their involvement mirrors i.a. the strong operational power of farmer associations due to the dynamic of the cotton economy in the W area (CS-o4 2009). Compaoré (2003) classified them together with AVIGREFs as key actors for development and conservation on the local level. As AVIGREFs, however, became official partners of CENAGREF, they also were recipients of the direct payments derived from trophy hunting (and to a lesser extent bush meat). This was comparatively less than in the Pendjari region, especially when one considers the difference in numbers of local resource users living next to the areas: from 2002-2005 AVIGREFs received 88.000 US $ derived from the earnings from trophy hunting and about 2.800 US $ from the commercialisation of bush meat between 2003 to 2005 (TWB 2006). In contrast to Pendjari, where all village AVIGREFs received their share of these earnings due to a defined distribution key, all financial issues of AVIGREFs in the W area were managed by the AVIGREF Unions and no money was directly transferred to the villages.

The vast extent of the park and the associated high quantity of villages created a high number of single associations and several aggregated structures. In 2009 there were 86 AVIGREFs at community level, seven unions at the level of communes (W has only five

[5] Though we tried hard to find any written documents on bylaws and internal rules (by asking relevant stakeholders and searching libraries on site), we could not get hold of any usable information. The only thing we found were "Internal rules of the AVIGREF Union" in the Department of Alibori. The structures are similar to the ones described here for the Pendjari, but kept simpler and without involvement of external stakeholders, i.e. no external control. The document has no date and signature, and resembles more to be a draft developed not by AVIGREFs themselves.

surrounding communities (Karimama, Malanville, Kandi, Banikoara, Kérou), but two have been subdivided so that each union has a maximum of 15 villages) and one at the regional level (Savadogo 2009). Like in the Pendjari area, local resource users also could benefit from small grants for micro-projects that were allocated in this case by EU-funding. Furthermore, another project (*Projet Eco-développement et Gestion de l'Espace des zones d'Influence des Parcs Nationaux*, PEGEI) implemented by IUCN (and financially supported by The Netherlands) promoted capacity building, local infrastructures and the participation of local resource users of the W area. Several activities of this project also aimed at the integration of decentralised local governments into the management of the PA and surrounding areas, i.a. the foundation of an association that comprised all communes lying next to the PA in 2005 (*Association des Communes Riveraines aux Aires Protégées du Parc* W, ACRAP). Decentralisation processes in the sector of co-management were supposed to be facilitated and activities of local committees be embedded in local development plans (Michel 2009). However, in general the project PEGEI suffered from limited funds (Le Meur 2006) and administrative problems, so that its effect in the field was rather limited (CS-o4 2009). The same holds true for the mayors' association ACRAP (Michel 2009, CS-o2 2009).

While in Burkina Faso there were no real transition zones surrounding PAs (village hunting zones were supposed to fulfil this aim), for both blocks in Benin some kind of buffer zones had been established and CENAGREF officially was in charge for an area of 5 km width around the PAs (ECOPAS 2005a). However, institutional settings and actual management varied tremendously between W and Pendjari. As these zones were often cause for conflict and involved village participatory bodies in one form or the other, a short description for both sites is given here. The management plan of the Pendjari (DPNP/ CENAGREF 2005) defined several areas as buffer zones, lying within the borders of the national park. However, there were only two buffer zones that allowed local forms of resource use, both adjoining the hunting zones along the south-eastern and –western axes: (1) the zone of controlled occupation (*Zone d'Occupation Contrôlée*, ZOC) was established in 2001 (Tiomoko 2010) in a participative process with villagers that were organised in delimitation committees (DPNP/ CENAGREF 2005). It stretches three to five kilometres into the hunting zone. Limits were marked in the territory and also fixed in a protocol. Fields could be established in this zone, however,

imposed rules for exploitation (including the involvement of AVIGREFs) sometimes got in conflict with traditional mechanisms of land appropriation (Tiomoko 2010). Adjacent to this zone, there was (2) a zone of resource exploitation (*Zone d'Exploitation Contrôlée*/ ZEC) in which small scale extractive forms of use were allowed, like the collection of medicinal plants or the watering of cattle. AVIGREF was a mediator for resource users to get permits issued by CENAGREF. Permits were for free.

In the W region a quite pragmatic approach concerning the establishment of a buffer zone was being implemented: a forum of different stakeholders decided in 2003 to subdivide the 5km band formally foreseen as buffer zone into several strips and allocate them to specific user groups (Mensah 2010). The strip to the exterior of the PA was dedicated to agricultural purposes (2 km next to PA), the next strip following was foreseen to be used for the exploitation of medicinal plants and for bee-keeping (1km), and the last one should be used as pasture area (2 km). Exploitation rights were subjected to the payment of fees. Herders had to pay 500 CFA per head of cattle and 250 CFA per head of ovine, farmers had to pay 5.000 CFA per ha (with a maximum of 5 ha per person), and exploitation of the collection area was for free. In 2005 a forum was organized that took care of the organization of these regulations (Michel 2009). Obviously, an approach like this is difficult to materialize on site as local distinctions have to be acknowledged, including the often disputed judicial status of areas lying close- or even in – the park (ECOPAS 2005a). Furthermore complex rule settings are usually also complex to implement and to monitor[6]. So already at the time of our study, various problems associated to the management of the buffer zone have been reported.

Village hunting zones existed only in Pendjari and were still in their implementation phase and steered by a special committee within the AVIGREF framework (*Réserve Villageoise de Chasse Autogérée*/ REVICA). However, if these hunting zones were not on their village territory, the bureaus of village AVIGREFs were not involved in the management (vpb 23, 24, 26 & 27).

[6] It was not possible neither to get a map of the buffer area, nor of local agreements on its materialization during our study

The role of AVIGREFs in Benin

- **Organisation, structure & legitimacy**

The organisational structure of AVIGREFs in the Pendjari region showed relatively little variance between villages and was marked by its status as association and the dichotomy of AVIGREF on the village level and their union on regional level. Though AVIGREFs in the W Area were formally organised in a similar way, their actual set-up and functioning differed considerably to those AVIGREFs in the Pendjari Area (for a detailed description of the formal organisational structure of AVIGREFs in the Pendjari Region see Annex Chapter 7: **Fig. 7.4** The organisational structure of AVIGREF))

Pendjari. All AVIGREFs were established between 2000 and 2004, but reported of prior tentative organisation, due to the activities of the PGRN, e.g. as committee in charge of afforestation measures to delimitate PA boundaries (vpb 27) or the above mentioned hunters' association (vpb 26). At the same time (2001) the regional union was established as umbrella association of all substructures on village level, and AVIGREF was officially recognised as a non-governmental organisation serving the public good (Kobilke 2004). All bureaus consisted of eleven members, of which the president, the secretary and the treasurer held key positions. The others were organisers, advisers, or controllers of fund management and included a women's representative. According to bylaws, elections were held every 5 years. To become a member of the bureau, you first had to be a participant of the association and a "responsible person of good morality" (vpb 27). While in Burkina Faso respective village participatory bodies were formed as committees and corresponded to the above described bureaus, the AVIGREF-structure was an association open to anybody in the village. Official boundary rules were the acceptance of AVIGREF rules (essentially the acceptance of the park and denunciation of people on rule infraction), as well as the payment of adherence- and membership-fees. The first was 1.500 CFA to be paid once, and the latter was 500 CFA to be paid once per year. The form of organisation was meant to raise commitment of villagers to the aims of conservation and integrate them in a formal framework of accountability. Various incentives came along with a membership in the association. Besides having access to local decision making fora of high relevance and hence to an important social network, members had direct material benefits in the form of bush meat at a reduced price or the possibility to take part in paid operational tasks of PA

management (foremost surveillance activities). The number of members hence continuously rose in most localities since the establishment, also due to active advertising of the bureaus and ordinary members: "*We invite all villagers to our General Assembly. We prepare fish and share with everybody without restrictions (*member and non-members*). After this, we benefit from new members. They see how the association works, and those that want more join us*" (vpb 24). The bylaws also committed all members to "inform any physical or moral person on the objectives of AVIGREF, whenever they have the possibility to do so" (Statuts des AVIGREF du Complexe de la Pendjari, Version 2008). The reason for these marketing strategies lied in a well planned leverage effect offered by the AVIGREF union. It disbursed its 30% income share of park revenues to the villages according to a performance based indicator scheme with the number of members in the villages being one of them (details will be treated in the following paragraphs). Single AVIGREFs hence might have had more than 100 members and the organisation was well known on resource user level: only 2.9% of respondents in our household-survey said to have no idea what their village participatory body was doing – compared to 40% in the W Block of Burkina Faso, respectively 26% in the Arly-Block.

The regularity of the meetings was another indicator for the above mentioned distribution key and AVIGREFS on village level were supposed to meet once per month. Though all villages reported to do so or to meet even more often, there is justified scepticism about this being true. Protocols that had to be written by the secretary and were controlled by the union showed that most villages met with a much lower frequency (CS-o5 2009). One meeting was of central importance: the General Assembly (GA). This usually was held at least once per year, first on village level and then on regional level. In fact, it was the decision-making body of the association (decisions were taken by majority vote; for the GA on village level at least 50% of members had to be present, at union-level at least two thirds of the delegates). In the course of these GAs, the bureaus had to report on their activities and the fund management. New members were officially introduced and any disputes discussed. Village associations used their GAs also to prepare their inquiries for the assemblies on union-level. And finally it was the GA that elected new members of respective bureaus. Each village then sent 5 members of its bureau (president, secretary, treasurer,

women's representative and one other) as delegates to the GAs on the union level (Statuts des AVIGREF du Complexe de la Pendjari, Version 2008).

W Area. The process of AVIGREF foundation (1999-2005) in the W Region very much resembled the establishment of vpbs in Burkina Faso. Governmental authorities, usually accompanied by project staff, came to the villages and instructed resource users to build a bureau by selecting a president, a secretary and a treasurer (and several associated positions like organizers and advisers). Great importance was attached to the integration of all social and socio-economic groups: women held in almost all cases the position of the treasurer, and also one or several Peulh were members of the bureau. Generally participants were not elected in a democratic way, but rather "selected" by the villagers. Replacement of members did not follow any formal procedure and often was due to illness or decease (vpb 18, 19 & 20). There was only little to no animation of the bureaus by higher level actors (including the AVIGREF union and projects) and no vpbs carried out regular internal meetings: "*When our new president started, we had two meetings per month. But as we realized that neither CENAGREF nor any other organisation comes along to see how things develop, and we also do not receive any information, we stopped to meet*." (vpb 18). They only met to pass on information that delegates received during GAs and formations organised by the union or by CENAGREF. Integration of the local population was very weak, as only participants of the bureaus were considered as members on the local level (though being formally structured as an association). Adherents were not paying membership fees and identification of resource users with AVIGREF was hence not given at all (though some officials considered the whole local population "to be AVIGREF").

Pendjari. The vertical structure of organisation on local and regional level was key in bundling local resource user interests and pushing them in higher collective and constitutional action arenas with participants from governmental hierarchies, donor interventions, local governments and private economy. The union very much gained from the integration of the former CAV as executive office, both in terms of material equipment and human capital. Salaries of this executive office as well as operational costs were still funded by ProCGRN at the time of our study. Additionally, an external technical adviser supported AVIGREF in its daily business. However, this meant that not only major strategic decisions were strongly shaped by this close cooperation with external donors and to a certain extent by the park administration, but also that

development of AVIGREFs in the villages did not keep pace with this fast evolution of its framework body. Several processes that required interaction of both levels were not well working and the overall performance of vpbs was assessed to be rather weak (Internal review document, commissioned by ProCGRN; CS-o5 2009). Our survey confirmed this and showed a high degree of discontent on the local level, however, it must be kept in mind that generally these conflicts and weaknesses took place on a relatively high level of organisation. The union also was the most important forum of exchange on the horizontal level, i.e. between village AVIGREFs. Besides GAs and trainings of the union, formal contact between village AVIGREFs were rather sporadic and often caused by actual problems (vpb 22, 23, 24, 25 & 26). Nevertheless, horizontal cooperation was assessed to be very good: "*If a member of AVIGREF visits the neighbouring village, and he meets a member of AVIGREF there, it is like returning home for him*." (vpb 23).

As AVIGREF represented in first line the interests of local resource users, but in second line also to a certain degree financial and political power of international donors, it established as a strong player on the local and regional level. Interactions with elected local governments lead to a contract between CENAGREF, AVIGREF and the communes next to the PA. Key points were the willingness of all partners to cooperate, the financial participation of communes in the distribution of park revenues (20% of the funds that go to villages) and enhanced coordination of AVIGREF funds according to communal investment plans (*Accord de Partenariat* 2009). All study groups on village level said to have only limited contact with their local government, however, some stakeholders saw the danger of political instrumentalisation of AVIGREFs by the local governments. AVIGREFS (vpb 23, 25, 26 & 27) were in close contact with district chiefs (*Chef d'Arrondissement* (CA); districts are subunits of communes), and hence in indirect exchange with local governments. The cooperation was generally assessed to be good to moderate. Their main functions were seen in the mediation of information ("*The CA knows how to pass information to the hierarchy*" vpb 26), conflict management between farmers and herders or with governmental authorities (vpb 22, 23 & 26), coordination of local infrastructure investments (vpb 23, 26 & 27) and access to specific natural resources in the village territory not covered by the PA (vpb 26). For some of the villages their CAs hence played a quite important role, whereas in others this was not the case (vpb 22 & 24). Personality of the CA (vpb 26) and general functionality of their communes seemed to be determinant factors for this interaction.

W Area. AVIGREFs in the W Area maintained close linkages to traditional authorities (as far as they existed in their villages), respectively to other local authorities like village chiefs. Probably due to the integration of Peulh herders (or the minor importance of AVIGREF in the region), the bureaus also assessed the cooperation with this ethnic and socio-economic group to be good or at least not burdened by conflict. On the contrary: "*As there are also other members of the bureau that have some cattle, we defend our interests together against the park administration, however, without success*." (vpb 20). This is remarkable, as general conflicts between farmers and (transhumant) herders were very strong all around W Benin. Avoidance and resolution of these conflicts also was the main subject of the interaction with local governments (vpb 16 & 21). Most bureaus, however, did not interact at all with mayors or their CAs (vpb 17, 18, 19 & 20). Despite these rare contacts (2x/a), some AVIGREFs knew from radio broadcasts or other sources that their local government was defending the interests of the villagers against CENAGREF, e.g. concerning the killing of livestock in the park (vpb 19) or the scarcity of land (vpb 20).

There was no inter-village cooperation between AVIGREFs, except informal exchanges and common meetings of unions on commune-level (all vpbs). Interaction with the unions on this "zone"-level also often was restricted to the GAs that took place twice a year and were attended by the first three members of the local bureaus. These delegates elected the bureau of the zone every 5 years. From each zone then, 5 delegates were sent to the regional GAs and elected the respective bureau there (CS-o1 2009). Due to this hierarchic structure, only very few village AVIGREFs had a direct linkage to the regional union. The meetings on zone-level were used to report of the union's activities and at the same time advice village AVIGREFs to fulfil their duties. The connection between village associations and their unions in most cases was rather weak and the union often was regarded as an external authority (and probably confused several times with CENAGREF by interview partners), that hence had to be followed (vpb 21). Vpb 17 described their relation to the union and the imbalance of power between them with a proverb: "*If you put a mouse and a cat in one hole, who is going to be happier?*". The lack of benefits on the local level, that was attributed to the weak performance of the unions, lead to a high level of frustration among AVIGREF members and made some AVIGREFs even stop communication with their union (vpb 16 &21) (see paragraph "conflicts"). Official bylaws or internal rule settings regulating these

interactions and guaranteeing also external legitimacy were unknown on the local level (all vpbs).

Pendjari. The organisation of AVIGREFs as association and its function in the tripartite management relaxed the interaction of resource users and governmental authorities in the Pendjari Region, however, introduced new areas of social conflict and tension between community members, as they were divided in "members" and "non-members": "(…) *but when the PGRN came and created the associations, this divided them, because they divided the land. The peasants could not continue to work where they used to make their fields*" (vpb 27). In fact, the exercise of social control as major instrument to steer resource users' behaviour was well wanted and conflicts taken into account by responsible parties. The calculation was nevertheless to attract the majority of villagers by enhanced participation as well as material and monetary incentives. Indeed, and despite strong criticism, acceptance of AVIGREF seemed quiet high, as almost all inhabitants felt benefits due to their activities (see Tab. 7.7). Nevertheless we also encountered a high number of negative voices on vpb activities, expressed by local resource users during our household survey and other involved stakeholders alike. Some also were concerned of a lack of democratic practice in the field (Le Meur 2006; Internal review document, commissioned by ProCGRN; CS-o3 2008). Traditional authorities in some villages still played an important role and were well integrated in the associative life, whereas other authorities like the elected village chief not necessarily had impact on the association. The following statement demonstrates this self-confidence and strong position held by AVIGREF: "*If the village chief is a member of AVIGREF, he may be integrated. If he is not a member, we do not even know him*" (vpb 26).

W Area. The lack of benefits for both AVIGREF members and local resource users in general, were seen as one of the most important impediments for a proper functioning of the associations. Besides remunerations, AVIGREF members claimed for better regulations and refunding mechanisms of transport when attending meetings of their union (vpb 16, 17, 19 & 21). They also lacked means of transport to execute controls in the field (motor-bikes, bikes) (vpb 16 & 17). Additionally to these material constraints, AVIGREFs identified institutional shortcomings. Their difficult relation to gardes faunes (see below) and concomitant effects to their village internal legitimacy e.g. were seen as pending problems. Furthermore, they received no information or animating support (vpb

18), and lacked internal rule settings to guide them in how to carry out their tasks (vpb 21). They consequently did not feel accepted as serious partners, neither of CENAGREF ("*AVIGREF is like a photo*" (vpb 18)), nor of villagers that realized that they had no influence on other actors (vpb 20). Vpb 21 admitted that there were internal problems as well, e.g. a general lack of capacity on the local level to participate in management arenas due to high rates of illiteracy (vpb 21). In sum, organisational deficiencies lead to a very weak status of AVIGREFs and made some of them even stop all of their activities (vpb 18), or exist only pro forma: "*We only carry on as the surrounding villages do as well. If they stop, we will do the same*." (vpb 19)

Pendjari. Main impediments for a proper functioning were less seen in material deficiencies than in institutional shortcomings. Among these were social conflicts within the associations or between members and non-members (vpb 24 & 26, 27) as well as failures in institution building and the organisation of specific processes by higher level actors (concerning e.g. the concept of membership fees or the lax implementation of sanctions on rule breakers; vpb 24 & 26). A lack of remuneration of the AVIGREF bureaus (vpb 27) and the lack of alternative ways of income generation reduced the motivation and operational capability of the association (vpb 27). Supported by regular, external critical review, the authorities of ProCGRN, CENAGREF and AVIGREF were continuously analysing strengths and weaknesses of the AVIGREF organisation and associated rule settings. Changes in this set-up hence were frequent and the institutional landscape quiet dynamic. We here stuck to the status quo at the time of our field work. Since then, however, the situation changed inter alia by a conflict that arose in consequence to the end of the "Pendjari Project" by German development assistance and the dismissal of the highly respected park director by the minister in charge for PA management.

- **Internal conflicts**

Sophisticated institutional and organisational settings that aim at distributing benefits (in whatever form) are likely to elevate the need for control and the risk of failure, and hence the level of system-inherent conflict. As indicated above, this was true for the situation of AVIGREF in the Pendjari region and in part also for AVIGREF in W Benin. Conflicts could be stratified along several axis and included (1) conflicts within village

associations, (2) between village associations and their union, (3) between members and non-members, (5) conflicts between villagers in one locality and (4) between villages. The latter usually were only indirectly associated to AVIGREF.

(1) **Pendjari.** One of the main internal problems in all study sites was due to the system of charged membership. People often saw the above mentioned incentives. By their adherence to AVIGREF, parents could e.g. contribute to school furniture being bought for their children via the association (vpb 24), and also the access to cheaper bush meat seemed to be a good incentive. People being interested to become member "(…) *will do anything to find the 1.500 CFA. But in the next year, the 500 CFA will be a problem*." (vpb 27). As the number of participants that paid their fees was one of the performance indicators, AVIGREF bureaus tried to push their members to pay, so that the association could profit from the leverage effect: "*If they do not pay, all the members of the bureau visit the ones that have not paid*" (vpb 23); "*This year we have no problem with the membership fees, but we worked hard on it. We invited the people, we begged them to help us*" (vpb 26); "*We encourage the people to pay and explain them that we will not get the 100.000 CFA from the union (…). If we put pressure on them, it is maybe half of the members who pay. We all have to look for another solution to this problem*."(vpb 27). Direct linkage between membership and the perception of benefits enhanced the motivation of people to pay: "(…) *Others come when we receive bush meat, as they also want to buy for 300 CFA instead of 600 CFA*." (vpb 24). Some members also used their payments as a means to bargain and attached conditions to ensure direct reception of benefits (I pay the fee if you give me a job in the surveillance with the DPNP) (vpb 24). An internal review in 2008 revealed that the percentage of members paying their fees was very variable between village associations (ranging from 0 to 100%), and that the average was just about 40%. Several reasons account for this failure of the system. The bureaus of AVIGREFs often were suspected of fund mismanagement and being focussed on their own personal benefit (vpb 26; CS-o3 2009). Indeed, the loss of funds in some villages was quiet high (Internal review document, commissioned by ProCGRN 2008) and some major incidences that were also discussed during the GAs had personnel consequences. Several AVIGREFS (vpb 23, 26 & 27) identified the widespread poverty, the lack of alternative ways of income generation and land shortage as major impediments: "*We do not have enough land. Some people already finished their stocks and do not have enough to eat. So they*

cannot pay." (vpb 27). No AVIGREF fixed a specific pay-day and sanctions for non-payers seemed to be handled rather slackly. They were either not allowed to buy bush meat, or at least not at a reduced price (vpb 22, 25 & 27). Furthermore, they were not appointed to take part in the surveillance activities and not allowed to actively take part in association meetings (vpb 22, 25 & 27). Only one AVIGREF said that non-payers were excluded from the association if they did not pay for two years, as foreseen by the bylaws (vpb 23), even if problems arose due to the status of non-payers: "*All this causes problems!*" (vpb 27) and "*Of course people (non-payers) always try to get the benefits though*" (vpb 25). AVIGREFs on village level though generally accepted the system of membership fees and also saw the advantages of it, the implementation, however, confronted them with severe difficulties.

Internal legitimacy of the bureau was not only challenged by suspicions of misappropriation of funds, but also by their closeness to governmental actors and nepotism: "*There is a lot of gossip in the village. People say: you and the rangers get along very well, eh? Every time they come, they take your brother or a friend, or a friend of a friend* (to participate in surveillance activities with them)" (vpb 26). Also the distribution of bush meat caused internal problems: "*Sometimes the meat we get out of the animal is less than on the documents. So people might think we, the bureau of the AVIGREF, have taken something*." (vpb 26). To counteract this criticism, AVIGREFs on village level began to install sub-bureaus that exclusively were in charge of managing the reception and distribution of the bush meat, so that the AVIGREF bureau itself was beyond reproach. Internal distribution conflicts, however, remained as quantities of meat often did not satisfy local demand (vpb 22).

W Region. Also in the W Region, several AVIGREFs debated heavily about the topics we asked and thereby revealed bureau-internal tensions. Some members then accused others not to fulfil their roles adequately, and so to contribute to the malfunction of the associations (vpb 16 & 19). However, as there were very little activities of most AVIGREFs, there seemed no major actual conflicts within the associations.

(2) **Pendjari**. In fact, the problems arising around bush meat were primarily a conflict between AVIGREFs on village- and on union-level. To ensure the correct distribution of bush meat to the villages, the union disposed of a vehicle including driver who was meant to deliver the killed animals directly to the villages. Furthermore members of AVIGREF were positioned in the camps to supervise the dissection of the game there.

The coordinators of the axis were in charge for the management of this process. However, despite this mechanism that was unique to the Pendjari area, the system did not work properly. Manipulations by many actors that played out their (relative) power positions were observed, including officials from CENAGREF and AVIGREF (Tiomoko 2010, own observation), and probably private actors as well. In any case, all AVIGREFs we interviewed reported problems with the distribution of bush meat. Most often they complained not to receive the ¾ of a game they were entitled to, and/or that the meat they received was already decaying (vpb 22-27). Most of the interview partners did not accuse specific actors to illegally take the meat, but did not trust neither the AVIGREF agents at the camps nor the drivers: "*Though there is an agent of AVIGREF at the camp, we do not really know what happens there (…). We only receive the meat and the document that gives a certain weight (…) We have to sign it. (…). We do not really know who takes the meat, maybe it is also the driver*." (vpb 27). For the AVIGREFs in the villages it is difficult to exert any control on these processes. They have no means to control the weight as they usually do not have a precise scale that can handle large quantities of meat. Also, as the animals were already cut into pieces, a visual control (if all parts are there) was usually very difficult. Generally there seemed to be comprehension that those working along the value chain also had to receive some kind of benefit, however, there was no consensus in what form this should happen. As the union was in charge to handle the process, criticism was often targeted on its management.

Generally, village AVIGREFs assessed the relation to the union as moderate to good, with a degree of conflict ranging also from moderate to high (see Tab. 7.8). This was quiet surprising as the functional role of the union in the Pendjari is widely seen as a role model in the whole region. Despite diverse formal mechanisms of exchange and participation, village AVIGREFs criticised a high concentration of power in the hands of very few steering the union ("*The union is holding all the power*." (vpb 24)). According to them, there was no real participation of villagers in action arenas on constitutional choice level. i.e. no sharing of responsibility and integration in decision making processes. They felt rules to be more or less imposed by the union (vpb 24, 25, 26 & 27). During the GAs, when internal rule settings and conflicts were discussed, everybody had the possibility to speak and say his opinion (vpb 24 & 27). Hence fora for participation formally existed. However, our interview partners complained not to be well

informed and prepared for the GAs in advance by the union. In many respects they hence were rather overstrained or even indifferent to the decisions taken by the GA, and pushed by the authorities to agree to the propositions made: "*They have prepared the documents for three months, and we get one day to read and respond at the same time. What can you say in a situation like that? They put pressure on you and then they say: it is adopted! Yes, it is adopted, because the people want to return home*." (vpb 26); "*They made the texts and said: here you are, you said it like that. But we do not even understand the content*." (vpb 27). Consequently it was difficult for these bureaus to act as multiplicators for spreading the rules in the villages: "*There are bylaws and internal rules. However, they (*union*) just made it and we did not really get a formation on it. The ones who can read a bit try to explain it to others, but they are very few. (…) People hence do not understand the bylaws well. (…) It is not enough to just distribute copies*" (vpb 27, also vpb 24). An external consultant of ProCGRN came to similar results after having attended an extraordinary GA in 2008. Discussions during this GA were on a rather superficial level, the context and implications of the decisions taken were not well explained by the organisers of the union, nor well understood by the village delegates. Decisions were mainly taken as already prepared by the union (Kobilke 2008). As initially described there hence was some kind of implementation gap that lead to missing links between the union and its substructures. Village associations also complained that officials from the union rarely came to the villages to see what was going on in the field (vpb 22, 25 & 26), even controls of AVIGREF performance were not on a regular basis (though foreseen to be several times a year). Being well aware of the deficiencies of their own village associations, bureaus complained about a lack of personal incentives offered by the union. They claimed some remuneration of the key actors of local bureaus and better financial compensation when they attended meetings and trainings in their function as AVIGREF officials in order to enhance motivation on their level: "*If there is a formation that lasts one week, you only receive 3.500 CFA. If it is during the rainy season, and you can not work in the field, this is a problem. The money is not enough to satisfy the needs of the family*." (vpb 25). Anecdotal reports from others accused the union to embezzle and waste money coming from the project, respectively the commercialisation of bush meat (vpb 23, 35 & 27), or criticised nepotism (vpb 25).

W Region. Poor performance of the unions, as well as a general lack of participation in common action arenas and week ties between hierarchy levels caused conflicts within the organisations of W. The union generally failed to distribute benefits (in the form of infrastructures) to the village level, and so made villagers question the rationale of AVIGREFs existence. As a consequence, frustration of bureau members on village level was so elevated that they even stopped to ask their union for any kind of support e.g. in the context of conflict management (vpb 19) or the construction of infrastructures (vpb 16). Moreover, they felt to be poorly informed (vpb 16), betrayed due to unfulfilled promises (vpb 19), or also disadvantaged in relation to some other villages (vpb 21). Like in the Pendjari region, the union was also under suspicion to embezzle money foreseen for the villages (vpb 21). Though AVIGREFs had the opportunity to voice their criticism and frustration during GAs vis-a vis other AVIGREFs and the unions, there usually were no consequences (vpb 21).

(3) **Pendjari**. Village internal conflicts that involved AVIGREF members and non-members concentrated on the unequal shares of benefits perceived by the two groups, or on denunciation activities carried out by AVIGREF members. Vpb 27 reported that non-members in their village did not accept that decisions on investments in public infrastructure were taken in arenas with restricted access for non-members of the association. Also the selling of bush meat at different rates to members and non-members, or the access to ceremonies associated with the associative life of AVIGREF led to conflicts (vpb 26 & 27). Denunciation of other village members committing rule infractions was one of the very raison d'être of AVIGREF, as social control was expected to diminish pressures on resources of the PA mainly exerted by the local population. However, this practice often interfered with – or integrated into –local social bonds and interactions and created a high level of distrust among villagers. Members of AVIGREF were sometimes called "black rangers"[7] by other inhabitants (vpb 24). Members reported of massive harassment after having denunciated wrongdoers, and even led to AVIGREF members being threatened with violence. In another village (vpb 22) the bureau reported that villagers did not join AVIGREF for not being integrated in surveillance activities as they feared the revenge of others.

[7] The description by "black" and "white" is usually not used exclusively to describe skin colour. Rather these adjectives also express some kind of social or power-related characterization. Here it is used to associate villagers, namely AVIGREF-members, to a lower hierarchical level of governmental ranger services without formal training.

W Region. The weak status and influence on outcomes of diverse action arenas of AVIGREF also caused conflicts between bureau members and villagers, and lead to complete disrespect of AVIGREFs functions in some instances (vpb 20). Further amplified by their (potential) closeness to the unpopular gardes faunes, which created distrust and suspicions among resource users (vpb 19 & 20), members of some AVIGREFs in the region even faced social disadvantages: "*It has happened in the past that we did not find partners for our daughters and sons. If one of our children asked the parents of a girl…the mother might say: Your parents cooperate with the gardes faunes. Due to your parents, you will not get our daughter as a wife.*" (vpb 21). However, various sources reported of village AVIGREFs embezzling the money and so causing severe problems with resource users, who themselves got into conflict with each other and/ or governmental authorities (e.g. vpb 16). Conflicts between professional groups in the buffer zone were also due to other planning and operationalization failures, e.g. the missing (or disrespect) of livestock corridors or unclear sub-zoning. Various internal and external (see below) conflicts proximately arose in consequence to the management of the buffer zone. In some villages AVIGREFs acted as mediators of resource exploitation tickets for the BZ, either by selling them directly or organising collective purchase for all villagers from foresters at the next post.

(4) **Pendjari**. Conflicts between villagers, in which also AVIGREFs played an active part, mainly involved issues of resource competition between farmers and herders. Though there was a rather small sedentary community of Peulh farmers that also played an important role for the local breeding of cattle, these problems arose in almost all villages (except vpb 26) and involved both, local Peulh herders (vpb 22, 24 & 27) and those on transhumance (vpb 23 & 25). Local Peulh often were also members of AVIGREF, as they can obtain special permits for watering their animals in the exploitation zone of the PA via a demand treated by the association. However, "*they do not respect the corridors and cut the green branches during the dry season*" (vpb 22). Concerned AVIGREFs expected other actors to help them remedy the problem. In the case of sedentary Peulhs, they either hoped that the AVIGREF union would build a water-hole close by (vpb 22), so that the herders would not have to cross their fields, or that CENAGREF would relocate them which would be a "…*win-win situation for everyone*" (vpb 27).

(5) **Pendjari**. Finally there were conflicts between villages or specific actors of the local population and AVIGREFs in other villages, e.g. provoked by the identification of poachers coming form other villages or traditional battues on village territory (vpb 24). The latter was actually developing during the course of our study and was intensively treated by colleague scientists. This conflict i.a. contributed to formal organisation of professional hunters and their integration in park management activities (see e.g. Aboubacary 2012).

W Region. Especially in the north-eastern part of the park periphery, there were severe conflicts between farmers and herders (both local and transhumant). At least in some localities AVIGREF seemed to have a mediating effect, as was confirmed by Peulh farmers that also participated in our interviews.

- **External conflicts**

Conflicts with external stakeholders concerned in all villages primarily the relationship with éco gardesand and gardes faunes. The concept of éco gardes (Pendjari), respectively gardes faunes (W) was introduced during the programme PCGPN and aimed at minimising the gap between local resource users and governmental services (Tiomoko 2010). They were recruited among local villagers with some degree of higher education and received paramilitary trainings. Mobile units of éco gardes (altogether less than 20 people), replaced the ancient posts operated by governmental rangers in the Pendjari Region. At the time of our study, there were less than 5 governmental foresters working for DPNP carrying responsibility and managing surveillance activities as well as resource access. Eco gardes hence were taking over the restricting and controlling role of rangers and were those agents of governmental services that interacted most with local resource users in the field. In the W region, gardes faunes cooperated more closely with rangers.

Pendari. Eco gardes were supposed to closely cooperate with AVIGREFs in surveillance activities. In fact, there were two forms of surveillance at that time. One was widely called “DPNP surveillance” as it was organised by the park administration and covered the whole PA. According to a programme elaborated by the foresters, an éco garde unit was displaced in the PA and patrolled the area for 10 days. They were always accompanied by two members of AVIGREF from the surrounding villages

employed as assistants (e.g. for preparing food). The other form of surveillance was the "village surveillance". This was a new approach introduced in 2007 and was taking place mainly in the interface of exploitation and hunting zones. One éco garde accompanied usually two villagers for a five, respectively ten day patrol.

With the new approach of participation implemented by the establishment of AVIGREF and éco gardes, the nature of the conflict between representatives of local resource users (as well as resource users in general) and the agents of governmental services in the field changed dramatically. Generally the relation ameliorated and lost its pronounced repressive character: "*Before, the situation with the rangers was different. It was war. If they found a poacher, they killed him*." (vpb 22); "*They killed the people in the park. But now the park is for us!*" (vpb 26); "The conflicts with rangers were due to poaching and land use issues: "*If you cleared some land, they came, they took your cloths and then they beat you up. (…) They maltreated the population, they even looked into our pots to know what we were cooking. They did not stick to the laws. Everybody feared them and fled when they came. Now we have no fear, our liberty is respected. (…) Since AVIGREFs are there the situation is better, though some conflicts persist.*" (vpb 27). Today, AVIGREFs even criticize that éco-gardes do not care enough and only rarely come to their villages (all vpbs).

In fact, the éco gardes did not stick to the work plans of the surveillance (in most cases village surveillance), which caused widespread discontent as villagers feared not to get enough performance based credits when funds were disbursed: "*They are sent for the surveillance, but they come and stay in the neighbouring village. If he has a friend there, he stays with him, or he stays at the camp and does not go into the bush. (…) He will wait for one, two, three, four days and then say he has done his work.*" (vpb 22). Their disregard of the plan might in part also have been caused by some other working tasks, however, had repercussions on the associative life of AVIGREF: "*They never stick to the plan and might come several days too late. So the villagers that were appointed to accompany them might have left. They then never stop and contact the AVIGREF, they just take some youngsters at the roadside. However, there are two ethnic groups in the village and the AVIGREF makes a balanced work plan during the meetings. This hence creates conflict in the village.*" (vpb 26). Maybe even worse, AVIGREFs also reported that éco gardes did not support the association when they found indications of poaching (vpb 22, 23 & 24) and supposed them to even cooperate with poachers themselves: "*So*

when the rangers come, we show them the traces, but as the park is vast, they do not really try hard to find them. In the end they do not catch the poachers and so think it might have been the people from this village." (vpb 23); "*The éco gardes are not motivated. If we inform them about traces that lead into the bush, they come, follow the traces a little bit and then they stop. They do not know if maybe there are friends of them in the park. They have friends who are poachers, you can see them together when there is market*" (vpb 22). The two parties hence accused each other not to work properly (vpb 27). Several AVIGREFs stated that éco gardes did not fulfil their original purpose which was the arrest of poachers: "*The farmers suffer as they stopped to make fields in the PA. They made their contribution. But the poaching exists until today…the gardes are not working correctly.*" (vpb 27); "*The cooperation with them is very bad as they are doing nothing.*" (vpb 25); "*When they started AVIGREF, the situation was better. They went for five to ten days into the bush. But today they stopped. They do not go into the bush anymore. They never catch a poacher, only Peulhs and fishermen.*" (vpb 22). Villagers hence lost respect of their factual authority:" *Before, they did a good job. (…) nobody entered the park and there was no poaching. All this was good, there were no rule infractions because they were respected.*" (vpb 25); "*The éco gardes do not use violence. He might ask a Peulh to give him a chicken, but if the Peulh says "no", nothing will happen. That is the problem: he is just an éco garde*." (vpb 22). Eco gardes themselves indeed were frustrated and had ongoing discussions with the park administration about their salaries. In sum they did not fulfil their original purpose as another cutting point between governmental authorities and local resource users.

Other reports of external conflicts were rather anecdotic. Several vpbs said that they would not have enough space for cultivating, especially on the axis Tanguieta-Batia (for a detailed analysis of land use around the PNP see Zomahoun 2002). Though the establishment of the buffer zone was a participatory process, some villages did not cooperate, and hence had to accept the borders that were defined by the authorities (vpb 27). Due to their perceived land shortage, they still expected CENAGREF to give them more land (vpb 27). CENAGREF was also blamed for not having employed the same number of éco gardes from every ethnic group and to have set standards for becoming an éco garde that were rarely met by any villager (vpb 27). Another vpb voiced discontent as the 30% of revenues given to AVIGREF was not enough to satisfy all the needs of the villages (vpb 26). Also problems with the authorisation of resource

use in the zone of exploitation were perceived by one AVIGREF (vpb 22). Demands for the traditional fishing were rejected several times, and there might have been problems in the field if one ranger gave the permission and another one controlled on site.

W Region. External conflicts were ultimately caused by a severe shortage of land that made resource users enter the park (and hence break formal rules), and consequently lead to conflicts primarily between herders and governmental authorities, but also between farmers and gardes faunes. The establishment of the buffer zone was meant to relieve these problematic interactions by providing resource access for all relevant groups and provide clear rule settings for their exploitation in the park periphery. However, the buffer zone was assessed very differently by individual villages and in general seemed to rather augment the level of conflict. Some of the AVIGREFs reported of repeated resettlements (vpb 18), respectively that "their" land used for exploitation was taken for the establishment of the buffer (vpb 17 & 19). So while some villages de facto seemed to have lost cultivable area due to the BZ, others though gained new (so far uncultivated) territory. This establishment process seemed not to have been realized in a participative way, and AVIGREFs reported there was no room for negotiating the new limits (e.g. vpb 20). Also, rule settings and delimitations of the different zones became more complicated, ambiguous and almost impossible to control and so further aggravated conflicts. Before the establishment of the BZ, rangers reportedly only controlled for poaching and illegal agricultural encroachment (vpb 20). With the BZ and its new and often rather vague rules, enforcement also became somewhat arbitrarily in the view of AVIGREFs (e.g. vpb 21). Law-enforcement was handled in a very restrictive way and fines indeed had a deterrent effect (vpb 17) due to the high amounts that had to be paid even for small delicts: "*If they catch you in the park cutting grass, they will burn it, take your bike and put it in their car, and also yourself, and then they will fine you.* (…) *Even when we cut grass close to the park, they fine us 200.000 to 400.000 CFA*" (vpb 17). As most villagers do not have that much money, they are either taken to prison or have to sign a debt obligation that they will pay after the harvest (vpb 17) – or find some kind of informal agreement with controllers. Violence exerted by gardes faunes and rangers was not uncommon, especially against poachers and herders that were caught inside the PA (vpb 19 & 20, CS-o6 2009); "*The gardes faunes enchain people and hit them like prisoners*" (vpb 19). Villagers hence generally feared the gardes faunes and tried to avoid any contact. Furthermore, gardes faunes killed any

livestock they encountered in "*or close*" to the PA (vpb 17& 20), and sometimes took the meat for their own consumption (vpb 17). As there was always a high percentage of resource users that did not pay exploitation taxes, the gardes faunes did not even ask for the tickets during their controls, or tore them apart and arrested all villagers they could catch. As a consequence, even those that feared the punishment of the gardes faunes and previously bought the tickets, saw them to be useless (vpb 20). At the beginning, AVIGREFs were told to be partners of the gardes faunes, however, this had not become reality (vpb 21): AVIGREFs were not even informed, respectively consulted when the gardes faunes came for the control (vpb 17 & 18). The interaction with governmental authorities was further burdened by the fact that material incentives had been promised by CENAGREF, but for most villages also never became reality (vpb 20). Vpb 18 additionally reported from a lack of support by official authorities when illegal resource exploitation was detected, and risks associated with the denunciation of wrongdoers hence not valued at all.

- **Interaction with other management actors: trust & power**

Eco gardes/ gardes faunes/ rangers/ governmental services.

Villagers tended to use "forester" as a synonym for anybody working for the park administration or in close cooperation: "*For villagers they are all the same. If you are seen in Tanguieta with CENAGREF, you have something to do with them, you are a ranger* (forester) *as well*." (vpb 26). This even included the AVIGREF union: "*CENAGREF and the AVIGREF union is more or less the same. CENAGREF established the union, they cooperate*." (vpb 23). In fact, however, at least in the Pendjari Area interview partners in all villages knew very well the differences and hierarchic levels of governmental actors: "*CENAGREF is the boss of the éco gardes. So if the éco gardes do not work correctly, it is maybe CENAGREF's fault*." (vpb 23) and "*If there is a forester among the éco gardes, they fulfil their tasks. If not, they do not. (…) Foresters are the bosses.*" (vpb 22). We therefore asked them about their relationships to all of these different actors.

Pendjari. Apart from the non-respect of the surveillance work plans, éco gardes anyway rarely came to the villages. During the two years prior to our study, the frequency of interaction even decreased (vpb 24 & 25) but was still more or less focused on common

surveillance activities (vpb 27) or the search of people on infraction. Despite the above described conflicts, AVIGREFs also understood the frustration of the éco gardes caused by ongoing conflicts with their superiors with respect to work plans and payments (vpb 26), or by lenient sentences of poachers that made them carry on with illegal activities (vpb 24). Especially in contrast to the situation in ancient times, some AVIGREFs put their criticism into perspective: "*The relation to éco gardes is different. The rangers were trained in Cotonou and sent here. The éco gardes are brothers, friends. You can visit him at his house and he will prepare some food for you and you will eat together. It is the first time like that. Before people already began to emigrate to Nigeria.*" (vpb 27). Especially if an éco garde came from their village, their judgement of the interaction seemed to be more positive (vpb 22).

Interactions with foresters as well as with other actors from the park administration were very rare. Foresters were only contacted to hand in demands for resource use in the zone of controlled exploitation. Rejections were quite frequent and often due to the non-respect of exploitation periods (Internal review ProCGRN 2008), but did not cause major conflicts or discontent on the side of AVIGREFs. Direct exchange of village AVIGREFs with high ranking park officials was during the GAs on union level and sometimes on the occasion of extraordinary meetings and trainings. The role of the park director was described as follows: "*He is the owner of the park. He is in charge for everything, the resource users and the animals. The cooperation is very good, we have no conflicts.*" (vpb 27). The relation between AVIGREF and CENAGREF in general was strongly affected by the perception of a hierarchical gap reflecting actual power differences, but also by a future vision that was promoted by some officials and the park management project. The following statements reflect the growing self-confidence in the importance of AVIGREF: "*CENAGREF is the big brother of AVIGREF and helps us. (…) AVIGREF grew up, but still is the little brother. The Union is always close to the CENAGREF.*" (vpb 26) and: "*As the donors will stop their engagement, CENAGREF will not have any more money to support all activities. CENAGREF hence is going to die. The participation of villagers therefore is urgently needed to keep AVIGREF alive. Today the AVIGREF organises all activities on village level. AVIGREF is hence going to take over the park. (…) This development has already started. (…) During a formation in Batia we were told that one day, when the local population has understood that it is important to protect the park and the poaching has stopped, we are going to be the rangers ourselves and the*

official rangers will go and leave the responsibility to us. But if it is not like that, they will stay." (vpb 25).

W Region. Our household survey showed that governmental authorities in the W region were much more associated to restrictive activities than elsewhere. This result was confirmed by the corresponding village participatory bodies and resulting conflicts have been outlined above. All AVIGREFs reported of a high level of distrust between them and governmental actors. Their aspirations and proposals for improvement were ignored and the bureaus not taken as serious partners, cooperation hence virtually absent (vpb 17, 18, 19, 20 & 21). Even worse, according to AVIGREFs, the behaviour of gardes faunes in the field did not conform to their official mandate and was marked by injustices and rude exertion of their formal and informal dominance and power vis-à-vis villagers (e.g. by convoking meetings at night or the use of violence) (vpb 19, 20). There was little to no exchange of information or animation of the associations carried out by governmental actors (vpb 16, 17); interaction was principally restricted to law enforcement (vpb 19). When asked about the difference between gardes faunes and foresters, AVIGREFs emphasized that foresters usually did not come to the field, while gardes faunes were more mobile (and thereby implied also a hierarchic difference) (vpb 19 & 20). They, however, did not see that gardes faunes were recruited among local villagers like in the Pendjari region. As they usually circulated around the park and passed a defined period of duty in a specific place, they were strangers to most interview partners and de facto regarded as foresters (vpb 17 & 21). Before the gardes faunes were introduced, the relation between rangers and villagers was also conflict–loaded (vpb 16), however, seemed to have changed in some localities since then: "*The foresters are not as draconic* (as the gardes faunes), *they are gentler*." (vpb 19), and another village evaluated the actual cooperation with rangers much better than with gardes faunes (vpb 16). Indeed control and enforcement seemed to have been reinforced with the introcduction of the gardes faunes: "*When the gardes faunes started, the villagers thought they could continue like before. But this was not true. The gardes faunes were not only interested in anti-poaching, but also controlled the fields in the BZ*." (vpb 20). AVIGREFs felt not to have the relevant power to change the situation and cooperation with gardes faunes, and also claimed to receive no support from higher hierarchical levels of governmental services. Most AVIGREFs indeed had no direct contact to the park administration or other higher hierarchy levels of CENAGREF.

Concessionaire

Pendjari. Interaction between village AVIGREFs and concessionaires were also very rare, if existent at all. The contact was managed by the union, respectively CENAGREF. Nevertheless, concessionaires did not enjoy a high standing by AVIGREFs, especially the one operating the concession along the Tanguieta-Batia axis. He inter alia was supposed to intricate against the resource exploitation demands of villagers in his zone (vpb 26).

W Region. Except of one AVIGREF (vpb 19), no bureau was in contact with private concessionaires or their staff. The AVIGREF that maintained interaction was lying in direct vicinity of one of the hunting camps and had sent one of their members to the camp during the dry (hunting) season as official informant. They evaluated their cooperation as very good, however, admitted to have major problems with private assistant rangers that were surveying the hunting zone: "*They are even worse than the gardes faunes and more violent. They kill livestock in the hunting zone, even if it is just 50 meters inside*." (vpb 19). They did not try to regulate this problem with the concessionaire directly, but instead contacted the local government and their union. So far, their approach had been without success.

NGO/ projects

Pendjari. AVIGREFs generally acknowledged the impact of project intervention during PGRN and PCGPN on the introduction of the co-management approach (vpb 24, 25, 26 & 27), and knew about the importance of financial support by international donors. Technical assistants were also well known, but during our discussions not differentiated from other CENAGREF, respectively AVIGREF union staff. Indeed, the cooperation between project staff and the park administration as well as the union was very tight. Project interventions were hence often not perceived as such, as traditionally they used to be focussed on agricultural techniques or the construction of infrastructures on site. At the time of our study, there was only one development project that focussed on organic cotton and operated block-wide.

W Region. The name "ECOPAS" was largely unknown to local AVIGREFs and formations that were organised by ECOPAS or some other project (Italian cooperation)

were attributed either to the AVIGREF unions or CENAGREF: "*We heard about the projects in the radio, but there were no agents coming to our village*." (vpb 20).

- **Participation in operational PA management**

Pendjari. Members of AVIGREFs were formally integrated in several tasks of operational PA management. They took part in the ecological monitoring programme, fire management and the maintenance of roads. They also controlled park entrances and collected entrance fees in the name of CENAGREF. Surveillance often was seen as the most important task of operational PA management. But sensitization of villagers to stop poaching and trainings on sustainable resource use were also carried out by all of our study AVIGREFs. In each AVIGREF there was an agent in charge for the participation of village members in the surveillance. They cooperated with the coordinators of the axis, who acted as cut points between villages and CENAGREF. Though the village surveillance was not working properly and while some AVIGREFs frankly admitted to have stopped since éco gardes did not stick to the work plans, others said they carried on with surveillance activities on their own (vpb 23 & 27). In the beginning salaries of AVIGREF assistants in the DPNP-surveillance were paid by CENAGREF. But their financial contribution was constantly reduced between 2000 and 2005, and so taken over stepwise by AVIGREF (Tiomoko 2010). AVIGREFs hence even financially contributed to the functionality of operational PA management.

Other important tasks were conflict management and the treating of demands for resource access in the exploitation zone, as well as the commercialisation of bush meat. They all were well aware of their impact on local development by funding infrastructure and social events.

W Region. AVIGREFs were supposed to support the gardes faunes in their primarily restricting activities and especially to control resource exploitation in the BZ. The gardes faunes announced at their beginning to take some of the members along into the park for surveillance activities, however, only one vpb confirmed that this had been realized: "*We make anti-poaching patrols once or twice a year with the gardes faunes to the interior of the park, but most often the gardes faunes go alone*." (vpb 21). Common patrols were hence extremely rare and not based on any kind of work-plan like in the Pendjari region. One vpb was advised to control the park entrance and collect entrance

fees there in the beginning, however, also did not carry out these activities as no tourists came (vpb 17).

During the initial phase of the BZ surrounding W Benin, several AVIGREFs (vpb 16, 18 & 20) were involved in the sale of tickets for agricultural and pastoral exploitation in the BZ. However, they stopped theses activities after a relatively short period of time. Only few AVIGREFs were still mediating resource access in some form or the other (see paragraph “resource access”).

Sensitization, information and advising of resource users concerning rule settings and restrictions of resource exploitation the BZ and the park were generally the most frequent activities (all vpbs). Nevertheless, despite this educational work, conflicts between resource users and governmental authorities as well as conflicts between farmers and herders were prevalent and some AVIGREFs also were active as mediators between conflicting parties (vpb 16, 17, 19 & 20). The distribution of bush meat was executed only by one bureau that lied in direct vicinity of a hunter camp (vpb 19). AVIGREFs though were virtually not integrated in operational PA management activities and their overall role in operational PA management was only of marginal importance.

- **Financial/ material participation**

Pendjari. Main sources of income for AVIGREF besides project support (which in fact represented the largest fraction and was mainly used for covering operating costs of the executive office) were a 30% share of the income generated by the DPNP via trophy hunting and fishery (called “direct payments” in the following). Own resources were the adherence and membership fees of the association and the returns of the commercialisation of bush meat. Between 2001 and 2010 approximately 245.000 Euros were paid to AVIGREF as direct payments (Tiomoko 2010), whereas own resources were much less. Concerning direct payments, distribution keys on two levels determined financial participation of different groups of stakeholders. The first key divided the money among the bureau of the AVIGREF union, the AVIGREFs on village level and the two communes (since 2005). After the subtraction of a specific amount for the functioning of the bureau of the union, 80% of the total rest was given to the village associations, and 20% were shared equally by the two communes. The second

distribution key regulated the disbursement on village level, and was essentially based on a performance indicator scheme. Though indicators actually used for the calculation of the key seemed to be adapted continuously, the AVIGREFs we interviewed were all well aware that they could maximise their income by a good performance. The keys were discussed and adopted by the GAs of all AVIGREFs. Indicators cited by AVIGREFs were: 1) the number of members (vpb 22); 2) the percentage of members that actually paid their membership fees (vpb 24, 24, 26 & 27); 3) number/ regularity of meetings (vpb 23, 24, 25 & 26); 4) participation in surveillance activities (vpb 23, 24, 25, & 26); 4) correct fund management (vpb 22, 24 & 27); 5) poaching: diminution of share if poachers come from village, increase if they help to arrest poachers; and 6) correct distribution of bush meat and respective book-keeping (vpb 27). All these indicators were evaluated by the union and their technical assistance in defined intervals, though there have been irregularities during the period of our study (due to restructuring processes of the union (CS-o5 2009)). According to an internal review report of ProCGRN, just four indicators have been used to calculate the distribution of 2006/2007: 1) number of members; 2) percentage of members that actually paid their fees; 3) execution of GA; and 4) number of monthly meetings (taking minutes). One AVIGREF hence complained as they denunciated several poachers, but were not rewarded accordingly (vpb 24). AVIGREFs also criticised that they were not informed about the total amount that was distributed (vpb 23, 25, 26 & 27), and so were left in uncertainty as to their relative performance compared to other villages: "*Once they told us how much each village earned. This is good, because if the village earned less than others, the president can tell his members and advice them to double their effort so that next time we also receive more. (…) It is good if everybody knows the figures, this allows for competition*." (vpb 25). After the GA, the Union asks them to hand in their bank-books, and when deposits were made, to collect them again. It is just upon the return of the bank-books that they know how much money they received (vpb 23 & 26). According to their own information, AVIGREFs received up to 300.000 CFA as direct payments per year, in theory up to 100.000 CFA from membership fees (vpb 25 stated to have 212 members) and up to 150.000 CFA from the commercialisation of bush meat. Modalities and criticism associated with the latter two have been discussed above.

Terms of reference for the expenditure of funds were prepared by the union. Bureaus of the village associations first decided on what to spend the money, often inspired by requests of other actors like village chiefs (vpb 25). The bureau then presented their proposals to the whole association, and the final decision was taken by all members. AVIGREFs did not need the authorisation of any external actors, however, had to bear the consequences if funds were not well managed. Like in the other regions money was mainly invested in public educational-, water- and health-infrastructures, but also in the funding of ceremonies or salaries for local teachers, village surveillance, meeting rooms for the association or religious infrastructure (churches and mosques). One AVIGREF proudly commented on its projects: "*AVIGREF is the only organisation of its kind in the village!*" (vpb 26).

They generally acknowledged that the financial participation promoted the development of their villages, but still had a lot of criticism (see above). One of the most prominent among these was the claim to provide stronger incentives for bureau members on the village level. They compared their status with the employees of the executive office "*...sitting in an air-conditioned office*" or the secretary of the axis who used a motor-bike of the union. Despite all progress, they demanded further improvement (e.g. a higher share of park revenues or new development projects). In sum: "*It is an organization of peasants, things always need to be ameliorated. For the moment it is good*." (vpb 26).

W Region. Village participatory bodies (AVIGREFs) in the W Benin region did not benefit from direct payments. In fact, most AVIGREFs had no source of income at all (vpb 16, 17, 18 & 20), or only generated very small amounts of revenue (vpb 19 & 21). The position of a treasurer, always assigned to a woman, was hence futile: "*We have a treasurer because the authorities told us that she should be appointed to this position. So we did it like that, but in fact she is a photo*[8]" (vpb 18). One AVIGREF earned some money by selling tickets for the exploitation of wood and medicinal plants in the BZ (vpb 19), another one reported of professional woodcutters that came to their BZ in order to cut trees there and sell them in the local capital (vpb 21). These revenues were less than 50.000 CFA per year. According to another source we interviewed for triangulation (CS-o4 2009), funds were disbursed in equal shares to AVIGREF zones, and then also to village AVIGREFs only in the beginning (2003-2005). These funds, however, were

[8] This metaphoric use indicates that she is not fulfilling any real function; she is just there as an official cover-up

not well managed and hardly any infrastructures were being built on the local level. So the authorities in charge decided to concentrate financial and decision making power on the union level.

AVIGREFs (respectively their villages) since then indirectly profited in the form of local infrastructures. They had to prepare demands that specified their needs and then pass them on to their union in charge. Still, several AVIGREFs were not aware that the union disposed over its own funds; they hence reported that their demands were passed on to CENAGREF who finally decided on them (vpb 16, 17 & 18). The key role of the AVIGREF unions nevertheless was understood by all of them, as their presidents were the first receptors of the demands and hence decided on their fate. Most villages made several demands during the last years (up to five), asking for boreholes, pumps, schools, health centres, etc. The bulk of these requests was never realized, however, four out of six study villages reported to have gained some kind of infrastructure (pumps or schools) or some co-funding for their realization (vpb 16, 18, 19 & 20). As CENAGREF, respectively the AVIGREF unions raised false expectations in the beginning by promising much more support but then rejected a high rate of demands in reality though, most AVIGREFs were rather frustrated. They usually did not have any further control what happened after they handed in their demands. Either they received a positive reply, or never received any kind of feedback (vpb 17). The process therefore was absolutely intransparent and resembled a lottery from their point of view: "*We asked at the General Assembly why we did not benefit. The union said they put all villages together and then only some can benefit. That year others received something. But in our point of view they must consider which villages are most in need. Until today we did not get anything*." (vpb 17). One AVIGREF considered their lack of participation in operational management activities as the reason why their demands were not taken into account (vpb 21) and hence presumed some kind of performance-based criterion. Others accused their own AVIGREF president in the village not to push enough their requests (vpb 16) or presumed the president of the AVIGREF union not to pass them on to CENAGREF (vpb 17).

The commercialisation of bush meat is by far not as widespread as in the Arly or Pendjari block. But even if the process of bush meat distribution to villages would work perfectly, the quotas of two hunting zones could not satisfy the needs of the population surrounding the whole W Benin block. In fact only two AVIGREFs (vpb 19 & 20)

reported to have received bush meat since their establishment (one of them only once), and at least one of the others did not even know that a mechanism like this (formally) existed (vpb 17). One AVIGREF lying next to a hunter's camp was in charge for the distribution of the game to all other 14 villages in their zone. During the hunting season they permanently had a member at the camp to inform them about the new killings. They then took the game to their village, cut the meat and distributed pieces to other villages using a motor bike of the union. The president of the zone decided that ¼ of the ¾ they received was directly sold at the camp and for the remaining ½ he made a program for the distribution among villages. Sometimes he also directly sold meat to other authorities. All AVIGREFs that received game sold it for 500 CFA/kg, and then had to transfer the money to the union. There was hence little incentive for those involved to carry out the job properly and consequently abuse was more than likely. Also as the overall quantity was very small, the population was not satisfied with this process and accused AVIGREF not to distribute the meat equally but to sell it only selectively to certain people. Vpb 19 hence proposed to distribute the whole carcasses, so that villagers get more meat with one delivery and can also exert better control.

AVIGREFs were not capable of activating other forms of alternative valuation and income generation. Only one (vpb 18) reported to have received a formation in the production of soap and neem oil conducted by "*people from AVIGREF Parakou*" (as there was no AVIGREF in Parakou, villagers obviously were not able to identify the respective actor; the formation was organised within the frame of the ECOPAS project to our knowledge). However, they still were not able to use this knowledge of alternative exploitation as they lacked the raw materials and so never fabricated or sold any products.

AVIGREFs hence were highly unsatisfied with their financial participation. The lack of means demonstrated their weak power and low status within villages, but also in the co-management agreements with other actors. Bureau members themselves therefore often did not identify with their formal roles. When asked about better solutions for more effective participation, vpb 17 said: "*We do not want to answer as AVIGREF, but as citizens of the village as this is more important to us. We need a health centre, a better school building and a new bridge*." (vpb 17) and: "*We know we will benefit from the park in the future like it is said in the documents. But for the moment, it is not reality. On the contrary, the population grew since the establishment of the park and the park takes all*

the land we would need for our fields and our cattle. We hope to receive more benefits and get some more land for our fields." (vpb 20).

- **Participation in PA management strategy/ decision making**

Pendjari. AVIGREFs evaluated their potential to influence the outcomes of collective choice arenas very differently: "*The AVIGREF village is not really integrated in the responsibility and decision-making. They* (union/CENAGREF) *impose the rules.*" (vpb 25) and "*We always say this is not right, but they won't take your word under consideration. They do what they want to*." (vpb 27) versus: "*Defining the rules and processes of the association is a participative process. So if some changes are made, we ask why and they explain it to us. During the GA then they make us read the projection, and we can ask questions so that everybody understands. If we refuse, the texts will not be changed.*" (vpb 24) and "*Everybody can express his opinion in the GA, everybody can say if it is good or not what the DPNP does.*" (vpb 26). Summing all the information, there rests considerable doubt that basic democratic principles were really implemented in the procedures of AVIGREF decision making. However, participation options were much better than anywhere else in the study region: village AVIGREFs were relatively well informed and self-confident, institutional frameworks guaranteed fora for exchange and officials were very open to stakeholder participation on the most basic level. Seen in context hence, the co-management approach there was a relatively highly advanced model in permanent transition. Capacity on the local level, however, sometimes did not match the pace of change and adaptation.

W Benin. In contrast in the W Region, AVIGREFs had very little opportunities to participate in higher level constitutional choice arenas. Their ties to the unions were very weak and often restricted to the reception of information and advices. Not one single AVIGREF reported of criticism voiced from their sides that positively influenced the outcomes of any action arena. We do not have much data on the activities of the union, however, based on diverse pieces of information, we estimate its role in higher level collective and constitutional choice arenas as rather weak as well. There hence was no real participation in PA management decision making.

- **Information flow**

Pendjari. With its statement: "*People discuss too much*." vpb 26 indicated that permanent discussions retarded the implementation of changes. The effectiveness of communication fora was hence questioned and the AVIGREF union was accused of intransparency in their information politics (vpb 22). AVIGREFs on village level admitted to receive trainings, e.g. concerning fund management, however, still claimed that their lack of capacity was due to a lack of formation and illiteracy which complicated the transmission of information. (vpb 27). Nevertheless, the AVIGREF network in general was quite effective in the dissemination of information, both on formal as well as on informal ways. This also was one of the key elements of social control: "*Also nowadays it is more and more difficult to hunt without anybody else in the village noticing and telling the AVIGREF members or the CENAGREF.*" (citation taken from Aboubacary 2012). Also on inter-AVIGREF level, communication in the form of public pillorying was used as a tool to enhance effectiveness: "*During the GA bad examples are discussed. Usually there is no denunciation, but there it is done (…) In certain villages they then changed the personnel*." (vpb 26). Formal direct exchange of information between village AVIGREFs, eco-gardes and concessionaires was rare, however, AVIGREFs used different indirect sources to gather information, e.g. via park guides that were formed by CENAGREF or employees of the hunting camps. Fast communication in the cases of emergency, e.g. when having identified poachers, was impaired by a lack of adequate means of communication (i.e. lack of mobile phones) (vpb 22 & 23).

W Region. AVIGREFs were not well connected to other actors and there was neither a well functioning cooperation nor information exchange network. There were hardly any regular and formal fora for exchange, and also informal exchange seemed to be limited among actors. Exchanges even dropped since the establishment of the associations. Information was mainly problem-oriented and mediated in a top-down direction. AVIGREFs on village level hence received information and advices and passed them on to resource users. Nevertheless, the general level and quality of information held by AVIGREF bureaus was low. Resource users hence also were not well informed about de jure rules and the theoretical background of the participatory approach that was officially implemented in their area.

- **Resource access**

Pendjari. Though the delimitation of the zone of controlled occupation (ZOC) in 2001 was organised in a participatory way, several villages said their objections and suggestions were not respected by the rangers at that time (vpb 26 & 27). So peasants that had their fields far in the hunting zone had to abandon them. On the other side the use of the ZOC was legalised and even enlarged the cultivable area for most villages. The land was de facto converted to village territory. In the management plan of the Pendjari in 2005 it was noted that the DPNP in cooperation with the AVIGREFs had to establish precise rules on the exploitation of this zone (DPNP/ CENEAGREF 2005). Rules that determined land access and withdrawals rights in 2009, however, rather seemed to follow traditional rules than newly introduced formal ones. For obtaining exploitation rights in the ZOC, inheritance and renting (vpb 23, 27) were important mechanisms, often mediated by traditional authorities (*chef de terre*) (vpb 26 & 27) or village chiefs (vpb 25). The roles of AVIGREFs and CENAGREF seemed to be of minor, respectively no importance for the allocation of land. For most resources of the ZOC the same rules as for the village territory were applied. For the cutting of wood in the village territory, AVIGREF, the CA and the governmental forestry office had to be contacted for receiving a permit. For exploitation of specific resources like Karité, grass, water for cattle or also the adoration of fetishes in the zone of controlled exploitation (ZEC), AVIGREF prepared a demand for the interested party and handed it in at the park administration. Most AVIGREFs said there were no major problems with this procedure (but see “conflicts”).

W Region. Besides the introduction of new actors (AVIGREFs and gardes faunes), the implementation of the buffer zone concept was one of the key characteristics of the new co-management approach that started with the ECOPAS project in 2003. Its implementation on site, however, proved difficult and provoked new internal and external conflicts (see paragraph “conflicts”). Before the BZ, there was already land scarcity in the periphery of the park and though high pressure on park boundaries. In fact herders penetrated deep into the PA and also agricultural encroachment had proceeded far in some areas. At that time, there were several villages inside park boundaries (vpb 17). Park authorities hence began to relocate these communities and then to install the buffer zone. Its materialisation differed very much with locality, but in general was rather weak and not working well. In some areas there was a physical

delimitation of the BZ including its subzones, in others though only BZ and park limits were marked by white paint on trees, and finally there were zones without any clear delimitation. Principally there were two different consequences of the approach to local communities: (1) either they gained new territory, respectively the exploitation of the previously used land was legalized through tax payments ("*With the establishment of the BZ we gained new territory. In the old village territory there was no more space for fields or pasture area. We are happy, as we now have more liberty to cultivate and look for firewood. Before, we were in trouble when we just entered the zone and collected a small branch.*" (vpb 16)), or (2) they lost land, respectively had to pay for land that has already been in use for a long time and now became part of the BZ. The latter of course was also a legalisation by the introduction of exploitation fees, however, was rather perceived as a loss of land, as concerned communities had to pay from one day to the other for land that already had been used by their grandparents (e.g. vpb 19 & 20) ("*Now we have to pay also for our ancient fields that were used before. We do not agree to these rules. They took our territory.*" (vpb 19). This criticism was mainly voiced by AVIGREFs from villages located in the southern periphery of the park. Only two villages were actively involved in the delimitation of the BZ (vpb 16 & 17), of which one reported from a conflict-loaded, but participatory process (vpb 17). With the help of the local government, they were able to convince the park authorities, that the land foreseen as buffer zone had been exploited for a long time and hence was exhausted. They succeeded and were given new land across the river that used to mark the boundary to the park. For the delimitation then, governmental services united all the user groups in the village and went with them into the field for delimitating even the subzones.

As the materialization of the buffer zone in the terrain did not work properly in most cases, the process for its operation consequently did not function well either: "*We know there is the buffer zone, and that we have our fields in there. Nevertheless, there is no zoning and it is exploited in an anarchic way*" (vpb 21). Some AVIGREFs sold tickets for agricultural and pastoral exploitation during the initial phase (5.000 CFA/ha/a for agricultural purposes and 500 CFA/head of cattle/a for livestock, respectively 250 CFA/ head/ a for small ruminants). According to AVIGREFs themselves they stopped this activity because they had to deliver all the revenues to the governmental services without receiving a share directly (though 30% of this income was foreseen to be transferred to the union). According to governmental services, however, the procedure

was changed as there was a high rate of abuse. This was also confirmed by resource users during our household survey as well as by a delegate from an AVIGREF union that accused village AVIGREFs of embezzling money. In some areas, the presidents of AVIGREF were still in charge of collectively buying the tickets for the whole village at the next rangers post, and then distribute them in the villages. But also in these cases abuse was reported: they took the money from the peasants but then declared a smaller field size when buying the tickets, and kept the rest for their own purposes. However, payment practices of resource users themselves were also marked by cheating: it seemed widespread that they also declared smaller field sizes or a smaller number of heads of cattle for their activities in the BZ when obtaining the permits. Anyway, quite a high percentage of resource users did not pay the taxes at all. An official of one of the most important AVIGREF unions on zone level estimated the percentage to be around 60% in his zone, and the presidents on village level we interviewed estimated that 5 (vpb 16) to 95% (vpb 20) did not pay in their villages. Some AVIGREFs (vpb 19 & 20) on the southern border of the park tried to sell tickets for the exploitation of wood and grass in the BZ, however, also with limited success as the majority of resource users exploited illegally and also had not to fear any consequences from AVIGREFs.

Control of the buffer zone was in most cases exerted by garde faunes, usually without even informing AVIGREFs about their activities. These sharp controls were marked by a very rigorous proceeding: local gardes faunes were often supported by their colleagues from other regions and then addressed all resource users they met in the field. As they knew that only a small percentage of them had paid, they treated everyone as a wrongdoer and arrested a large number of people and reportedly tore apart existing tickets (vpb 18, 20 & 21). This in turn, further reduced the motivation of resource users to pay as they saw the tickets to be useless (only those that feared the gardes faunes most, still paid as they hoped to reduce the risk of getting into problems (vpb 20)). Some AVIGREFs also controlled the BZ and potentially denounced non-payers to governmental services (e.g. vpb 16). In fact, however, like in other regions these events seemed rather rare (see also paragraph “conflicts”) and their “control” turned out to be the advising of resource users to respect exploitation rules.

Due to this non-functioning of the buffer zone, new approaches were being debated at the time of our study and IUCN and other stakeholders promoted new projects. The interim director of the park told us that for one year all exploitation had been suspended,

which on site was beyond reality. In fact, governmental services seemed to accept that their approach was failing: "*Last year the gardes faunes came and said the AVIGREF union would now collect the money for the BZ. But nobody came and so far there are no conflicts about it.*" (vpb 18). Though AVIGREF was supposed to play a major role in the management of the BZ, there were not enough incentives for bureau members to stick to the rules and potentially risk conflicts within their social network. In effect their role for resource access options and restrictions hence was insignificant, or even aggravated already existing conflicts. As resource competition and degradation of the natural systems were particularly high in the vicinity of the park and any kind of exploitation inside was strictly forbidden, resources of the buffer zone represented an important value.

Key findings Pendjari

Organisation & Structure	**Pendjari**
	▪ Well elaborated internal rules and bylaws; constant evaluation AVIGREF organised as association open to all local inhabitants; charged membership ▪ Union on regional level represents interests of members in constitutional and collective choice action arenas ▪ Executive office of union directly supported by development assistance ▪ Strong player on local level, cooperation with local governments regulated by contract ▪ Major constraint: financial dependence on project; organisational gap between village and union level.
	W Region
	▪ Integration of all relevant professional groups organised in layers: 86 village associations, 7 unions on zone level, 1 regional union ▪ weak ties between levels, union dominant player ▪ AVIGREFs installed without further animation ▪ No real associative life, e.g. no/rare meetings ▪ No incentives for participation: low motivation and identification
Conflicts and	**Pendjari**

conflict management	▪ On village level: collection of membership fees not working; lack of internal legitimacy through i.a. embezzlement of AVIGREF funds by bureaus, nepotism ▪ Between village associations and union: malfunctioning of processes, e.g. distribution of bush meat; union dominating village structures ▪ Between members and non-members: non-members excluded from decision –making arenas; denunciation ▪ External conflicts: lack of cooperation with éco gardes, lack of cultivable land ▪ AVIGREFs self-confidently tried to push their claims in respective arenas
	W Region
	▪ Not accepted as partner of governmental authorities in the field ▪ Union failed in distributing benefits ▪ Weak status and influence on outcomes caused disrespect by villagers ▪ Operation of BZ: not working, causing diverse conflicts between AVIGREF and villagers, respectively gardes faunes ▪ Land shortage and ethnic heterogeneity caused conflicts between farmers and herders: difficult context for vpb activity
Interaction with other PA management actors	**Pendjari**
	▪ Governmental authorities: interaction via union; “AVIGREF is small brother of CENAGREF” ▪ Inter-village: organised mainly by union ▪ Concessionaires: no interaction with village AVIGREFs ▪ Projects: impact on establishment of co-management approach acknowledged
	W Region
	▪ Governmental authorities: interaction bad, only enforcement Inter-village: weak ▪ Concessionaire: weak, no interaction ▪ Projects: weak, unknown on local level ▪ Local governments: weak ▪ Generally not well connected to other actors
Participation in operational PA management	**Pendjari**
	▪ AVIGREFs tightly integrated in surveillance of PA Indirect effect on anti-poaching activities by social control of AVIGREF members ▪ members work at park entrances, ecological monitoring, maintenance of roads, etc.
	W Region
	▪ In the beginning involved in sale of pastoral and agricultural exploitation tickets ▪ Not integrated in formal surveillance activities ▪ Conflict management farmers-herders with some success ▪ Only of marginal importance for operational PA management

Financial/ material participation	**Pendjari**
	▪ Villages mainly benefit from direct payments, commercialisation of bush meat and adherence and membership fees ▪ Project/ donor involvement important, esp. for UNION ▪ Income shared between union, villages and communes ▪ Distribution key on village level based on performance indicator scheme ▪ Fund management and total performance controlled by union
	W Region
	▪ No direct payments Funds were managed by unions ▪ Villages could hand in demands for infrastructures ▪ High rate of rejection and unfulfilled promises caused frustration ▪ Bush meat distribution only very limited ▪ No other relevant sources of income
Participation in strategic decision making processes	**Pendjari**
	▪ Institutional frameworks guaranteed fora for exchange, e.g the General Assembly ▪ Park officials were open to stakeholder participation ▪ Influence of AVIGREFs on village level was still limited ▪ Capacity to take part in respective arenas sometimes limited
	W Region
	▪ No influence of village AVIGREFs on decision-making arenas ▪ Impact of unions probably limited as well
Communication & information flow	**Pendjari**
	▪ Information flow relatively open and transparent ▪ AVIGREFs were well informed about rule settings ▪ Public pillorying as means of social control
	W Region
	▪ Village AVIGREFs act as top-down channel of information ▪ Not well integrated in information networks
Resource access: options & restrictions	**Pendjari**
	▪ AVIGREFs not involved in land allocation in buffer zone ▪ AVIGREFs mediate withdrawal rights of specific resources in PA (via CENAGREF)
	W Region
	▪ Buffer zone: 5km width, exploitation zones for farmers, herders and small scale extraction of natural resources Some villages gained new territory, others perceived lost ▪ BZ and subzones not well delimitated/ realized in the field ▪ Ticket-system not working at all: causesddiverse conflicts ▪ Controls perceived to be unjust and very strict
Motivation:	**Pendjari**

benefits of taking responsibility	▪ Incentives for ordinary members: access to bush meat at a reduced price, jobs in operational PA management ▪ participation in local decision making for a
	W Region
	▪ Motivation and identification with AVIGREF very low among members: no incentives on their level ▪ Social harassment due to potentially restrictive role

Further information in Annex Chapter 7:

- **Motivation: benefits of taking responsibility**
- **Interactions of vpbs with researchers**

Chapter 8

Output II
Assessing resource quality and quantity
and the effect of management interventions on resource status

Due to a general lack of scientific data, a mismatch in spatial and temporal scale, as well as methodological diversity of the data available, there was no sound analysis that allowed attributing the effects of recent management activities directly to resource evolution on a WAP wide scale. However, the importance of the WAP-complex as a refuge of biodiversity is eminent. Compared to its surroundings, the status of most natural resources can be estimated as satisfactory, simply due to the fact that resources outside PAs are usually heavily overused and degraded. Regeneration capacities of Accacia species and several other NTFP-providing trees (*Anogeissus leiocarpa, Adansonia digitata, Afzelia africana* and *Pterocarpus erinaceus*), e.g. were found to be lower in habitats outside of WAP-PAs than inside (Traoré 2008; Schumann et al. 2010; Schumann et al. 2011; Nacoulma et al. 2011a, b). Similarly, abundances of raptors were found to be much higher in WAP-PAs than in buffer zones and cultivated areas (Thiollay 2007), and abundance of Nymphalidae (Lepidoptera) species being used as ecological indicators were found to generally drop with human activities in the study area (Bouyer et al. 2007). Clerici et al. (2007) impressively showed that from 1984 to 2002 natural savannah habitat (and associated resources) was increasingly converted into agricultural area in PA surroundings, while conversion inside the complex was significantly less. Scientific assessment of resource status and long-term evolution hence remains rather anecdotal so far. Very few of the single PA management units implemented regular monitoring and evaluation schemes that unambiguously allowed assessing effectiveness of their interventions, or at least trends in resource evolution (caused by whatever reason). As large mammals were often seen as the primary resource of (economic) importance by park managers, monitoring efforts usually focussed on this group as “indicators for overall biodiversity”. While regular censuses were legally prescribed for classified areas of the WAP, at the time of our study we could only find more or less regular assessments for Pendjari, the hunting zone Konkombouri in BF and to some degree for W Benin (see paragraph 8.3).

Despite the scarcity of data, we implemented four different approaches to analyse the status of important ecological resources and of ecological integrity as a whole. Firstly, based on the findings of Clerici et al. (2007), we used a simplified remote sensing approach to assess human impact and land-cover change in the immediate vicinity of PA borders (inside and outside; see 8.2). Secondly, we gathered all kind of mammal census data from 1973 to 2009 in order to extrapolate spatial and temporal trends of

population dynamics and distribution of some key species (paragraph 8.3). Thirdly, in absence of robust quantitative data, we used another approach based on scoring data: we asked respondents of our hh-survey about their perception of resource evolution during the last 5-10 years (paragraph 8.4). Fourthly, as an addition, we reviewed threat status as judged by local PA experts that were involved in PA management project preparation and evaluation (see Annex Chapter 8: Threat analysis (expert interviews))

8.1 Human impact: land-cover change in and around the PAs of the WAP

Land cover around WAP changed dramatically during the last 30-40 years (see **Fig. 8.9** in Annex). While there have been reports on the encroachment of fields in some of the subcomponents, other PA units seem to have been quite effective in preventing farmers to clear land inside their borders.

Therefore, the aim of our GIS-approach was the quantification of human impact for single PA units by calculating a threat indicator based on land cover change in inner and outer buffer zones of PA units. For this analysis we were guided by the following questions:

- What was the degree of land cover change in PA buffer zones, respectively surrounding areas?
- Were there differences in the degree of human impact that threatened single PA units?
- Do effects of PA management become visible by analysing the integrity of PA buffer zones and their limits, i.e. were there effective counterstrategies that prevented agricultural encroachment of fields into PA interiors?

Methods

- **Data**

We used basic remote sensing data to calculate threat indicators for each PA. Unfortunately, at the time of analysis there was no detailed and verified land cover

classification available for the study region. We therefore decided to rely on global classification systems that were available open source. These classifications, however, implicate some risks of producing false interpretations on the local level as data validation and/or resolution remain unsatisfactory. Especially for Africa- and our study region- where agricultural areas are often mixed with natural grasslands or shrublands, it is difficult to separate these entities in a classification (Mayaux et al. 2003). Results therefore have to be interpreted with caution.

To minimise these effects as far as possible, we used two vegetation classifications: Global Land Cover 2000 (GLC 2000) and GLOBCOVER (GC). GLC 2000 was produced by a partnership of 30 research groups coordinated by the European Commission's Joint Research Center (Batholomé & Belward 2007). The resulting map was the first one depicting the world's landcover using a 1 km resolution. We chose the regional map for Africa for our analysis, which is based on observations in the years 1999/2000 by the VEGETATION sensor on the SPOT 4 satellite (JRC 2003). Like GLC, GLOBCOVER was carried out by an international consortium and initiated by the European Space Agency (ESA). However, the MERIS instrument on board of the ENVISAT satellite delivered the basic data to compute a much more detailed (300m resolution) map of the world's land cover (Bicheron et al. 2008). Basic data was collected in the years 2004-2006.

Data on PA boundaries was provided by courtesy of JRC (Jean-Marie Gregoire) and the ECOPAS project, as well as by the Ministry of Environment of Burkina Faso. Borderlines correspond to de facto management units, not to official status and classification of sites (see Chapter 4). With the help of further cartographical material provided by ECOPAS, the Pendjari Project and IUCN, the material was quality-checked and demarcations of PA boundaries were slightly modified in some parts. Borderlines e.g. were more closely adjusted to natural features like the course of the Pendjari River. Furthermore, we excluded some areas from the original PA shapes, namely the "Zone d'occupation controlee" (ZOC; buffer zone) from the Pendjari hunting zone, as well as the enclaves around Pama and Madjoari in the Arly block.

- **Data Processing**

We used GRASS open source software to construct PA buffer zones that comprised zones of 5 km and 30 km width exterior of the PA, respectively 5 km interior of each PA unit. As PAs in our case were clustered to a complex of about 20 interconnected units, we then reduced these buffer zones and cut off those parts that were covered by a neighbouring PA. We did this for external as well as for internal buffers, thereby creating an "exposed" buffer zone, as threats were considered to be mainly borne from areas outside any PA (see **Fig. 8.10** in Annex). Some PAs in the heart of the complex were well protected by neighbouring PAs, like Konkombri in Benin or Singou in Burkina Faso, whereas others like W Benin or Dosso in Niger had a high percentage of exposed buffer surface and therefore potentially ran high risk to be threatened by agricultural encroachment (see **Fig. 8.1** & **Tab. 8.4** in Annex).

- **Calculating the threat indicator**

Using a GIS-approach we overlaid land cover classifications and PA shapes including their buffer zones. For both, GLC 2000 and GC we then calculated the areas in each buffer zone that have been subjected to severe anthropogenic alteration as percentage of the exposed buffer total. For GLC the respective classes were: croplands (>50%), croplands with open woody vegetation and irrigated croplands. In the case of GC we clustered the classes rainfed croplands, mosaic cropland/vegetation and mosaic vegetation/ cropland to the high impact category.

Due to the above mentioned fact of very different exposed buffer sizes, percentage of highly degraded land itself is not sufficient to express the degree of threat on single PA units. As some form of standardization we therefore multiplied the percentage of degraded land and the ratio of exposed buffer size and total buffer size. The resulting threat indicator can be used to assess and compare threats caused by land cover change among PAs.

Comparing the maps of GC and GLC (**Fig. 8.11 a&b** in Annex), one can easily see some major differences, especially in the north of the WAP complex. Due to our own field experience, we found hard to explain classifications of some areas in both maps. We also estimated them not to be caused by the time difference of both classification systems (ca. 5 years). To level pros and cons of both maps to a certain degree, we

hence used the mean of highly impacted area in the buffer zones of both analyses to calculate the final threat indicator.

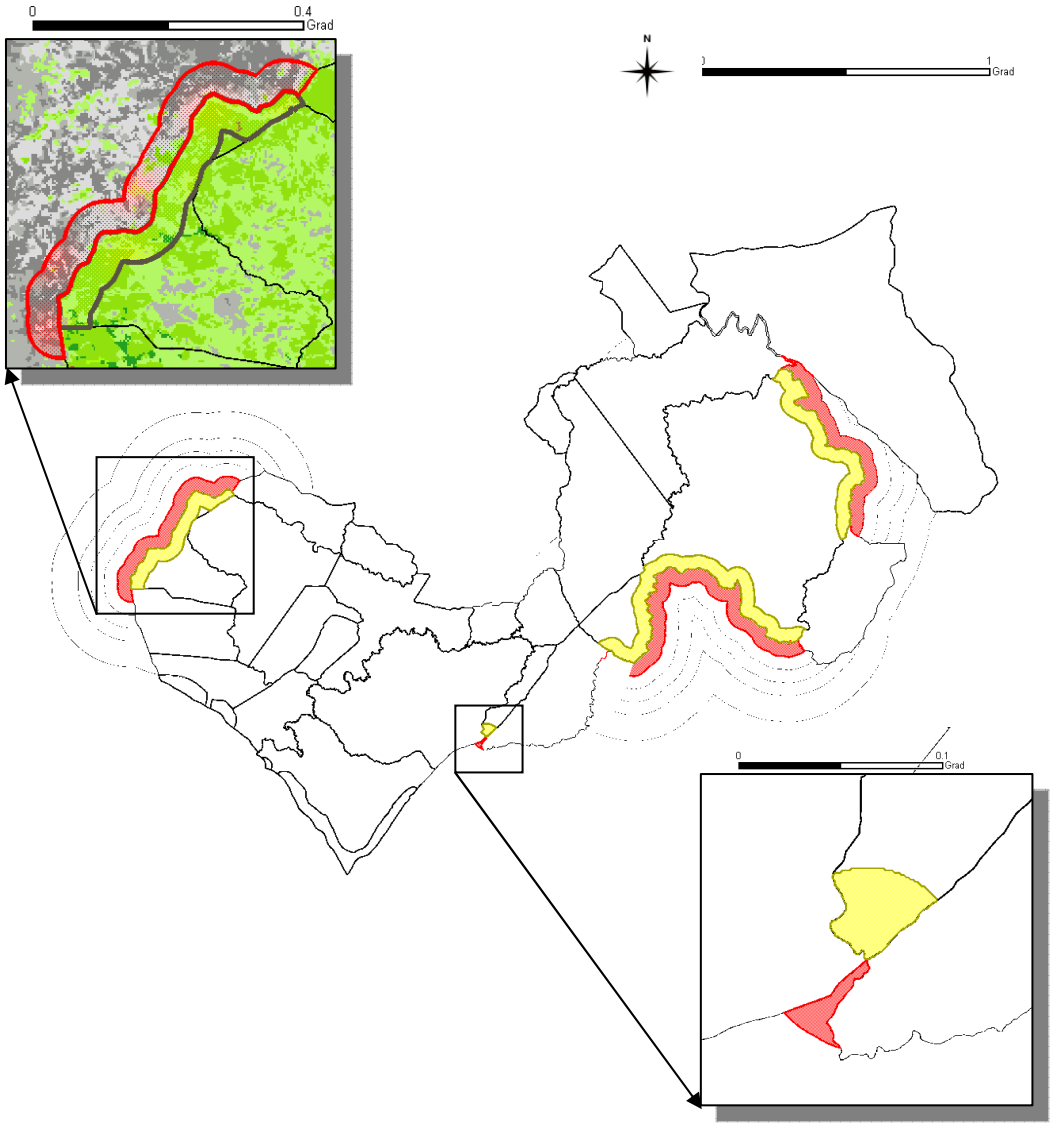


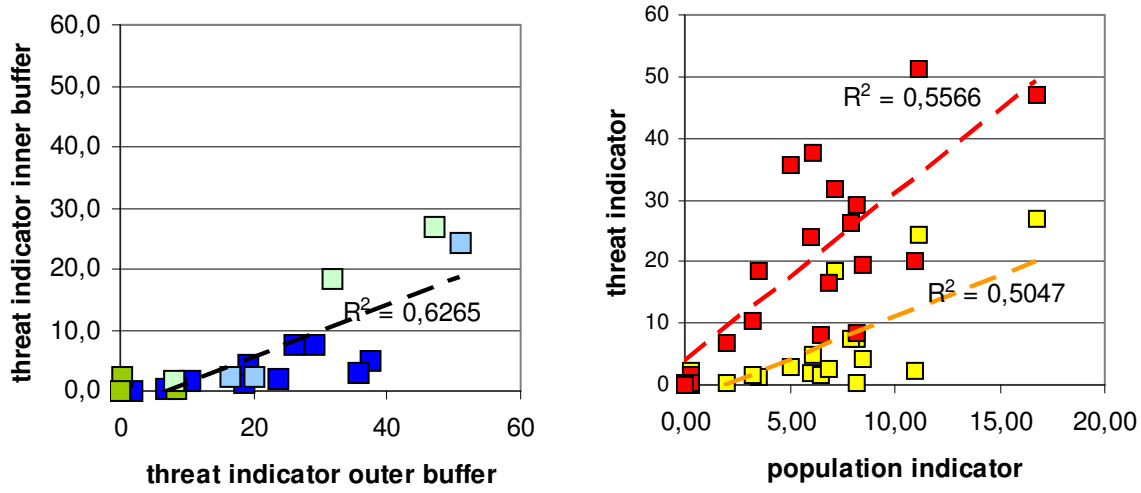
Fig 8.1.: Map of the WAP complex with exemplary buffer zones (for Pama Nord, Konkombri and W Benin). Red zones indicate the 5km exposed outer buffer, yellow zones the 5km exposed inner buffer. For W Benin and Pama Nord, the 10km, 15km, 20km and 30 km outer buffers are indicated by thin lines. Enlargement on left upper corner shows the highly degraded outer 5 km buffer (GC classification) and intact inner 5km buffer of the Pama Nord concession. Enlargement on lower right side shows the very small inner and outer 5 km buffer of Konkombri: the concession is well protected by neighbouring PAs.

Results

- **Land cover classification**

In both classification maps, GLC and GC, the shape of the WAP complex stood out against the surrounding matrix (see **Fig. 8.11** in Annex). Especially in the north, but also in the east and south east there were huge impacted areas directly bordering the complex. Both classifications indicated a high degree of land conversion also in the interior parts of the most northern PAs, namely Tamou and Dosso in Niger, as well as the two W parks in Niger and Benin. The GC classification, however, showed less degradation than GLC and generally seemed to be more accurate (judgement due to own field experience). Nevertheless there were also some areas in the GC classification that were not classified correctly. Inside Pendjari NP, e.g. we could not find such a large area of mixed cropland and natural vegetation during our field visits, as indicated by the map. For those regions that lately had been named “enclaves” on cartographical material produced by ECOPAS (Madjoari, Pama), both maps showed a high degree of impact. Though being officially part of the PA demarcations, their status de facto did not correspond to their formal status. We therefore treated them as areas external of respective PAs. For checking the differences of both classifications (and though also reliability of our results) we correlated the percentage of degraded land given by GC and the percentage given by GLC (**Fig. 8.12** in Annex). For the 5 km outer buffer there was high congruence of results (R^2=0,79; p<0,00), whereas results for the 5km interior buffer diverged to a higher degree (R^2=0,52; p<0,00).

The coarse pattern of degradation coincided with human population density in the 5 km outer buffer (see Chapter 4). We tested this hypothesis by correlating human population density and degradation in the 5km buffers. Indeed we found significant correlations for the outer (R^2=0,56; p<0,00) as well as for the inner buffer (R^2=0,50; p<0,00). There was also a significant correlation between degradation in the outer and the inner buffer (R2=0,63; p<0,00), however, with some important exceptions, i.e. areas that did not fit perfectly well to the line. These will be discussed in the following paragraphs (**Fig. 8.2**).



A correlation inner and outer buffer

B correlation threat indicator and population indicator

Fig. 8.2: A (left): correlation of threat indicator for the outer and inner buffers R^2=0,63. Color gives PA block affiliation of single PA units: light green= W Benin, green= Pendjari, light blue= W Burkina Faso, dark blue= Arly Burkina Faso; B (right): correlation of threat indicator and population indicator; yellow= inner buffer, R2= 0,5, red= outer buffer, R= 0,56)

- **Agricultural exploitation pressure in PA buffer zones**

The mean percentage of highly degraded land in the 5km inner buffer zone varied from 0.8% (Konkombouri and Pendjari Hunting Zone) to 90.4% in Tamou Total reserve in Niger. Significant differences between the results of GC and GLC were found for Tapoa Djerma in Burkina Faso, Pendjari NP in Benin and W in Niger (outliers in correlation **Fig. 8.12b in Annex**). Results for these PA units hence have to be treated with caution. Resulting threat indicators for PAs in Burkina Faso and the Pendjari region were comparatively low (exception Tapoa Djerma), with quite high values for Park W Benin and its adjoining Djona hunting concession. Tamou and Dosso in Niger, however, showed alarming threat indicators of agricultural encroachment into the PA.

As expected, in most cases threat indicators for the 5km outer buffer zone showed much higher values than for the inner buffer zones. Pendjari NP (generally very low values, see remark above) and Tamou and Dosso (generally very high values) were exceptions here. De facto, for the latter there did not seem to be a difference in land degradation between the two buffer zones. The mean percentage of degraded land in

the outer buffers ranged from 3,0% for Pendjari NP to 98,6% for the Pama Nord hunting concession. Except for the Pendjari Region and two PAs in the Arly block (Pama Sud and Konkombouri) mean values indicated more than 50% of degraded land in these buffers in all cases. Variation between GC and GLC were highest in the Arly Block. Resulting threat indicators ranged from 0.1 (Konkombri; very small outer buffer) and rather low impact) to 66 for Dosso in Niger (large exposed buffer and high percentage of land degradation) (see **Tab. 8.5** in Annex.)

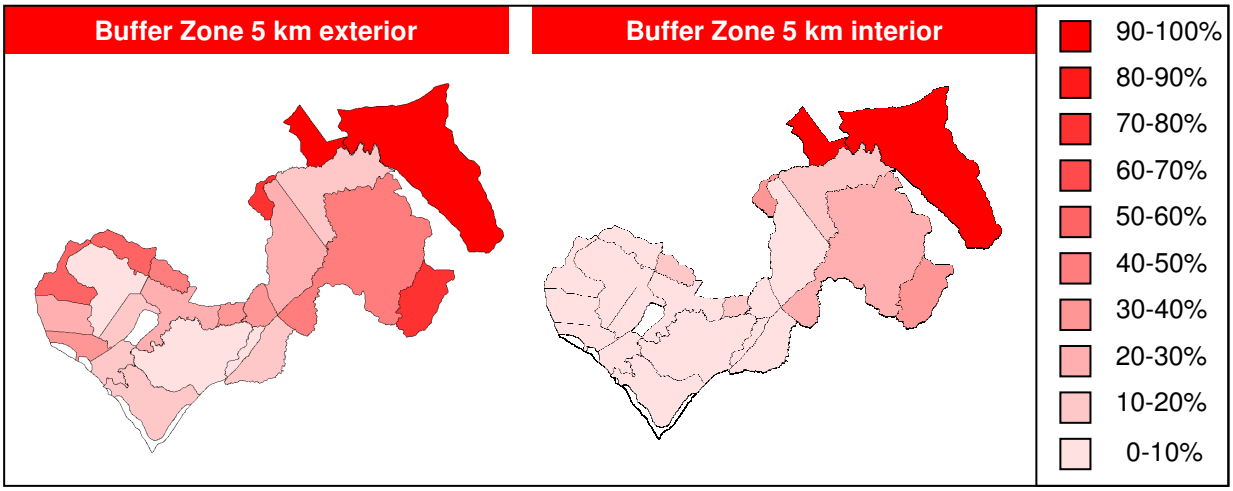


Fig 8.3: Indicator of agricultural pressure within a buffer zone of 5 km exterior (left) and 5 km interior (right) to park borders. The indicator is based on land cover data of GLC 2000 and GC 2005. Values for individual PA units are standardized relative to maximum value. Colour scale gives relative degree of threat (dark red= highest threat, light red= lowest threat). For details see text.

Results are depicted in **Fig. 8.3**. The map shows the relative degree of threat to each single PA (relative to highest threat indicator of all PAs). We chose categories of 10% to level out minor differences that might be due to inaccurate land cover classification. Regarding the 5 km exterior buffer, Tamou hence represented the maximum (threat indicator 66), for the interior negative frontrunner was Dosso with a threat indicator of 73. It became apparent that besides these two areas, especially the outer limits of the Arly block were threatened by high human impact in their immediate surroundings, as well as Tapoa Djerma (Block W Burkina Faso) and W Benin and the adjoining Djona hunting concession. For the inner buffer critical values so far were reached also in the North of Niger (exception W Niger) and areas close by in Benin and Burkina Faso.

Future threat situations are likely to be occurring in areas where land resources are largely depleted, not only in immediate surroundings, but as well in the farther periphery. We therefore also assessed threat indicators in a 30 km external buffer. Results were similar to the analysis of the 5 km external buffer (see **Tab. 8.5**. in Annex). Threat indicators increased the most for those PAs that did not have large 5km external buffers (e.g. Singou and Konkombri) and for those which were situated less than 30 km from the next town (e.g. W Burkina is not far from the provincial capital Diapaga).

To further elaborate the effects of PA boundary management, we analysed the differences between the 5km threat indicators inside and outside each single PA. We did this by assigning ranks to each PA according to its threat indicator for inner and outer buffers. We then subtracted the interior rank from the exterior rank. The more negative the result hence, the higher is the relative difference in land cover between outside (high conversion) compared to inside (low conversion). **Fig. 8.4** shows the results graphically. Darker coloured PAs show a more pronounced difference between their inner and outer buffers. These strong contrasts therefore indicate some form of boundary management that effectively prevents land conversion inside the PA.

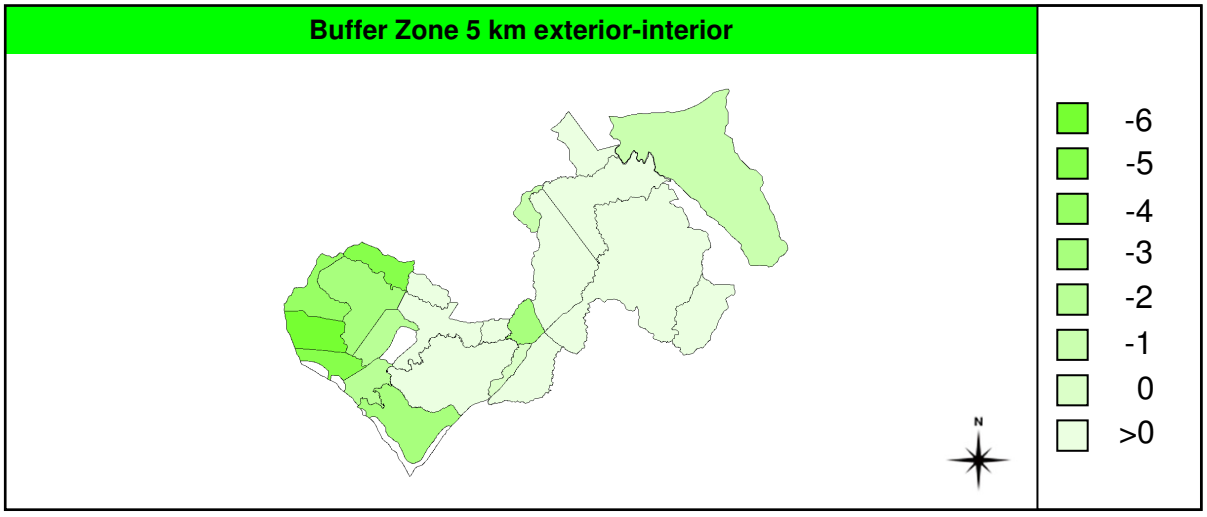


Fig. 8.4: Rank difference calculated on agricultural pressure indices exterior and interior of the park boundaries. PA rank of the interior index was subtracted from the exterior index. Though the more negative the result, the higher is the difference in land cover between the outside (high conversion) as compared to the inside (low conversion). The map therefore indicates where a functional park boundary has been established that withstands even high agricultural exploitation pressure.

Discussion

As results largely correspond to those of our expert interviews regarding the actual threat status at the time of our study, we judged overall quality of data as satisfactory.
Our analysis revealed that there were major differences between PA subunits with regard to land cover change in PA periphery and the prevention of agricultural encroachment into PAs. Driving factor for high threat indicators in the periphery were high human population densities. However, some areas managed to effectively defend PA boundaries against encroachment despite high agricultural pressures in their immediate vicinities. It showed that especially in Burkina Faso for both, the Arly as well as the W block, areas that had been privately managed as hunting reserves at least during the last 10 years were more successful than the other parts in protecting PA borders (i.e. in contrast to the governmentally managed W National Park as well as Arly which was managed as a private tourism concession). Enforcement of restricting rules in these areas was backed by financial and political power of concessionaires and hence probably more strict (and effective) than in government-led areas. In some areas concessionaires directly supported e.g. governmental rangers by providing means of transportation, or deployed own human resources to counteract illegal activities. Even though these approaches showed to be effective in conserving intact PA boundaries, they came along with significant social costs (see Chapters 5, 6 and 7).
In Benin the Pendjari Block proved to be more resistant against encroachment than the W Block. Besides ongoing park management projects funded by external donors that i.a. integrated the local population, this was a result of its natural location (being protected by neighbouring PAs and the Attacora mountain range) and relatively low human population densities in its surroundings. W Benin in contrast had to deal with a large exterior buffer that had been intensively used. Encroachment consequently was a common phenomenon.
These results can have implication for future large scale programmes that aim at conserving WAP as a transfrontier conservation area. Key PAs so far facing rather low threat indicators (like Pendjari NP and Singou Total Reserve) should continously be supported with sufficient means for control and enforcement. As they are surrounded by other PAs for the most part, conflicts with neighbouring communities are not to be expected to escalate. Instead, these areas can serve as nuclei for ecological integrity of

the whole complex by harbouring source populations. PAs of the complex that face severe exploitation pressure in their immediate vicinity, but managed to keep intact PA borders (like those of the Arly Block and the Pendjari hunting zone) face somewhat different challenges. Here functioning mechanisms of strict enforcement seem to be well established, however, projects should focus as well on community outreach projects aiming at more effective agricultural land use and conflict mitigation. Any projects intervening in those areas that face severe pressure and that were unable to protect their boundaries adequately (like those in Niger, W Benin or Djona) face a dual challenge of reconciling the establishment of strict enforcement of potentially new rule settings (redefining e.g. new PA boundaries) with complex and tedious participative development activities in their peripheries.

8.2 Population dynamics of large mammals in the WAP

Main reason for the establishment of PAs belonging to WAP was the preservation of large mammal populations, at first to serve hunting interests of authorities, then also for attracting tourists and hunter tourists. Indeed, WAP today is the largest contiguous area of protected savannah in West Africa, still harbouring relatively high population numbers of charismatic mega-fauna. It represents e.g. the largest savannah elephant range in West Africa, both in terms of extent and elephant numbers (Bouché et al. 2004), or represents one of the last refuges for several big mammal species in the region, e.g. African wild dog (*Lycaon pictus*) or cheetah (*Jubatus actinonynx*). Park administrations hence treated mammal populations as single most important natural asset of their areas. Though biodiversity concerns lead to a broadened perspective in recent years (i.a. stimulated by a good number of scientific research taking place in the area), management activities were still largely focussed on the thriving of mammal populations. Some of the areas managed to run mammal assessments on a regular basis, however, most (respectively all) of these activities were highly dependant on external project funding, and therefore stopped when projects were terminated. At the time of our study, there was no current data available for several areas, and it seemed that hunting quotas were rather determined by educated guesses and political interests than by scientific analysis of population dynamics.

Despite this general lack of reliable data, we were interested in the following questions:

- Have the PAs of the WAP complex been effective in protecting large mammal populations?
- Where were areas of key importance for large mammal populations within the complex?
- Could spatial and temporal trends in population dynamics of selected species be analysed?
- Could effects of the governance system on mammal distribution/ trends be identified?

Methods

Altogether we could get access to 38 documents of either terrestrial or air counts that have been conducted between 1973 and 2008 in the area (see Fig. **8.13** in Annex). These documents were gathered from different sorts of libraries, private collections and the internet. However, spatial and temporal coverage of these censuses varied tremendously, with most of the documents originating from the period 2000-2005 (time of high project activity). Furthermore surveys differed in number of species that had been integrated, and – most of all – in methodological approaches for data acquisition and treatment (terrestrial/ air counts; total counts/ strip-transects/ distance-sampling; etc.). Measures of variance often were either not calculated at all or, if specified, so high that overall quality of results seemed to be questionable. Though, according to own review and comments received by key informants that participated in the monitoring activities, reliability of most of the data is estimated to be rather poor and sample size too limited to extrapolate sound time series of population trends.

Aerial surveys seemed better planned and implemented in most cases, and delivered more consistent results than ground surveys. In order to analyse at least rough trends, we therefore chose some of these key documents, originating from three different time periods: 1980-85, 1990-95 and 2000-2005. For the first period we used two different assessments (Bousquet & Szaniawski 1981; Bousquet 1982 in Lungren & Douamba

2002). However, data for the year 1982 were not PA specific, but calculated as means (Arly Block). For the period from 1990-95 there was no data from aerial surveys available for the Pendjari Biosphere and the three W National Parks; for Arly we relied on extrapolated data retrieved from Lungren & Douamba (2002). If several surveys were available per period (and specific area), we took mean values of animal densities (maximum n=2). For the last period, we extracted data from one single assessment, as it covered the whole complex in a total count (Bouche et al. 2003).

Finally, we restricted the analysis on three species that can easily be counted from the air (Bouché & Lungren 2004): 1) elephants as highly mobile species with high ecosystem-engineering capabilities; they were not (legally) hunted during the period of the study; 2) buffalos, a highly mobile species as well, being the most abundant ungulate in WAP (Bouché et al. 2004) and being of key importance for trophy hunting business; like elephants buffaloes are highly dependant on (daily) water sources; and finally 3) roan antelope, the biggest antelope species in West Africa, less mobile than the other two species.

Besides analysing temporal trends, we used the two surveys that covered (almost) the whole complex and were conducted within short periods of time (FAO 1981; PAUCOF-MIKE 2003) to evaluate and underline the relative spatial distribution of individuals (elephants/buffaloes/ roan antelopes) within the complex and compare the importance of specific sub-components as refuges for the three species.

Analysis of the mammal census documents has been done in a BSc Thesis (Béatrice Portail) within the framework of our study.

Results

In general, there were declines in population sizes of most large mammal species occurring in the area, including elephants and buffaloes. While 5300 elephants and 19110 buffaloes had been counted in 1981 in the whole complex, numbers dropped to 4152 individuals for elephants (-21%) and 8872 individuals for buffaloes (-54%) in 2003. Rough time series for the three focus species are shown in **Fig. 8.5**.

According to this data, there were sharp declines in population sizes of buffaloes and roan antelopes in most areas between 1980/85 and 1990/95, and subsequent growth in

several areas between 1990/95 and 2000/05, e.g. in Pama and Singou. However, in particular for buffaloes, population sizes did not reach former levels by far. An exception here was Pendjari Biosphere Reserve that was able to preserve approximately the same number of buffaloes (unfortunately there was no census for 1990/95). Relatively, PA units of the Arly block suffered most severe declines of buffalo densities between 1980/85 to 2000/05.

Roan Antelope populations in Pendjari and in the three W National Parks remained relatively stable over the whole period (20 years), with slight tendencies of an even growing population in W Burkina Faso. Generally, densities in these PAs nevertheless remained much below those encountered in other units of the complex. PAs of the Arly Block (hunting concessions) provided a mixed picture, also with some areas reaching higher levels of roan antelope densities in 2000/05 (Pama and Singou) and some reaching lower levels than 1980/85 (Arly and Koakrana). Most important source populations for roan antelope seemed to be located within the Arly block as it sustained relatively high densities during the whole period.

Elephant densities also showed very different tendencies, and are likely to reflect time- and context-bound migration movements. In Arly densities continuously rose since 1980 and showed even higher densities in 2000/05 than in any other area, while densities in neighbouring Koakrana evolved exactly the opposite way. Pama and Singou, again, showed declines between 1980/85 and 1990/95 and subsequent recovery without reaching former density levels. While in Benin Pendjari NP could keep its elephant density, populations in Pendjari hunting zone and Park W Benin experienced severe declines.

Focussing on the relative distribution of WAP total population numbers to single PA units clearly shows that those areas that hosted relatively high population numbers in 1981 still attracted relatively high population numbers in 2003 (**Fig. 8.6**). Especially W Burkina Faso and Pendjari NP gained in relative importance as refuges within the complex, whereas Pama and Singou lost in relative importance (exception Pama for buffaloes) but still demonstrated their potential for keeping high population numbers. Elephants, the most mobile of the three species, showed a more even distribution in 2003, which might be a result of emigration from an invigorated source population in the Pendjari into a sink population in the Arly area. Generally, for all three species, PAs of the Arly block played a significant role in Burkina Faso, while in Benin only Pendjari NP harbours a significant percentage of WAP total population numbers.

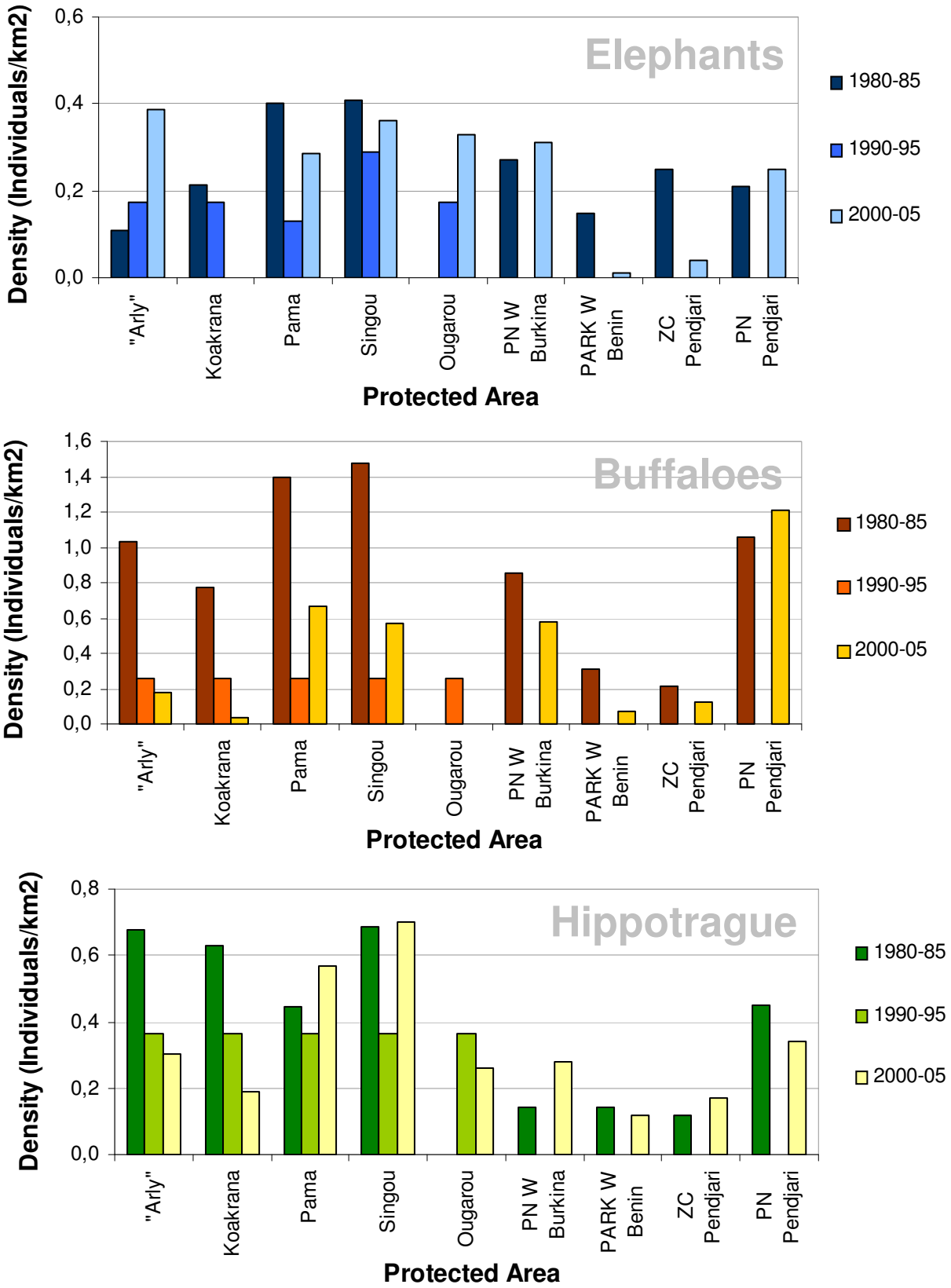


Fig. 8.5: Population trends of some selected species from 1980/85 to 2000/05. If there was more than one sample in any given period, the mean density is displayed.

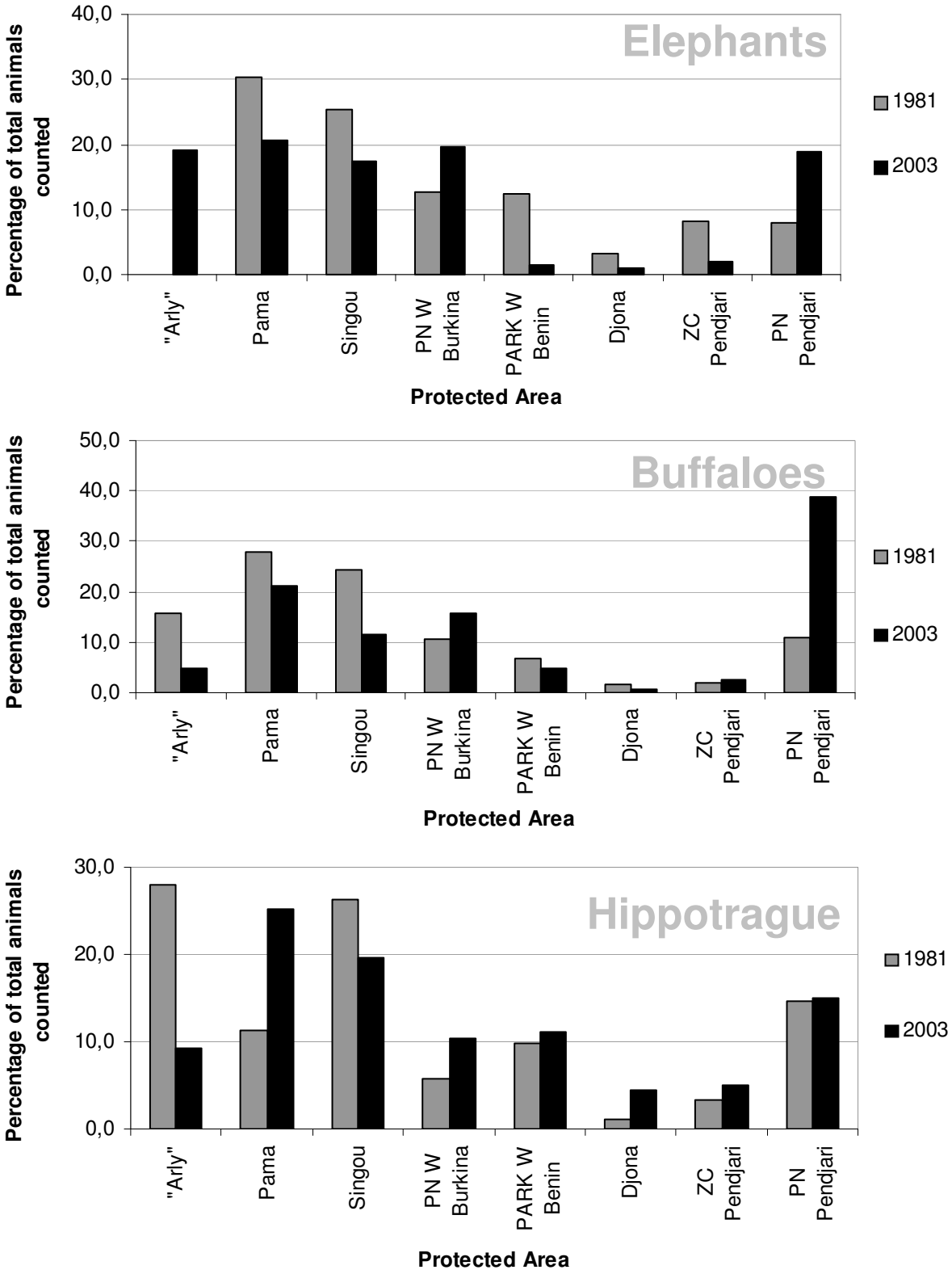


Fig. 8.6: Relative distribution of WAP total population numbers among single PA units.

Discussion

Despite all above mentioned caveats, analysis of general trends of mammal population dynamics in the WAP delivered two major results: 1) after strong population declines between 1980/85 and 1990/95, numbers of elephants, buffaloes and roan antelopes recovered to a certain degree between 1990/95 and 2000/05. 2) Some areas harboured higher population densities (during the dry season) than others and hence were likely to play a key role for conservation management by acting as refuges and harbouring source populations. These areas were Pama, Singou and W in Burkina Faso, as well as Pendjari NP in Benin. The respective areas are large in extent and therefore relatively undisturbed, though partially facing heavy agricultural pressure from the exterior.

Densities, respectively wildlife biomass, was much less than might have been expected when compared to similar biomes or historic records (Larsen 1976 in Sinsin et al. 2002), and ranged below carrying capacity of the habitat (Sinsin et al. 2002, Lungren & Douamba 2002). Direct and indirect human impacts are likely to be major driving factors for declining mammal populations, with direct overuse (poaching) playing a key role in the past (Poche 1973; Sayer 1981) and today alike (Sinsin et al. 2002). Commercial poaching for ivory, meat and other animal products -in combination with other factors- became a serious threat since the 1950ies (Hibert 2010). Consequently, trophic cascades and ecological interactions began altering the ecological system, with several mammal species being pushed to the brink of local extinction. This process led to the virtual elimination of some species from certain subareas as early as the 1960ies, e.g. concerning the African Wild Dog in W Niger (Poche 1973). After a period of heavy poaching between 1980 and 1990, pressure decreased in the following years (Bouché et al. 2002). While commercial hunting was stopped in the 1980ies, structural reforms of the forestry and wildlife sector in the 1990ies apparently had net positive effects on wildlife populations: contracting large areas to private concessionaires as well as the implementation of internationally funded park projects helped to reinforce surveillance and minimise illegal activities, especially in the Arly- and Pendjari-Blocks (Mauvais, personal commitment; Bouché et al. 2002). Elephant populations additionally benefitted from the international ban on trade with ivory (The elephant was listed as CITES Annex I species in 1989), as well as the immigration from neighbouring PAs in Togo due to political unrest there (Bouché et al. 2002). On a micro-scale, poaching activities can also lead to behavioural adaptation and migration, as described by Grettenberger

(1984) for elephant movements within the W Block. Illegal agricultural activities, i.e. field and cattle encroachment into PA territory, can influence mammal abundance and distribution on several scales as well. Indeed, illegal settlements within WAP were widespread during the 1990ies and privatization led to relocation and forced expulsion of quite high numbers of villages in many areas of WAP (e.g. Bouché 2007). Farming activities (within PAs or at their margins) provoke human-animal conflicts, e.g. by attracting elephants to these areas that consequently feed on crops and devastate fields. However, there were no well-functioning compensation mechanisms for such damages and especially human-elephant conflicts remained widespread, e.g. in the areas surrounding the Partial Reserve Pama (including the Enclave of Madjoari where ca. 10.000 people live inside the Arly Block)) (Nakandé et al. 2007). Cattle encroachment also proved to have severe consequences on mammal populations. Hibert et al. (2010) revealed functional substitution of wild grazing species by domestic cattle illegally foraging in the Park W. They showed that spatial distribution of most grazing antelope species (i.a. buffalo) was characterized by spatial separation from cattle, whereas distribution of mixed feeders (i.a. roan antelope) and browsers was not influenced by cattle presence (though roan antelopes preferred localities with few other herbivores in other parts of Africa (Tyowua et al. 2013)). Also elephants avoided areas occupied by or in close proximity to cattle (Hilbert et al. 2010). Like buffaloes, elephants roam freely within the complex and their numbers strongly vary with time and conditions, foremost the availability of open water sources (Bouché et al. 2007). During dry seasons, when surveys were conducted, they used to concentrate along rivers that maintain open water bodies longer than waterholes do (Bouché et al. 2004). Taken into account the high numbers of cattle that were found in the Parks (Bouché et al. 2004), such disturbances hence were likely e.g. to influence migration routes of elephants, especially when encroachment is taking place along river systems (Ipavec et al. 2007). Another impact that probably can be attributed to the interaction of livestock and game was the outbreak of Rinderpest at the beginning of the 1980ies in the WAP area (Grettenberger 1984) with an estimated reduction of 50-60% of buffalo population size in the region. Rinderpest had long-term impacts on the distribution and abundance of wildlife throughout Africa (Newmark 2008) and obviously caused a large part of the rapid declines documented in Fig. 8.9.

Anthropogenic pressure, though, is nowadays impacting the ecological system in many direct and indirect ways. In a semi-arid environment, the availability of water and high quality nutrition (perennial grasses; Cornelis 2011) during the dry season (Chardonnet 2000 for elephants; Cornélis et al. 2011 for buffaloes within W) is a limiting factor and naturally determining mammal distribution and ecological behaviour. These scarce resources are vulnerable to the effects of climate change that increase variability and extent of rainfall (see Chapter 4). Our analysis of open water bodies (Chapter 4.3) suggested that Pendjari, parts of W Niger and Arly were particular suitable as habitat for mammals that need to drink daily. Actual population densities during the dry season, however, showed a different picture (e.g. Singou and Pama as suitable habitat). This is likely to mirror methodological shortcomings of the remote sensing approach used for the detection of water bodies. With a minimum of ca. 1 km^2 surface, many smaller water bodies were likely not be detected at all. These, however, include a large part of the small water bodies that endure in drying river beds or the water bodies artificially constructed by concessionaries or park projects.

Consequently, for the sustainable management of large mammal populations within WAP, several important issues have to be addressed. Core areas that provide suitable habitat for a large number of species and act as sources for the whole complex should be given priority (Pendjari, Arly, Pama/Singou, W Burkina Faso). In a context of rather week and under-funded governmental park authorities, privatization proved to be effective in diminishing poaching and protecting large mammals. However, regular assessments of population sizes, structures and dynamics should ensure sustainable implementation of quotas, including their strict control. As well, illegal encroachment has to be minimised in order to avoid effects of functional substitution/ competition with domestic livestock. Additionally, already established transhumance corridors have to be implemented more effectively. Vital resources, foremost perennial water bodies have to be protected (e.g. against siltation caused by large numbers of livestock visiting these sites), respectively should be constructed artificially in some areas. Natural (seasonal) migration routes within WAP and between WAP and surrounding PAs (e.g. Kéran in Togo) call for more intensive transfrontier conservation management that i.a. guarantees genetic variance. Finally, in order to mitigate the effects of human-animal conflicts and increase local acceptance, compensation schemes have to be established. These should be initialized in areas with relatively high levels of participation (Pendjari) and spread from there to other areas.

8.3 Resource Evolution as perceived by local resource users

With growing human population numbers in the vicinity of WAP during the last 30 years, demand for natural resources increased. As shown, impacts on land cover as well as on mammal populations reached alarming levels, and competition as well as tensions among those that rely most on the exploitation of natural resources aggravated (e.g. conflicts among different user groups: farmers/ herders). We therefore included questions related to the individual perception of resource evolution in our household survey in order to capture a basic –though subjective- assessment of actual resource status.

Methods

For a general methodological description of our hh-survey see Chapter 4. Resource users were asked two questions relating to several natural resources that were supposed to play a major role in their daily lives. The first question ("Did you notice any change in resource availability during the last five to ten years?") was a closed one offering four alternative answers ("no comment/ I do not know", "increased", "stagnated" and "decreased"). The second question ("What are the reasons for decrease/ increase?") was formulated in an open way in order to avoid biased responses. The high diversity of answers was attributed afterwards to several categories. If the answer to the first question was "declining", then the subsequent categories explaining the causes were: "overpopulation/ overexploitation", "restricted access/ due to park", "natural variance/ reasons", "lack of protection/ effective management" or "declining demand". If the answer was "increasing", respective categories then were: "better/ legal access", "effective protection/ management" and "declining demand". As multiple answers were possible, we relativized answers per category to the total of answers (items) given.

Results

Cultivable land and pasture were the resources most often perceived to decrease throughout all blocks, with the highest percentage of negative answers in W Benin. As main reasons for the scarcity of these resources, interviewees identified overexploitation/ overpopulation (for cultivable land most often cited in all four blocks; for pasture in all blocks except Pendjari) and restricted access or limitations due to the park in general (for pasture most often cited in Pendjari). For bush meat, there was no consistent picture. While in Benin people generally felt the resource to decrease, very few respondents in Burkina Faso gave clear answers, and a relatively high proportion did not comment at all. We therefore refrained from asking further (reasons), as exploitation of bush meat was usually practised illegally and therefore clandestine (bush meat from big mammals was always originating from the PA; hunters in general needed a license). Indeed, illegal exploitation of most resources was widespread, however, if it was practiced in a non-commercial way and in the “village territory” there was usually little risk associated to it. In some areas fees had to be paid to the local rangers, e.g. for the exploitation of wood or grass. For wood and for fish, again, there was a relatively high percentage of respondents in both blocks in Burkina Faso that either gave no comment or felt neither increase nor decrease of these resources, while in Benin the majority said these resources had decreased as well. Overpopulation and overexploitation were identified by 55% (Arly) to 73% (Pendjari) as the driving factors.

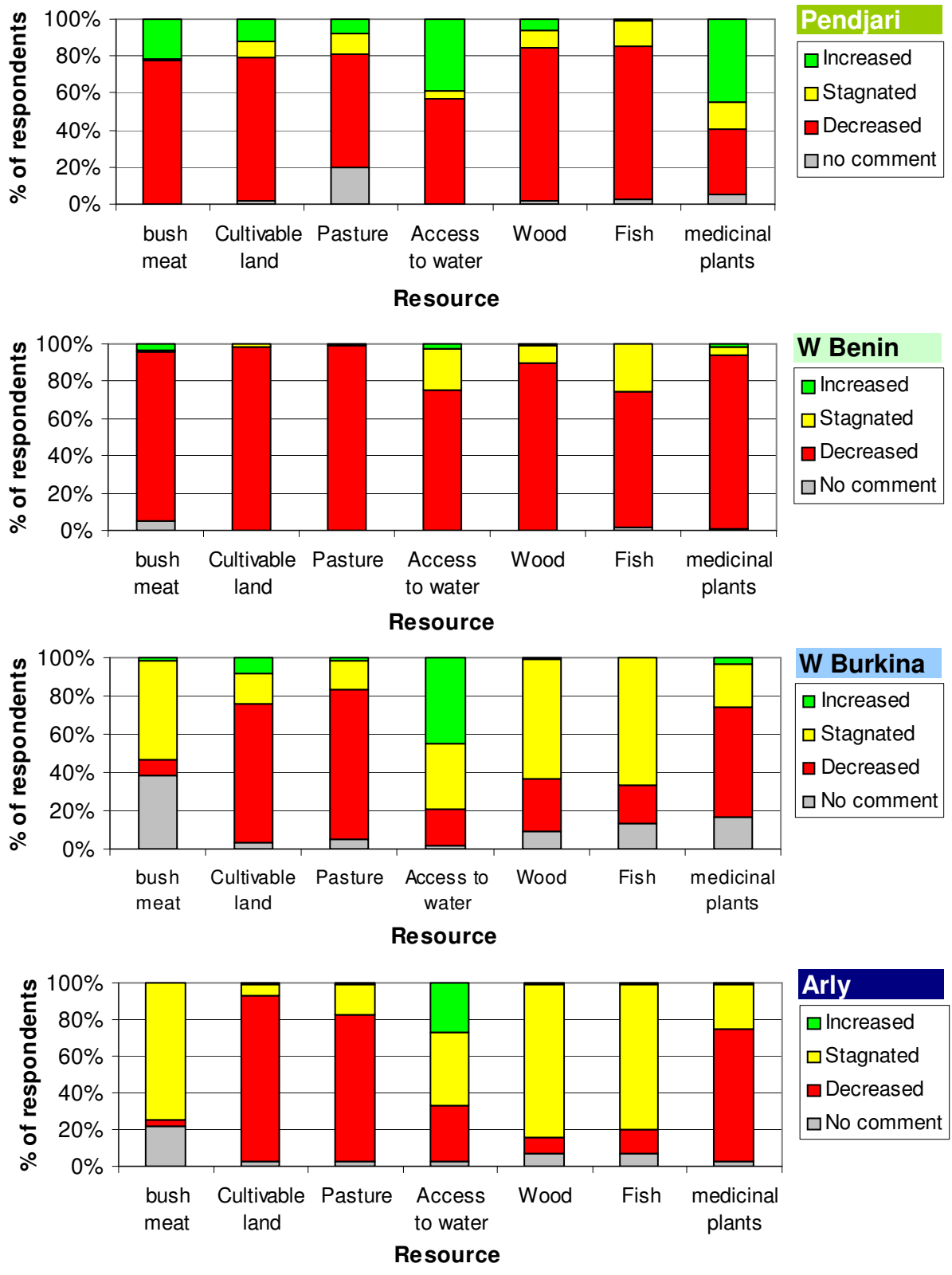


Fig. 8.7: Evolution of resources as perceived by local resource users in the Pendjari Region (n= 102), W Region of Benin (n= 143), W Region of Burkina Faso (n= 100) and Arly Region of Burkina Faso (n= 204)

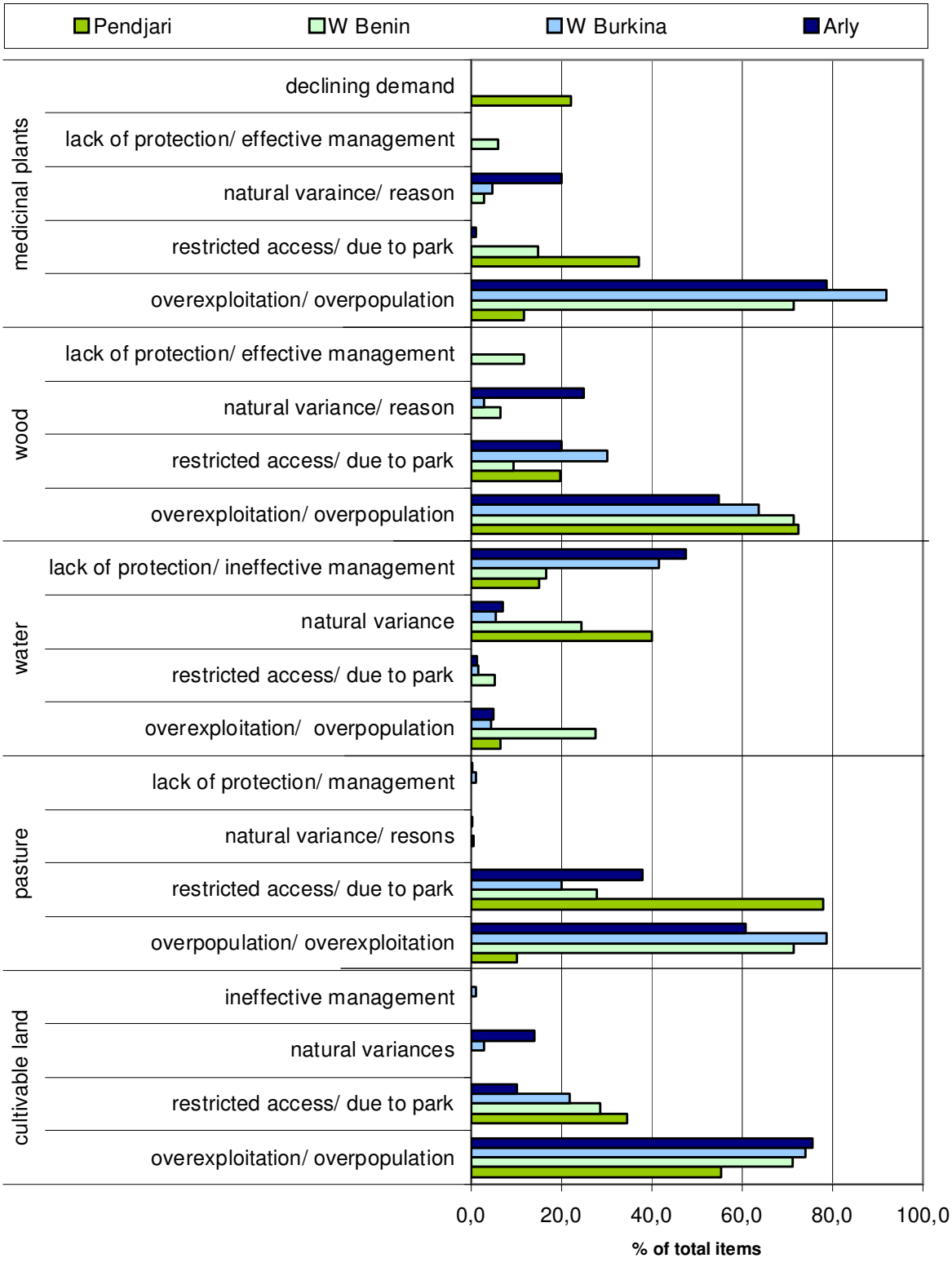


Fig. 8.8: Reasons for resource decline as perceived by resource users. Numbers give proportion of items relative to the total number of items given.

Discussion

Findings of our hh-survey are in line with results gained by literature review as well as outcomes of other parts of our study: local resource users in most parts of the WAP face a severe decrease of vital resources. In particular there was a shortage of agricultural land in PA vicinity of virtually all four different blocks. Land that had been released from strict protection status during the last years and consequently been used as buffer zones, was not sufficient to satisfy local needs in the medium- and long term. The ultimate drivers of decline, as acknowledged by resource users themselves, were generally overpopulation and overexploitation, and further fuelled by the cultivation of cotton (see Chapter 4). Arenas of competition among resource users hence were in most cases impacting resource availability more strongly than enhanced enforcement activities of park authorities (category restricted access/ due to park).To address these root causes was far beyond the scope of most park management programmes, however, highlights the need for long-term programmes and projects that integrate development, land-use planning and conservation issues. As pressure is likely to increase, more effective management schemes for buffer zones have to be established in the short term that regulate any form of extractive exploitation in a sustainable way (including fishery in the Pendjari River). In Burkina Faso, there were no buffer zones established around PAs of Arly and W at the time of our study. In some areas, people nevertheless could buy permits for the exploitation of e.g. wood in certain sub-areas. These activities, however, seemed poorly organized or controlled and were often affected by bribery. Promotion of alternative ways of income generation that might help to ease pressure locally had been only of limited scope and success that far. Alike, more efficient, effective and sustainable cropping systems should be introduced on a large scale in order to minimise the need for agricultural land.

Chapter 9

Synthesis & conclusions

- the end-

Overview

This work summarized the current status and role of protected areas, both in protecting biodiversity worldwide and in promoting development for local resource users. We showed that in a globalised world, integrating conservation and development became a complex task. Multi-level governance approaches linking action arenas and stakeholders of different levels and scales, became inevitable and seem to be the most promising approach for solving PA-dilemmas in the long-term. We then focussed on the case of the W-Arly-Pendjari PA-complex in West Africa and showed that governance regimes and PA management activities differed significantly in their institutional and organisational set-up. Accordingly, their ability to effectively (1) integrate local resource users in respective action arenas (operational and decision-making), (2) generate and distribute high and low value benefits to communities and individuals, as well as to (3) solve and mitigate PA-associated problems and conflicts varied with governance-block. Key element of participation and benefit distribution was the empowerment of legal entities representing local resource users' interests (village participatory bodies, vpbs). Due to a general lack of (ecological) data, analysis of the linkage between the level of participation and enhanced conservation success can only be tentative – indeed we found indications that privatization and strict control might be more effective in protecting wildlife than projects that focussed on infrastructure and community outreach, at least in the short term, and often associated to significant social cost.

Summarizing and capitalizing on our findings, we give in the following some general recommendations for PA governance regimes. These recommendations are derived from literature review and the results of our field work. They are hence illustrated by WAP-specific examples and also indicate future steps for improving PA governance and management in the region.

Findings and recommendations on a global level

1. **The complexity of eco-sociological systems has to be acknowledged. Concepts of mainstreaming environmental issues into policies and economic processes have to be developed.**

We are just beginning to understand the complexity of most socio-ecological systems and the linkages between them. Meanwhile negative trends continue (CO_2-emissions, population growth, biodiversity loss, etc) and the actual implementation of counterstrategies is lacking behind: we need more commitment, courage and investment of individuals, corporates and governments to start new interdisciplinary and integrative approaches to stop these trends and their root causes: one-dimensional and monocausal approaches will not be sufficient to do so. The challenge will be managing global flows of information, goods and services (economic and natural) by integrating interlinked chains of action arenas from the global to the local level. We urgently have to overcome the status of "just" describing global challenges and proceed in the implementation of remedies.

2. Protected areas are one of the key concepts for preserving biodiversity worldwide.

However, just establishing paper parks is not sufficient. Much more needs to be done to ensure context-adapted and effective governance regimes of PAs, in developed as well as in developing countries. Furthermore, PAs can only be one pillar of the strategy to conserve biodiversity – they are open systems in exchange with their surrounding matrix. We therefore need profound changes in the way and extent we exploit and convert natural systems. This essentially means there has to be a true transformation in the way we produce and consume our goods, acknowledging the value of natural resources (i.e. including external costs in our balances) and the services they provide. Given the current status of our planet, there is no alternative to this way forward. Otherwise biodiversity will continue to decline and still more PAs will end up as isolated islands, being unable to cope with the consequences of climate change and collapsing sooner or later due to edge effects, the curtailing of energy flows and material cycles as well as the loss of gene pools and evolutionary potential.

Findings and recommendations on a regional level

3. West Africa is not an easy setting for the implementation of effective PA management.

There is high cultural diversity, high rates of migration and population growth as well as widespread dependence on and overexploitation/ degradation of natural resources. Complex deconcentration and decentralisation processes are ongoing and implicate all sectors of policy and administration. There is hence high dynamic in the evolution of the institutional and organisational system, however, only with a limited degree of coordination and mainstreaming in arenas on the constitutional choice level. Political agendas are dominated by potentially more pressing topics than nature conservation, such as economic development, education, health and poverty alleviation. External actors and (market) forces have marked influence on agenda setting and policy-making processes on the macro level and often actively affect outcomes of respective arenas. Due to their colonial history and the long-lasting dominance of direct rule strategy, governmental actors on the constitutional choice level are often perceived to be almighty by actors on all other levels. Similarly, some of the private actors involved in PA management (concessionaires) possess a high degree of power due to their financial and social backgrounds, and hence can easily disregard the rules, especially on the macro collective choice and operational levels (e.g. with regard to quotas). Despite all these difficulties, institutions on the national law level made considerable progress in the last 20 years and nowadays are good frameworks for the establishment of co-management approaches. Further elaboration of these frameworks will play a decisive role for the future of WAP. This also includes status clarification of some areas in Burkina Faso, as well as clear definition of buffer zones in Benin and Burkina Faso. National and international NGOs are supposed to play a key role in balancing power asymmetries in action arenas on all levels and act as agents of change (see below).

Findings and recommendations concerning co-governance regimes and actual approaches in the WAP-area

4. **Projects on PA-governance and management are not suited to solve most of these complex problems and their root causes all by themselves. Instead of overstraining individual projects, they have to be integrated into holistic land use and development plans and programmes.**

Working with complexity is indispensable. However, effectively addressing root causes like high human population growth, national policies with regard to the cultivation of cotton, or problems arising from international transhumance mostly lie outside the control of single PA governance projects. Instead of focussing on key issues, resources are currently spread to a large scope of different issues. The ECOPAS project e.g. made serious efforts to fully understand the social and socio-economic context of Park W and supported a wide range of scientific background studies. This is laudable and results were valuable, however, they helped little to solve operational problems on the ground (e.g. concerning the implementation of the buffer zone or mitigating conflicts caused by transhumance). Vice versa, a scientific research project (BIOTA, funded by German BMBF) focussing on biodiversity and its exploitation was required to integrate the aspect of gender in its research – which per se is laudable as well. However, better coordination among donors and implementing organisations would help each actor to focus on his competences and not to lose in complexity. Much too often, log-frameworks of projects are too ambitious and the "pathology of projects" (i.e. the necessity to report success for all actors) impedes real progress. Having interviewed some actors that were taking part in the conservation of WAP for decades - and having read grey project literature originating from the last 30 years – was quite disillusioning: though there was remarkable progress in some areas (e.g. setting up the framework of a co-management approach), in others there was no or just very little success (e.g. real devolution of property rights). As a result, projects and their implementers may raise false expectations on all levels, and trust among actors is lost. Building trust, however, is a long process and follow-up projects will have to invest noteworthy time and funds to rebuild a positive relationship and the willingness to cooperate.

5. Strategic planning has to differentiate more strongly between short-term and long-term goals, and leave enough space for adaptation of activities and strategies.

Short-term management activities often imply further restrictions in order to sustain resource status. Such measures and their effective enforcement are indispensable, even if they cause a certain degree of hardship to some individuals or groups of local resource users: if resources (PAs) are not protected form now onwards, there will be no natural capital that resource users (and their children) might benefit from in the future. It

goes without saying, that human rights and needs of people have to be respected. Rather there has to be a thorough assessment and balancing of different interests. As for any activity on the ground, the local realities have to be acknowledged.

Short-term measures, however, can also positively contribute to the building of trust and so lay the foundation for enhanced cooperation. Many respondents of our household survey in the W Benin area indicated that they gained new agricultural land when the buffer zone had been implemented, respectively that they gained legal recognition of the land they used. Initially this contributed to a positive attitude of local famers towards the PA and the park administration. At the time of our study, however, this effect lost its power and local resource users became frustrated with the bad management of the buffer zone. There hence was no sustainable impact of attributing parts of the PA to the exploitation zone. The positive attitude bought at a high prize had been lost - instead of using the momentum to further ameliorate the relationship between actors and to achieve consensus on other contentious issues.

Other such measures that could easily be implemented in the region and used strategically should be examined more closely. As the exploitation of natural resources was an important benefit to locals, relaxation (especially in the hunting concessions of Burkina Faso) of strict regulations might be one of such measures, potentially also including the establishment of buffer zones. Unutilized hunting quotas (which usually existed in many concessions) could be assigned to local communities by lottery. Such measures need clear rule settings that take actual local circumstances into account, as well as effectively working (governmental) monitors. We might call this principle of generating strategic short-term benefits a planned revolution – in so far as the resulting positive attitudes can be the starting point for an evolution of trust and cooperation.

Generally, long-term strategic planning should aim at balanced compromises, adapted participation and equitable distribution of costs and benefits among stakeholders. Much time and effort is needed to craft a theoretical concept into an operational system (e.g. the building of trust, human capital, village participatory bodies, routine that lowers transaction costs, etc.), and many natural processes need larger timeframes as well. In situations and environments marked by high reates of uncertainty and variability, long time horizons are even more difficult to integrate. Measuring success should therefore not only concentrate on project output, but rather on outcome in the long-term (e.g. the safeguarding of source populations as an ecological outcome, or enhanced food security for the local population). This is especially a challenge not only to governments

of the respective countries, but also to donors and international funding mechanisms. They have to think in much larger time scales and secure funding in the long-term. Trust funds seem to be a well suited instrument, if well managed (even during financial/ economic crisis). At the time of our study there were ongoing negotiations for a trust fund to be installed in Benin covering PA-expenses.

Furthermore, developing a shared vision for all stakeholders should be one of the primary goals of any intervention. If there are agreed long-term goals, processes can concentrate on issues of distribution and the way forward. In a case of conflict, this vision can always be revoked to all parties as a common denominator and hence facilitate conflict resolution. Once agreed, however, credibility of all partners is attached to the quest of realizing the goals of the vision – and they can be held accountable for failure.

6. **Institutions (i.e rule settings) have to be well adapted and take informal norms and rules into account. They usually have to be based on compromises, nevertheless, must be clearly formulated and well communicated to all stakeholders. Ideally there is a prior process of joint definition.**

Generally, in most cases it will not be possible to satisfy interests of all stakeholders. However, it is important that the institutional system as a whole is well balanced, and therefore supported by the majority of stakeholders. Wherever possible hence, there should be a process of negotiation that leads to consent on rules in force. Central and most controversial is the definition of property rights. These can be considered the key institutions of a PA arrangement. They often collide with well established traditional rule settings and deprivation can cause long-term conflicts. Indeed, more than 50 years after the establishment of most WAP PAs, 10 (Arly) to almost 50% (W Benin) of respondents of our hh-survey indicated that the park should be declassified so that the land could be used by the local population for their own purposes. These figures impressively demonstrate that participation and the retransfer of property rights is still in its infancies in most regions of WAP. Due to PA-establishment by colonial power and the long history of fines and fences that governed the WAP-complex, rule settings around WAP are often perceived to be extremely strict and unfair. Actors on the collective choice and operational level that abuse their power (e.g. by charging certain forms of exploitation that should be for free) still contribute negatively to these perceptions. As there have

been very little options for resource users to take part in formal decision-making arenas (all levels), they consequently did not accept these rules and rather referred to traditional rights in their behaviour (especially Burkina Faso; 50% of respondents referred to the traditional rule system as being the more important one).

Besides better training of governmental staff with regard to their role (and better salaries), it shows the necessity to create more opportunities for local residents to adopt a feeling of ownership: as local resource users usually bear the highest load of costs, they also have to be compensated for their disadvantages. Arenas at least on the macro collective-choice level have to better integrate resource users as participants.

Furthermore rule settings can only be effective, if they are well communicated and well known among resource users. While we found that most vpbs were well informed (though they did not claim their rights), there were also major deficiencies, e.g. concerning exact knowledge of park borders or the right procedure to gain official exploitation permits. Like governmental actors, vpbs should therefore receive more intensive training on formal rule settings and options how to claim their rights and potentially start reform-process.

Finally, well defined and agreed upon rule settings minimise the risk of “forum shopping”, which in this case means that participants of an action situation refer to those rule settings that best suit their strategy – be they traditional rules, informal customary law or formal rule settings.

7. Links of horizontally and vertically connected action arenas have to be well elaborated and being implemented. Room for manoeuvre on the other side might help to overcome adverse institutional contexts on the micro-level.

We found rather weak linkages among arenas of different levels, as well as within levels. Despite strict hierarchies within the governmental sector, individual freedom of key actors was quite large, once being assigned to a certain position. Though this freedom enabled some to better adapt to (local) circumstances and new challenges in macro-level collective choice and operational situations, others used power asymmetries to create new rule settings on the operational level for their own benefit. Actual success hence strongly depended on personality and leadership of these actors. The director of Pendjari NP at that time was a positive example for inducing system change and balancing different interests. He was widely respected among the local

population and backed by donor and NGO-support, however, was in permanent conflict with his superiors. Sharpening rules that directly link action situations (and so define a space of potential outcomes) and monitoring their implementation would generally contribute to enhanced predictability and reliability of outputs/ outcomes. The challenge here is not to create rigid systems, but to determine spaces of action that help lowering transaction costs and create smooth processes. Such networks of interlinked action arenas must contain feedback loops and mechanisms of internal revision in order to permanently refine its own institutional and organisational setting. Besides effective monitors (again, NGOs seem to be the most suited actor for this position), these systems need specified cutpoints that know the different rule systems and participants of linked action arenas.

Connecting levels of action was furthermore hampered in most cases as there were no participants directly representing local communities in arenas on the constitutional choice level. It was hence very difficult for local resource users to induce fundamental change. This role usually was fulfilled by the activity of NGOs that relied on necessary capacities and power to take part in or lobby respective arenas.

8. Stimulating local empowerment and self-mobilisation have to be an integral part of any long-term participatory approach.

Given the very short history of decentralisation in Benin and Burkina Faso, there were very few self-mobilised local initiatives representing resource users' interests in relevant arenas. Communities (and communes) lacked necessary levels of education and capacity. However, as projects tend to be of limited lifetime, the successes achieved to date will only survive if locals keep on claiming the privileges they have already received. Establishing a joined vision (see above) can help to mobilise grass-root movements. Such a vision would be to give exclusion rights of hunting concessions directly to local communities (i.e. they become concessionaires themselves) or even the right of alienation (i.e. they themselves can lease management or exclusion rights). In South-East Burkina Faso, there was a positive example of such an approach (Comoé-Leraba).

At the time of our study, however, the situation around WAP was quite different: communities were entitled to establish small-game hunting zones, but usually were not integrated in their business operations. In fact, they also lacked capacities to do so.

Even the process of establishment had to be actively supervised either by governmental services or NGOs. They hence should receive more specified training to fulfil these tasks. Ideally, if wildlife populations were thriving, there could also be restoration and establishment of big game hunting areas on communal land. Even if there is still a long way to go, programmes in southern Africa, e.g. in Zimbabwe (Campfire) and Namibia (Conservancies) could serve as a role model here. The way forward has to be a stepwise approach of enhanced participation and capacity building: starting from participation in operational arenas (more or less the status around WAP) and capacity building, to participation in problem solving and decision-making arenas (Pendjari), to enhanced property rights for local communities and hence altered rules of action arenas on several levels.

9. Creation of cut-points between local communities and corporate/ governmental actors greatly improve options for participation.

Due to the lack of self-empowered initiatives and communal actors, village participatory bodies were installed all around WAP as legal representatives of community interest. Their establishment and animation – if existent at all – were mainly driven by donor engagement and western ideas. Their performance varied widely (Chapter 7), between blocks as well as between villages. In fact, most of them hardly fulfilled their main tasks as guardians of rule compliance and conservation wardens. Vpbs themselves neither had entry nor exit capabilities to specific action situations.

They usually channelled top-down rule settings, but rarely managed to initiate and steer bottom-up issues. All of these bodies on village level (except W Benin) were directly involved in receiving and managing funds that were entitled to villagers as kind of compensation payments. In fact this was one of their main activities. Assessing respective arenas in detail, however, proved to be very difficult within the frame of this study.

In Burkina Faso and W Benin, one of the major drawbacks was the very low degree of participation of resource users in participatory bodies and hence only a limited feeling of ownership. Being structured as an association, AVIGREF in the Pendjari Region had been more successful in this respect, especially as their Union had direct access and control over some of the collective choice arenas on the macro-level. Incentive mechanisms for resource users to actively take part in the associative life were well

thought, however, after some years came to their limit (e.g. membership fees were not paid). Underlying processes became ever more sophisticated, and elite capture seemed to be a widespread phenomenon. Nevertheless, the status and structure were the most promising approach of integrating large numbers of people and sensitize them to the value of natural capital. Its natural and social context made the Pendjari area the preferred playground to introduce new governance models and conservation tools. We strongly recommend (especially to German donors) to further support AVIGREFs and their partnership with CENAGREF in their way forward. Still, they can act as a role model for the region. W Benin partly used the same approach, however, due to a much vaster area and larger number of inhabitants, as well as limited options for generating funds, had not been as successful. Details were described in Chaper 7. While there was some exchange between vpbs of both regions, cooperation was not satisfactory. Resource users in W Benin effectively had even fewer opportunities to participate in management arenas than elsewhere – even funds were distributed by AVIGREF Unions.

Legally elected communes can be expected to become functional at least in the medium term all around WAP. As it is also their task to manage natural resources of their areas (except of national parks) and decide on investments in their territory, there have to be binding agreements of coexistence or merger between vbps and communes. While it was right to create vbps before communes existed, external stakeholders should now mediate this process: there is large potential for conflict, as prior existing vpbs will have to give up at least part of their privileges; achievements gained so far might be threatened.

10. Traditional authorities, grass-root initiatives and local NGOs, being well embedded in the social and cultural context, have to play a more dominant role in PA management arenas. Generally, social capital can be a solid basis for co-management agreements.

As broad effects of participation are not satisfactory, specific actors that have local time and place information and enjoy high social prestige ought to be integrated more tightly in participation and restriction arenas. Their potential influence on resource exploitation behaviour and the willingness of resource users to cooperate with park authorities can be very high, as social norms usually have high impact on individual pay-off functions.

They hence have other means for social regulation than formal authorities. Furthermore, they can contribute substantially to harmonization of formal and informal rule settings. While in some areas of WAP traditional authorities were tightly integrated, their role in other areas seemed rather marginal.

Local NGOs are rare (see above), however do exist. They usually have exact place and time information and close linkages to local authorities and administrative units. In fact, these groups often are more likely to act as agents of change in collective choice arenas on the micro level and might be more capable to interact with private and governmental actors in action arenas on the macro-collective choice level. Supporting these groups can hence leverage effectiveness of interventions.

11. Benefits (i.e. payoff rules) have to match aspirations of local people and be valued higher than potential gains from rule infraction and unsustainable exploitation. If this condition is not met, they cannot work as incentives for local resource users to adapt their exploitation behaviours.

Direct payments given to local resource users respectively village participatory bodies can be considered as a form of payment for ecosystem services (PES). They also can be seen as some kind of compensation for exploitation options forgone. Both views imply that resource users are expected to adapt their behaviour to rules in use and hence more sustainable forms of exploitation. If there are too few benefits, if their quality is not satisfactory, if they are not distributed equitably or if there is no reliability of disbursement, the credibility of governance structures can be undermined (Suich 2013), and resource users won't change their personal payoff-functions. This happened to many ICDPs (Newmark & Hough 2000).

And it happened also to most approaches implemented in the WAP region: all these conditions were (negatively) met. Except for the Pendjari region, there was little understanding and acceptance of the PES principle. The majority of resource users saw direct payments either as a gift or as some kind of compensation due to the hardship they suffered because of the PA. PA-managers on the other side missed to introduce performance-bond measures in respective participation arenas. Only in the Pendjari Region and in one sub-region of Burkina Faso the amount of direct payments paid to individual villages was attached to such indicators. In Burkina Faso, however, there was

no monitoring and the actual amount was based on very different indicators, including the subjective evaluation of cooperation between governmental actors and villages.
While direct payments were a strong incentive to some vbps to either fulfil respective indicators (Pendjari) or at least maintain positive relationship with governmental officials, their effect on individual resource users was rather diluted, though still acknowledged. Generally, there were too few high quality benefits offered to individual resource users. Incentive-based conservation approaches hence need to offer benefits on the community as well as on the individual level. Those that engage directly in vpbs should receive some extra kind of benefit to reward their engagement. This could help to minimise abuse of funds on this level. Generally, all three major arenas of distribution needed more transparency and better management (These three arenas were: (1) the one regulating partitioning among private concessionaires, governments and local communities, (2) the second was the distribution of funds among all villages of one region/ block, (3) the third one determined how funds (and other benefits) were distributed among villagers).

12. Tripartite governance systems involving entrepreneurs, government administration and the local population can be a well suited regime for PA governance. However, for their functioning several conditions must be met.

The tripartite co-governance approach essentially is a division of rights and duties, trying to integrate strengths and specific competences of each group of actors while levelling out their weaknesses and shortcomings. In theory they create win-win-win-scenarios. This compelling system, however, is only working if each group of actors is fulfilling its respective role. Due to several reasons, the approach in WAP suffered of serious problems (see above): as governmental actors on the operational and collective choice level were not well paid and equipped, they were open to rule-breaking behaviour themselves instead of being the ultimate monitors and guardians of management arenas. Private concessionaires showed little interest in cooperation with local communities and enjoyed high degrees of freedom with regard to their activities – which also resulted in rule breaking behaviour. Finally, resource users were rarely integrated in rule and decision-making arenas, so that they felt rules and restrictions being imposed on them. Additionally, quality and quantity of benefits was not sufficient to make them change their personal pay-off functions and they mainly struggled for

subsistence of their families – which also lowered the hurdles for rule breaking behaviour.

For being effective hence, such an approach needs potentials for benefit generation high enough to satisfy (realistic) needs of all partners, balanced distribution of rights and duties, actors being capable to fulfil their roles and finally effective mechanisms of monitoring and sanctioning of rule breaking.

13. While direct benefits are very important, indirect benefits and the avoidance of opportunity costs can serve as incentives as well.

Indirect benefits proved as important incentives especially to those individuals in the villages that assumed responsibility in vpbs: they often hoped to further increase their social prestige. Sense of ownership of natural resources and political co-determination can further stimulate active participation of local resource users. Also the avoidance of negative impacts, i.e. avoidance of opportunity costs, has to be addressed more strongly and can contribute to better acceptance of PA management. As in many other areas surrounding PAs in Africa, human-wildlife conflicts were a serious problem around WAP. With increasing levels of capacity on the local level and further NGO support, the establishment of a self-insurance scheme could be a suitable tool to reduce negative impacts of human wildlife conflicts.

14. Successful approaches have to be seen as role models for other projects (in similar context) and follow-up interventions. Trial-and-error will always be part of any process. However, if options for action and associated potential outcomes can be assessed in advance, cost and valuable time can be saved.

There is no universal blueprint approach for PA governance and management. Successful strategies cannot be transferred one-to-one to other projects and usually need adaptation to the specific (micro) context. However, learning from past successes AND failures has to be integral part of project planning and adaptive management. While we encountered a rich rhetoric concerning cooperation and transfrontier management approaches in the WAP area, we found only very limited cooperation on the ground: there has been some exchange, but only very few repetitive and well structured arenas for interaction. Financial constraints were one of the reasons, political

unwillingness another one. In fact, blocks competed with each other concerning tourist numbers, funds and prestige. Though competition might stimulate innovation and progress, it can also have the adverse effect. Just one example: Park Pendjari (funded by German developmental aid) and Park W (funded by the EU) e.g. both had own stands at the ITB (Internationle Tourismus Börse, Berlin) during our field work – but did not cooperate at all for the preparation. They missed the chance to have impact at scale and wasted synergy potential.

Any future intervention hence should integrate cooperation on the inter-block level and create respective arenas of interaction and communication. Being the most important and intact savannah area in West Africa, this is a challenge and an opportunity at the same time.

15. The preservation of biodiversity and ecosystem services is the very raison d'être of any PA. Ecological aspects and protection of natural values hence always have to be in the focus of PA governance. Ecological monitoring is a prerequisite for determining the ultimate success of any management approach.

Assessing single ecological indicators, let alone the status of ecological integrity was beyond the scope of this work. Initially we had planned to assess the relation of ecological and socio-economic outputs of PA management arenas, but eventually refrained from this aim. Ecological data was too scarce, too heterogeneous and not matching temporal or spatial scales of the rest of our data. Taking proxies did not seem appropriate either, as we did not want to produce misleading results and spur their recirculation in political arenas.

WAP can be described as an ecological continuum, however, due to its geographic location and extend harbours a multitude of subsystems. We believe it is urgently necessary to harmonize standard assessments of key indicators for single subsystems but also on a block-wide scale. Some of the larger mammals, like elephants or buffaloes, migrate huge distances depending on seasonal variations and forage availability, but also on human disturbance. Analysis of these patterns has to been done on the micro and the macro-scale to deliver conclusive results.

Effective and regular monitoring and evaluation hence have to be integral parts of any PA management approach. Projects have to calculate a budget for these activities right

from the beginning - often they are skipped in favour of other activities assumed more important.

Conclusion

Different groups of actors hold different perceptions of social, ecological and political "realities". Any management approach has to take all these different perspectives into account. The greatest challenge is to create well balanced action arenas on different levels with capable cutpoints that link arenas vertically and horizontally. Power asymmetries between actors have to be diminished as far as possible: There are many different realities, interests and strategies that have to be taken into account when designing and implementing conservation arenas.

Around WAP, implementation of the institutional and organisational framework with regard to participation was just at the beginning at the time of our study: there were too many disadvantages and too few benefits, too few options for participation in decision-making and too high power-asymmetries between actors.

While the general principle of participation is beyond controversy, its actual implementation in many areas seems to be rather questionable. There is no doubt that local communities have to suffer form hardship from PAs, and that actors in power (governmental, private) usually do not want to share their priviliges. However, decentralisation of property rights and management tasks also need some kind of readiness of the new beneficiaries. In reality, there is often a lack of capacity on the local level to handle associated processes. Participation and the devolution of rights on its own is hence no panacea to solve conservation problems – no more than is a revival of strict fortress conservation.

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Ehrenwörtliche Erklärung

Gemäß § 4, Absatz 3, Ziffer 3, 3a, 3b, 5 und 8 der Promotionsordnung für die Fakultät

für Biologie der Bayerischen Julius-Maximilians-Universität Würzburg vom 15. März

1999, zuletzt geändert durch die zweite Satzung vom 14. November 2013, erkläre ich hiermit ehrenwörtlich, dass ich die vorliegende Dissertation eigenständig und ohne Hilfe einer kommerziellen Promotionsberatung angefertigt, und keine anderen als die von mir angegebenen Quellen und Hilfsmittel benutzt habe. Ferner versichere ich an Eides statt, dass ich die Gelegenheit zum Promotionsvorhaben weder kommerziell vermittelt bekommen habe, noch eine Person oder Organisation eingeschaltet wurde, die gegen Entgelt Betreuer für die Anfertigung der Dissertation gesucht hat. Ich erkläre außerdem, dass ich die Regeln der Universität Würzburg über gute wissenschaftliche Praxis eingehalten habe. Die Dissertation hat keinem anderen Prüfungsverfahren vorgelegen, weder in gleicher noch in ähnlicher Form.

Die Fakultät für Biologie der Universität Würzburg hat mir am 26.04.2005 den Titel

„Diplom-Biologe“ verliehen. Weitere akademische Grade habe ich weder erworben noch

zu erwerben versucht.

Berlin, den

Tillmann Konrad