Karina Barquet

Transboundary Conservation and Conflict

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Norwegian University of Science and Technology
Faculty of Social Sciences and Technology Management
Department of Geography

NTNU – Trondheim
Norwegian University of
Science and Technology

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Abstract

Within the field of nature conservation, advocates of transboundary conservation argue that borderlands can be a source of cooperation between neighbouring states who previously have engaged in conflict. By opening negotiation channels based on environmental issues, jointly managed, cross-border protected areas could reinforce harmonious relations between contiguous states. Despite such excitement and widespread support for transboundary conservation, there remain important practical and conceptual challenges. In practice, such potential has yet to be proven because experience with transboundary parks remains anecdotal with limited systematic analysis of their role in conflict resolution. Conceptually, transboundary conservation remains unproblematized and undertheorized.

The aim with this thesis is to add to the theoretical gaps and practical experiences on the relationship between transboundary conservation and conflict. The thesis consists of four individual articles: one global study that explores the correlation between Transboundary Protected Areas (TBPAs) and conflict, two articles based on a study of a TBPA in an area with conflict in Central America, and an article introducing a new TBPA dataset in Africa.

Four main conclusions are drawn from the studies in this thesis. First, that location and the particular context of each border need to be understood in order to assess the potential role of transboundary conservation upon states' relations and regional cooperation. Whereas transboundary conservation could be used as a tool of cooperation in some places and under particular circumstances, it could have the opposite effect in other contexts. Second, TBPAs encourage states to project their power and take action to strengthen their territorial projects even more than before their establishment. Because of this, TBPAs can be used as tools to gain control over space. Third, the territorialisation of places through TBPAs highlights the emergence of environmental issues as a new arena for geopolitical play. Hence, this thesis argues for an understanding of TBPAs as territorial formations rather than neutral natural entities. Fourth, the thesis highlights the complexities of the bioregional discourse used to legitimize the establishment of TBPAs and underlines the problems of matching discourses of nature to accounts of social unity. Lastly, the thesis concludes that the establishment of TBPAs may be guided by agencies' own interests and commercial value of transboundary conservation, rather than by ecological criteria or peacebuilding relevance. This might further complicate matters in cases with ongoing border disputes and complex geopolitical realities.

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PART I
INTRODUCTION

Transboundary conservation gained considerable interest amongst conservationists at the beginning of the 1990s. A shift from 'community' forms of management to 'landscape' approaches created momentum for transboundary conservation initiatives to function as a strategy to protect large areas (Zbicz, 2003). By connecting bioregions across jurisdictional borders, transboundary protected areas (TBPAs)[1] would be able to preserve more habitats and conserve a greater diversity of species (Pirot, Meynell, & Elder, 2000). By the mid-1990s, transboundary conservation had also caught the attention of peace theorists interested in environmental issues as points of departure for interstate cooperation. Most notable was the involvement of Johan Galtung and Roger Fisher in the establishment of Cordillera del Condor Peace Park, which is claimed to have been part of the solution to the territorial conflict between Peru and Ecuador in 1998 (Fisher & Ury, 1992; Galtung, 1992, 2000).

The expansion of individual protected areas into cross-border bioregions has been justified through the claim that TBPAs can be used as a tool in conflict resolution (Ali, 2011; Griffiths, Cumming, Singh, & Metcalfe, 1999; Marton-Lefèvre, 2006; Shambaugh, Oglethorpe, & Ham, 2001; Thorsell, 1990). More specifically, it has been argued that TBPAs could contribute to peace as they can be a means to solve border disputes, a means to maintain communication during a conflict, a tool for reconciliation after conflict, and they could provide a platform for facilitating negotiations in areas with prolonged conflict (Mittermeier et al., 2005).

International organizations such as the International Union for Conservation of Nature (IUCN), development agencies such as the United States Agency for International Development (USAID), political personalities such as Nelson Mandela, and research institutions such as the Woodrow Wilson International Center have repeatedly emphasized the critical role of transboundary conservation in resolving conflicts between neighbouring states, and by transboundary parks' 'remarkable' contribution to building confidence, trust, and friendly relations across borders (Vasilijević & Pezold, 2011).

Widespread support for transboundary conservation has resulted in the proliferation of TBPAs worldwide (Katerere, Hill, & Moyo, 2001; Lanfer, Stern, Margoluis, & Goodale, 2003; Petursson, Vedeld, & Kaboggoza, 2011). In 1988, the IUCN Commission on National Parks and Protected Areas identified 70 potential transboundary protected areas straddling 65 national borders (Thorsell, 1990). In 2005, a publication by Mittermeier et al. listed 188

[1] In this thesis, 'transboundary protected areas' is used to refer to 'transfrontier conservation', 'peace parks', and 'transborder conservation'.

TBPAs (Mittermeier et al., 2005), and subsequently Lysenko, Besançon, and Savy (Lysenko, Besançon, & Savy, 2007) mapped 227 TBPA complexes incorporating 3043 individual protected areas.[2]

Despite much optimism, there is little evidence supporting claims regarding the peacebuilding potential of transboundary conservation. There may be four reasons for this: (1), the assessment of preventive measures such as peacebuilding and peacekeeping continues to be a challenge; (2), there is limited knowledge of the extent of cooperation between states over TBPAs, (3) no systematic analyses of the relation between TBPAs and peace and conflict have been carried out; and (4) it is unclear how the failure or success of TBPAs in states' relations should be measured.

This thesis attempts to fill some of the gaps on the transboundary environmental management–conflict nexus. In four articles, the thesis explores, through the use of different methods, the relationship of TBPAs and states' relations. The outline of the thesis is as follows. This section (Part I) introduces the thesis and places the topic of transboundary conservation in a wider theoretical context. In this section, the methodology and data used in the thesis are also explained. This is followed by a summary of the four articles of the thesis. I conclude the section with final remarks and comments for future research agendas. The four articles of this thesis are presented in Part II. Appendix I contains the list of informants for the data collected in Articles 2 and 3. Interview guides for this data can be found in Appendix II. A summary of the dataset and references to it are presented in Appendix III.

THE AIM OF THE THESIS

The general aim of the thesis is to explore the premise of the environmental peacemaking hypothesis that environmental issues can provide a basis for interstate cooperation, a platform for dialogue and confidence building, and serve as an instrument for peace and regional stability. The point of departure is transboundary protected areas (TBPAs), defined as areas that straddle one or more borders between states and that are to be managed cooperatively through legal effects or other measures (Sandwith, Shine, Hamilton, & Sheppard, 2001, p. 57).

[2] The number for the individual protected areas incorporated in the dataset was found in the spatially referenced dataset that the author provided me with through personal communication.

One of the strongest arguments for establishing transboundary conservation initiatives is based on ecological theories about distribution and representation of ecosystems in protected area networks (Agrawal, 2000). There are four primary aspects of ecological theories that can provide arguments for the establishment of TBPAs and the general enlargement of protected areas (Jeffries, 2006): (1) biodiversity is generally greatest in the oldest established ecosystems; (2) biodiversity changes across environmental gradients (latitude, altitude, depth, aridity, and salinity); (3) biodiversity increases with increasing area; and (4) biodiversity decreases with increasing isolation. On the basis of these aspects, the establishment of protected areas has come to have a strong focus on integrated ecosystem approaches (Pirot et al., 2000).

The scientific arguments behind the establishment of TBPAs are associated with the type of environmental management specified under Program Element 1 of the Protected Areas Programme of Work on the Convention of Biological Diversity (Hutton, Adams, & Murombedzi, 2005). The Program underlines the importance of landscapes, corridors, and regions across boundaries for the protection of biodiversity and the improvement of international cooperation. Specifically through the Convention of Biological Diversity, Program Element 1 is supposed to:

> *establish and strengthen by 2010/2012 / transboundary protected areas, other forms of collaboration between neighbouring protected areas across national boundaries and regional networks, to enhance the conservation and sustainable use of biological diversity, implementing the ecosystem approach, and improving international cooperation.* (Convention on Biological Diversity, 2004, p. 1)

The statement above confirms one of the primary roles of transboundary conservation: by connecting bioregions across national borders and jurisdictional boundaries TBPAs could function as tools for cooperation and the promotion of peace between neighbouring states. The motivating arguments are that environmental issues are often not limited to political boundaries or physical limits, and that transboundary environmental problems often involve common pool resources. Parties sharing such resources may be more effective in protecting nature and solving environmental problems if they work together (Blum, 2002).

At the same time, biodiversity is typically considered a ‘low politics’ issue that donor agencies and states can take as a starting point for negotiations and peace (Feil, Klein, &

Westerkamp, 2009). Policies around environmental issues can provide mutual benefits to neighbouring states, and in turn maintain their incentives for cooperation. Cooperation over environmental issues can in turn develop to encompass other more politicized issues as environmental cooperation subsequently has an impact on other spheres (Conca & Dabelko, 2003). In such cases, epistemic communities, which are networks of recognized experts with a shared set of normative beliefs and authoritative claim to policy-relevant knowledge, function as mediators in interstate environmental cooperation (Haas, 1990). Through those communities, states develop institutional activity and connectivity across borders, which in turn help states forge and strengthen ties, even in cases of conflictive histories between the parties involved (Westing, 1998).

From the discussion above it is clear that what differentiates transboundary conservation from other types of protected areas is the goal to enhance peace and cooperation between states. However there remain several questions around various issues. First, it is not clear whether TBPAs have in fact contributed to more peaceful relations between states. Second, while the discourse used to establish TBPAs is "all-encompassing" the terminology, scope, aims, and geographical extent of these areas are confusing. Third, the actors involved in the establishment of TBPAs and their role in the governance of these areas, as well as the policies and governance strategies adopted to achieve the goals of TBPAs remain undiscussed issues.

The aim of this thesis is to explore the potential of transboundary conservation in enhancing more peaceful regional relations. Given the difficulty of assessing peacebuilding initiatives coupled with the lack of clear indicators to assess the performance of TBPAs in preventing conflict, the thesis assesses whether transboundary conservation has any inherent structures, policies, or governance strategies that may foster peace between states. This is done by exploring the driving factors behind the establishment of TBPAs, the actors involved in their establishment, the governance of these areas, and the context in which TBPAs are established. Specifically, the thesis will explore the following overarching questions:

1. Are TBPAs established in places that have experienced conflict?
2. Do TBPAs induce cooperation between contiguous states?
3. How are TBPAs established and legitimized?
4. What actors are involved in the proliferation of transboundary conservation?
5. Why are TBPAs established where they are?

The questions are examined through four separate articles: Research Questions 1 and 2 are addressed in Article 1; Research Questions 2 and 3 are addressed in Article 2; Research Questions 3 and 4 are discussed in Article 3; and Research Questions 4 and 5 are explored in Articles 3 and 4. The articles engage, through different methods, with broader geographical discussions concerning power, territoriality, nature, scale and governance.

SHORTCOMINGS OF PREVIOUS RESEARCH AND CONTRIBUTION OF THE THESIS

The proliferation of TBPAs in the late 1990s and early 2000s not only generated great interest amongst conservation agencies, environmental organizations, and bilateral and multilateral donors, but also resulted in an array of academic literature. This literature was primarily produced by a small international community of conservationists who enthusiastically advocated transboundary conservation as the solution to problems of poverty, environmental degradation, and regional instability (Mittermeier et al., 2005; Sandwith et al., 2001; van der Linde, Oglethorpe, Sandwith, & Snelson, 2001; Westing, 1998, 2010, 1993; Zbicz, 1999, 2003). The community quickly evolved into a wider area of study that engaged scholars and research centres proposing environmental issues as tools for peace and cooperation between countries (Ali, 2007; Carius, 2006, 2007; Conca, Carius, & Dabelko, 2005; Conca & Dabelko, 2003).

The publications and reports from the 'transboundary conservation community' advocated TBPAs as a concept to be embraced by all and that promised impressive and attractive possibilities, particularly for donors. Large contiguous biodiversity-rich regions would simultaneously protect biodiversity, create opportunities for economic revenue through tourism, alleviate poverty, reunite previously separated ethnic groups, and promote peace and cooperation between contiguous states (Ali, 2003; Hanks, 2003).

International organizations such as the IUCN, development agencies such as USAID, political personalities such as Nelson Mandela, and research centres such as the Woodrow Wilson International Center have repeatedly emphasized the critical role of transboundary conservation in resolving conflicts between neighbouring states, and the remarkable contribution of transboundary parks to build confidence, trust, and friendly relations between the parties involved (Vasilijević & Pezold, 2011).

Although there remains little evidence to validate the assumptions that transboundary conservation could be used as a peacebuilding tool, the increase in TBPAs since the mid-1990s has been generally welcomed as a sign of cooperation between neighbouring states, particularly in areas with relatively recent histories of conflict. Consequently, TBPAs have been proposed in border areas with ongoing disputes in India and Pakistan (Swain, 2009), in North and South Korea (Westing, 2010), and in Israel and Jordan a Peace Park has been planned to span the River Jordan (Crosby, Abu-Hilal, Al-Homoud, Erez, & Ortal, 2000), one of the main sources of potable water in the region.

As a response to the proliferation of TBPAs and transboundary conservation literature, critical studies emerged highlighting the lack of evidence to validate the supposed instrumentality of TBPAs as the new panacea, and the lack of theorization concerning many of the fundamental concepts upon which transboundary conservation is based. Many of those studies examine the neoliberalization of conservation through transboundary conservation (Büscher, 2010a, 2010b; Dressler & Büscher, 2008; Finley-Brook, 2007; Ramutsindela, 2007b), the theoretical foundations of transboundary conservation (Fall, 1999; King & Wilcox, 2008; Noe, 2010; Ramutsindela, 2007a; Ramutsindela & Noe, 2012; van Amerom, 2002; van Amerom & Büscher, 2005; Wittmayer & Büscher, 2010; Wolmer, 2003), the impact of TBPAs upon local communities (Draper, Spierenburg, & Wels, 2004; Draper & Wels, 2002; Jones, 2005; Spierenburg & Wels, 2006), questions of institutional structure and cross-border cooperation (Büscher & Schoon, 2009; Mavhunga & Spierenburg, 2009; Petursson et al., 2011; Petursson, Vedeld, & Vatn, 2013; Ramutsindela, 2007b; Schoon, 2013), and discussions concerning the implications of environmental governance (Duffy, 2005, 2006b; King, 2009).

The four articles presented in this thesis explore the link between transboundary conservation and conflict and the management of TBPAs. My research differs from other research to date, in which the peacebuilding aspect of transboundary conservation has remained largely unexamined and systematic studies of the role of TBPAs upon state relations are typically lacking. These oversights are surprising, as one aspect that differentiates transboundary conservation from other types of conservation is its aims of enhancing peace and preventing conflict. Intuitively, one would expect greater scrutiny to the role that TBPAs have had in cases with ongoing conflict and in post-conflict scenarios, as that is where the real potential of TBPAs can be examined.

The thesis most important contributions include a) an empirical contribution in the production and analysis of new datasets that facilitate more systematic and comprehensive knowledge about where TBPAs are established and their effect on inter-state relations; b) a number of novel insights that may inform future theorizing in the area of environmental peacemaking; c) the thesis provides a clearer understanding of the governance of TBPAs, the complexities of transboundary conservation initiatives, and TBPA's contribution – or lack of it – to peacebuilding efforts; d) it provides a better understanding of the network of actors involved in the establishment of TBPAs; and e) it presents with new discussions on geographical concepts that may contribute to debates on territory, governance and scale.

Article one follows the quantitative tradition of exploring through large N-studies the relation between TBPAs and inter-state relations. The results reached in this article constitute the first of its kind across academic disciplines and can hopefully provide geographers and peace researchers with a starting point for the systematic study of initiatives inspired by the environmental peacemaking hypothesis. Article 2 further explores the environmental peacemaking hypothesis through a study in Central America. The case presented in this article is amongst the few studies carried out in a context of ongoing armed inter-state conflict, which is particularly relevant given the goals of TBPAs. While the results from this case cannot be generalized, it is a first step towards understanding how the environmental peacemaking hypothesis works in practice and the potential of TBPAs to build or not regional peace. Articles 3 apply theories and concepts of geography to understand the process of establishment and management of TBPAs. The article contributes to an understanding of how transboundary conservation has come to be the dominant discourse in nature conservation; reflects upon questions of governance and the role of institutions in redefining nature and forming territories; and explores how scales are produced in nature conservation. The main contribution of Article 4 is the spatial dataset of TBPAs in Africa. The dataset is built so that it can be used for future spatial and statistical analyses. Besides this, the article exemplifies how the dataset could potentially be used to understand patterns of transboundary environmental aid in relation to other events, such as conflict or biodiversity hotspots.

SITUATING THE THESIS

In order to understand how transboundary conservation gained momentum, it is important to recall the development of global environmental politics following the end of the Cold War. Figure 1 sketches the main elements included in the discussion of the following pages.

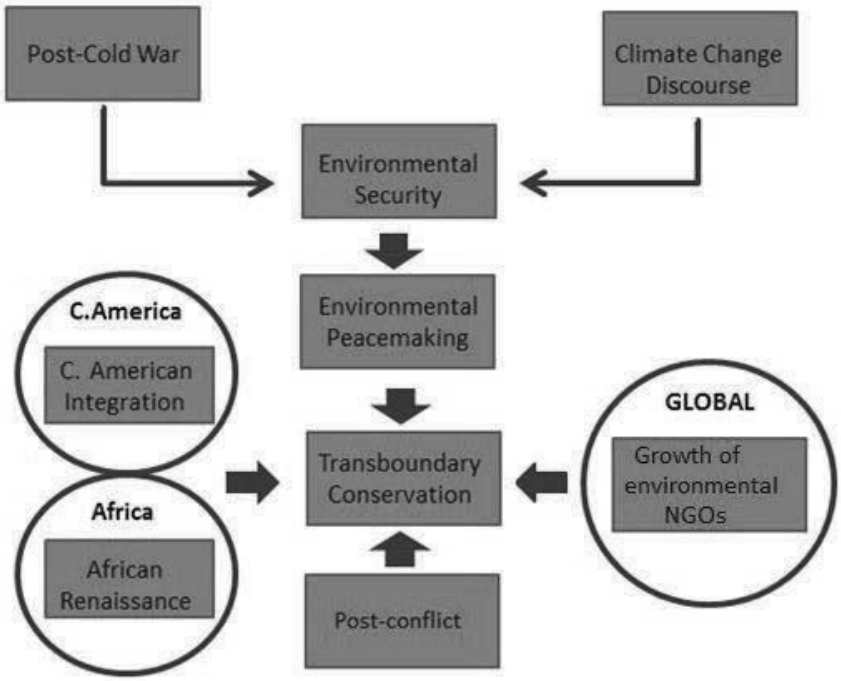

Figure 1 Sketch of the discussion

Securitizing the environment

Environmental security has become increasingly popular both as a concept and a set of policies following the end of the Cold War. As a concept, environmental security is highly disputed as it is unclear who is to be secured from what and what securitizing the environment entails (Barnett, 2001). Barnett identifies seven major areas comprising the environmental security agenda: (1) efforts to redefine security; (2) theories about environmental factors in violent conflicts; (3) the environmental security of a nation; (4) the linkages between military and environmental issues; (5) the ecological security agenda; (6) the environmental security of people; and (7) the issue of securitization.

As a set of policies, environmental security emerged when the end of the Cold War prompted new debates about the nature of threats, and the object and meaning of security in a post-Cold War world. At the same time, there was a need to identify new enemies and threats, particularly in the United States (U.S) (Durant, 2007). Environmental security quickly became a preferred discourse primarily because a few reports painted a series of bleak scenarios that

called for national security measures. Environmental scientist Norman Myers, World Resources Institute Vice President Jessica Mathews, and forest ecologist Arthur Westing were key drivers of the environmental security discourse.

The discussions triggered a number of studies that linked environmental issues to violence and conflict. Some claimed that environmental scarcity would lead to violent conflict (Barnett & Adger, 2006; Homer-Dixon, 1999; Homer-Dixon & Percival, 1998; Le Billon, 2001; Myers, 1989; Stern, 2006, 2007). Others claimed that climate change would lead to national and international distributional conflicts (WBGU, 2008), and organized violence (Haldèn, 2007); it would pose major obstacles to progress for development (UNDP, 2007), it would act as a stress multiplier (EU, 2008), and more importantly it would pose a threat to states' national security (Campbell, Lennon, & Smith, 2007; Schwartz & Randall, 2003). As a response to the alarms raised in these studies, academic research has explored the role of natural resources for interstate and intrastate conflict (Koubi, Spilker, Böhmelt, & Bernauer, 2014), the relationship between water and conflict (Brochmann & Gleditsch, 2012; Gleditsch, Furlong, Hegre, Lacina, & Owen, 2006), the implications of climate change for conflict (Buhaug, Gleditsch, & Theisen, 2008), the role of forests in conflicts (Rustad, Rød, Larsen, & Gleditsch, 2008), the spatial coexistence of armed conflict and biodiversity hotspots (Hanson et al., 2009), and the role of the military in securing the environment (Coates, Cole, Dudley, & Pearson, 2011; Henk, 2006).

The most relevant discussion for this thesis is on the question of whether natural resources can lead to conflict. The conflict literature divides resources into renewable and non-renewable, and sources of conflict into scarcity or abundance. Given the focus of this thesis, a review of the main arguments pertaining to renewable resources is in place.

The scarcity thesis, based on neo-Malthusian reasoning, argues that scarcity coupled with lack of access to renewable resources can create grievances against the state, weaken civil society, lead to opportunities for insurrection, and cause internal conflict (Homer-Dixon, 1999). In particular, qualitative studies have identified various cases in which resource scarcity may have contributed to violent conflict at local or national levels (Brown, 2010; Homer-Dixon & Percival, 1998; Khal, 2008). By contrast, 'resource optimists' claim that while resource scarcity can be a risk to human well-being, people are able to adapt to scarcity through market mechanisms, technology, and institutions (Koubi et al., 2014). Through large N-studies, optimists have shown various casual mechanisms where resource scarcity is one of several

factors in the relationship between resources and conflict, and rather, political and economic factors seem to be more important drivers of conflict (Buhaug, 2010; Gartzke, 2012).

Much of the research carried out on the relationship between renewable resources and conflict has adopted a liberal peace approach where it is thought that democratic institutions facilitate cooperative solutions. For instance, research on the relationship between water and inter-state conflict suggest that states tend to cooperate rather than fight over shared water resources (Brochmann & Gleditsch, 2012), and that institutionalized agreements can reduce the risk for conflict (Zawahri & Mitchell, 2011). A similar relation is assumed in transboundary conservation, where it is believed that overlapping ecological interdependencies like biodiversity and forests, can lead to Post-Westphalian governance because sustainable management of the environment requires long-term cooperative planning (Swatuk, 2002).

The role of renewable resources and intra-state conflict is far from clear. Studies reveal different results for many of the indicators potentially relevant for TBPAs, and for some, lack of robust statistical results imply that the scarcity thesis has little explanatory power when it comes to civil violence (Theisen, 2008). For instance, Hauge and Ellingsen (1998) find a positive relation between land degradation, freshwater scarcity, deforestation, and armed conflict. However, Urdal (2005) finds a positive relation with civil conflict only when combining land scarcity and high rates of population growth, as well as when agriculturally productive land is scarce and agricultural wages decline. Hendrix and Glaser (2007) do not find a relationship between civil conflict and land degradation, but find that increased water per capita rises the risk for conflict in Sub-Saharan Africa. However Theisen (2008) only finds a positive relation with civil conflict in cases of very high levels of land degradation, while water scarcity has no effect at all. Others, like Meier, Bond & Bond (2007) find that increased vegetation rather than scarcity is positively related with the incidence of organized raids; while Rustad, Rød and Larsen (2008) do not find robust results when exploring the relationship between forests and conflict.

The underlying assumptions of the environmental security literature have received widespread critique. Already in 1990, Deudney argued that not everything having a negative impact on human well-being can be labelled a security threat because the term loses all analytical significance. Most often the causes, the harms, and the solutions to environmental problems are not national in nature, and therefore it is futile to label the issues in terms of national security. Furthermore, the threats emerging from environmental problems are not necessarily

intended, unlike traditional security issues. In addition, the military might not be the most adequate actor to address environmental issues. Invoking national security might be counterproductive, as international cooperation is necessary to deal with environmental problems, not militarization (Deudney, 1990).

The Copenhagen School led by Ola Wæver voiced one of the strongest critiques of the environmental security argument. According to what Weaver coins 'the securitization approach', security is a speech act and a form of politicization that serves to enable and legitimize the use of extraordinary means (Buzan, Wæver, & de Wilde, 1998). Securitized issues move out of the realm of normal politics and into the sphere of emergency measures, where they are treated without the normal rules and regulations of policymaking. This may entail the use of violence in situations that under normal circumstances would not be justified. Once an issue has been successfully securitized (i.e. accepted by an audience) military actions can be legitimized. Thus, the implications of securitizing issues such as those relating to the environment do not necessarily entail a positive move. Rather, Wæver (1995) has argued for moving towards desecuritization, whereby securitized issues such as those concerning the environment shift from the emergency realm back to normal politics.

In recent years, environmental peacemaking has emerged as a response to critical evaluations and scepticism towards the idea that climatic change and natural resources will trigger wars between states. In line with the liberal peace theory, researchers have linked environmental issues to the potential to improve interstate relations rather than to sources of violence (Carius, 2007; Floyd, 2008; Maas, Carius, & Wittich, 2013). Specifically, advocates of this approach argue that environmental peacemaking can turn conflict over transboundary environmental issues into dialogue over shared resources and gradually develop environmental cooperation into other forms of cooperation (Conca et al., 2005; Conca & Dabelko, 2003; Conca & Wallace, 2009).

Research on environmental security, desecuritization theory, and environmental peacemaking has been conducted by members of a few academic institutions. In North America, the University of Toronto's Peace and Conflict Studies Program led by Thomas Homer-Dixon investigated the links between resource scarcities as drivers of violent conflict (1994–1996). The Global Environmental Change and Human Security (GECHS) project led by Jon Barnett, Richard A. Matthew, and Karen O'Brien, argued that environmental changes would impact human security (1999–2009). The Environmental Change and Security Program (ECSP)

directed by Geoffrey Dabelko at the Woodrow Wilson International Center for Scholars in Washington, advocate the environmental peacemaking hypothesis (1994–ongoing). In Europe, the Copenhagen School led by Ole Wæver, Barry Buzzan and Jaap de Wilde from the Copenhagen Peace Research Institute (1983–2003) proposed securitization and desecuritization theory. The Center for the Study of Civil War at the Oslo Peace Research Institute led by Nils Petter Gleditsch carried out a systematic analysis of the relationship between natural resources and conflict (2003–2012). The Environment and Conflicts Project in Switzerland, co-directed by Günter Bächler and Kurt R. Spillmann, departed from the premise that environmental transformation impacts socio-economic conflict potentials that can violently escalate (1992–1996).

Parallel to academic discussions, international organizations such as the World Bank and its Global Environmental Facility (GEF) as well as UN organizations upgraded their climate change-related activities, and by 1988 the UN Environmental Programme (UNEP) together with the World Meteorological Organization (WMO) established the Intergovernmental Panel on Climate Change (IPCC) (IPCC, 2014b). In their fifth report, the IPCC added a security dimension to their mandate (IPCC, 2014a). International development agencies such as USAID, the German Federal Enterprise for International Cooperation (GIZ), the Swedish International Development Cooperation Agency (SIDA), the Norwegian Agency for Development Cooperation (Norad), as well as regional bodies such as the European Union (EU), all intensified their activities related to environmental issues and international security (OECD, 2011).

However, concerns over human-induced climate change are not new. They emerged already in the 19th century when Swedish scientist Svante A. Arrhenius suggested that industrial development might cause global warming. However, Arrhenius's claims were rapidly dismissed. Later, in the 1970s, the Central Intelligence Agency (CIA) commissioned a study on the security implications of climate change (CIA, 1974), although it took 20 more years before the issue started to resonate in the U.S Senate (Parker, Blodgett, & Yacobucci, 2011). In 1995 the IPCC was formed with the aims to scientifically assess human-induced climate change, the impacts of climate change, and options of adaptation and mitigation. In 2003 a report to the U.S Department of Defense received broad public attention after presenting a worrying scenario with combatant states and widespread local disturbances as a result of climate change (Schwartz & Randall, 2003).

The year 2007 was a turning point in the way environmental issues were framed and addressed globally (Brauch, 2009). In the U.S, security agencies were concerned about the potential threats that climate change could pose to U.S. interests at home and abroad. Reports raising alarms about the possible consequences of climate change coupled with the devastating effects of Hurricane Katrina in 2005, the IPCC's fourth assessment report in 2007 (Pachauri & Reisinger, 2007), and the Nobel Peace Prize awarded to Al Gore the same year all helped to create a context for the securitization of the climate change.

At the G8 meeting held in 2007 world leaders agreed to set a global goal for emissions reductions. In the same year, the UN Secretary General released a report in which climate change was specifically linked to security through the suggestion that climate might act as a conflict enhancer (Dalby, 2013). The following year, the EU released a paper summarizing seven threats considered likely to originate from climate change: (1) conflict over resources, (2) economic damage from sea level rise, (3) loss of territory that can lead to border disputes, (4) environmentally induced migration, (5) pressure on politically unstable regions, (6) tensions over energy supplies, and (7) pressure on international governance (EU, 2008).

In 2012, the U.S government's National Intelligence Council (NIC) released a report stating that one of the three most serious risks that could make interstate war more likely was increased conflict over resources, including energy, water, food and minerals. According to the report, resource conflicts would increase as a result from a growing population with increasing demands and a reduced supply of resources due to finite stocks and impacts from climate change (NIC, 2012). In in May 2014, by the U.S Center for Naval Analyses (CNA) Military Advisory Board released a report titled National Security and the Accelerating Risks of Climate Change, which stated that 'the projected impacts of climate change will be more than threat multipliers; they will serve as catalysts for instability and conflict'. Moreover, since climate change impacts transcend international borders and geographical areas of responsibility, the report states that in order '[t]o protect our national security interests both at home and abroad, the U.S must be more assertive and expand cooperation with our international allies to bring about change and build resilience' (CNA Military Advisory Board, 2014, p. 2).

The expansion of conservation NGOs

Following the end of the Cold War, researchers and policy makers broadened the concept of security. By the mid-1980s, environmental issues were framed as security concerns and a new

field of security studies was coined environmental security (Ullman, 1983; Westing, 1986). Discussions on the role of environmental issues in states' relations throughout the 1990s and 2000s opened up spaces for non-traditional actors to be part of the debates on non-traditional threats. Hereafter, environmental non-governmental organizations (NGOs), biologists, and conservationists have been deeply entrenched in linking national security agendas with issues such as desertification (Kepner, Rubio, Mouat, & Pedrazzini, 2006), conservation (McManus, Shao, & Lin, 2010), and deforestation (McDonald, 2003).

While questions of deforestation and biodiversity protection were originally the concern of a limited group of environmentalists, in the post-Cold War period environmental issues have become matters of security (Matthew, Barnett, McDonald, & O'Brien, 2010). Environmental issues' shift from 'low' to 'high' politics has also allowed conservation organizations to expand their goals to include issues such as conflict prevention and peacebuilding. Storing carbon, protecting species, and cooperating over water are increasingly seen as measures to cope with global environmental changes and to prevent droughts and food shortages (IPCC, 2014a; Strassburg et al., 2010). Consequently, environmental aid targets a wide variety of issues besides the environment, particularly in the developing world (Articles 2 and 3 in this thesis).

The escalation of environmental issues to the top of political and security agendas has triggered the formation of public–private partnerships linking governments, NGOs, international agencies, and multinational companies (Biermann, Siebenhüner, & Schreyögg, 2009). Those actors have become so entrenched with each other that it is increasingly difficult to differentiate them from one another, particularly when it comes to conservation NGOs (Igoe, Neves, & Brockington, 2010). For example, case studies conducted in Ethiopia and Tanzania have documented how forced displacements for conservation purposes have been carried out in partnership between the state and both local and international NGOs (Pearce, 2005; Sunseri, 2005).

Non-state and private actors' increasing involvement in development and environmental projects (Duffield, 2001) as well as the fusion between the public and private spheres have triggered support for environmental NGOs. This support has in turn allowed environmental NGOs to widen the scope of their projects and accordingly seek funding from a wider range of sources. As a result, conservation NGOs, particularly those operating in Sub-Saharan Africa, have grown in numbers, size and scope since the 1980s (Brockington & Scholfield,

2010), and during the 1990s biodiversity aid increased sharply worldwide (Miller, Agrawal, & Roberts, 2013), particularly for the largest conservation organizations, namely the WWF (World Wildlife Fund), Conservation International, and the Wildlife Conservation Society (the 'Big Three') (Chapin, 2004), which are also some of the world's largest NGOs (Brockington & Scholfield, 2010).

The power of NGOs, particularly environmental ones, is a relatively recent phenomenon. In the post-Cold War period increased funding opportunities, new paths for political access, the promotion of NGOs by donor countries, the simultaneous growth of intergovernmental organizations (IGOs), and the establishment of international institutions, created the political and material conditions for the expansion of NGOs (Reimann, 2006). Hereon, NGO-IGO-state partnerships became increasingly entrenched and dependent on each other, particularly when it comes to environmental governance.

Some argue that the power of environmental NGOs derives from their ability to appropriate environmental problems left unresolvable by traditional politics. By building their own bargaining assets they are able to negotiate with other international actors (Thomas & Finger, 1994). Liftin (1994) argues that the ability of environmental NGOs to act as knowledge brokers by framing and interpreting 'scientific knowledge', particularly in cases of scientific uncertainty like with environmental problems, is a significant source of power.

Corson (2010) traces the power of conservation NGOs to the reduction of state services throughout the 1990s, which led to an increasing share of authority between the state and other parties, and to the increased use of market-oriented policies to address matters of global concern like the environment (Cashore, 2002). For instance, when the U.S Congress appointed USAID to fund biodiversity conservation through non-state channels, a growing number of national NGOs shifted their goals towards promoting environmental foreign aid. The privatization of state functions under the Reagan and Clinton administrations further helped to privilege NGOs, and when facing cutbacks during the Bush administration, environmental NGOs successfully attracted corporate support that helped to strengthen USAID's biodiversity programme. Through these reforms, NGOs have been able to attract both political and corporate leaders because what is being protected is distant and does not threaten economic and political interests at home. These political transitions have allowed conservation NGOs to capitalize on 'idealized visions of themselves as representatives of civil

society operating to counter the force of private interests thought to be behind environmental degradation' (Corson, 2010, p. 578).

NGO expansion has been further facilitated by global regime shifts from dictatorships to democratic rules, and to donor's investments in democracy advocacy like in South America during the 1980s and 1990s (Brockington, Duffy, & Igoe, 2008). Hereon, the power of environmental NGOs in the developing world stems from their ability to effectively crush political challenges by "insistently reposing political questions of land, resources, jobs, or wages as technical 'problems'" (Ferguson, 1994, p. 270). As a result, international conservation organizations occupy powerful positions regarding direct access to policymakers, public policy, and environmental agendas in many countries, particularly amongst donor nations.

NGOs have not only grown in size and scale, but also in scope and influence. Parallel to a decline in multilateral peacekeeping operations throughout the 1990s, NGOs have also become deeply involved in peacekeeping and peacebuilding operations as well as in complex emergency contexts and conflicts (Abiew & Keating, 1999). Results of NGOs' role in areas such as humanitarian relief, demobilization and resettlement, support for elections, mine-clearance, and more recently, environmental peacemaking, are mixed (Abiew & Keating, 1999; Barnes, 1998; Goodhand, 2006; Goodhand, Klem, & Korf, 2009).

Today, conservation NGOs are extremely influential globally for two main reasons: they are preferred vehicles for bilateral and multilateral donor funds, and they are drivers of conservation science and policy lobbying (Brockington & Scholfield, 2010). This can be attributed to their ability to adapt to donors' interests and to shape their agendas according to global trends. For instance, during the 1990s the 'Big Three' reformulated their mission towards large-scale conservation and regional approaches such as hotspots, biodiversity corridors, bioregions, and transboundary conservation in response to donors' interests in regional projects (Chapin, 2004).

Large-scale conservation projects not only grant NGOs more visibility because they cover larger areas but also resonate with globally-dominant conservation strategies seeking to connect ecosystems by maximizing areas of land considered 'intact forests' on the basis of the argument that the larger the area, the greater the biodiversity (Brottem & Unruh, 2009). Global efforts to mitigate climate change have further provided excuses for the expansion of protected area networks because large areas of forest are needed to sequester carbon, to ensure

biodiversity survival and ecosystem representation. Through these arguments conservation NGOs have identified priority areas and linked these areas within and across countries to maximise conservation benefits. This logic has not only justified the expansion of protected areas, it has also ensured a continued and expanded role of conservation experts (Wolmer, 2003). Consequently, in many places, NGOs are the driving forces behind the establishment of TBPAs (Leibenath, Blum, & Stutzriemer, 2010).

As a result of the growing influence of environmental NGOs, much attention has been paid to the apparent privatization of governance (Cutler, Haufler, & Porter, 1999; Lane, 2003), and to the role of markets and consumerism in triggering policy changes (Micheletti, Follesdal, & Stolle, 2004), with a particularly focus on the premise of tourism as the panacea to problems of poverty and degradation, and as the solution to the financial viability of protected areas (Hanks, 2003; Spenceley & Goodwin, 2007). Tourism has been a major driving force in the establishment of TBPAs, and public-private and private-community partnerships have been encouraged because of their potential to generate jobs (see discussion in Wolmer, 2003). For instance, McCallum and Schoon (2011) argue that

> *Generally, transboundary conservation areas might be more attractive to tourists as they can visit two or more countries by going to a single transboundary protected area. Often, the experience is enriched by a unified approach to marketing from neighboring countries who share, and thus reduce, costs for the development of joint maps, common signage and infrastructure.*

However, gains from tourism and local development through TBPAs remain a promise in many places. For instance, Scovronick and Turpie (2006) found that tourism in South Africa's Kalahari-Gemsbok National Park and Botswana's Gemsbok National Park did not increase after their integration into the Kgalagadi Transfrontier Park in 2004. A before-and-after study measuring the effects of the Kavango-Zambezi Transfrontier Conservation Area (KAZA) on the tourism economy reveal that while gains had been made, a majority of the revenue has been generated by multinational corporate industries. Roughly 20 percent remains locally and the industry only employs about half of one percent of the population in the whole KAZA region (Suich, Busch, & Barbancho, 2006).

Environmental politics

Although the threat of climate change calls for broader societal consensus over climate

change as a collective issue, the politics of climate change reveal highly territorialized practices because at a global scale, individuals, states or groups have an increasing capacity to influence decisions on nature-related issues (Kythreotis, 2012). Through environmental governance, the global scale has been standardized as the natural scale of action for climate change and environmental questions, in turn decontextualizing local geographies and undermining the strategies that are much needed to adapt, mitigate, and combat climatic changes (Adger, Armel, & Tompkins, 2005). In this respect, conservation organizations have expanded their power, which in turn has allowed them to influence natural resource management and shape environmental policy in general (Duffy, 2006a). Since, in the developing world, natural resources are closely linked to questions of land and territorial control, shaping environmental agendas means shaping the broader political agendas of states.

By portraying themselves as experts, environmental NGOs are able to participate in policy implementation and the international harmonization of environmental norms and regulations (Falkner, 2013). Economy and Schreurs (1997, p. 2) therefore suggest that the internationalization of 'environmental politics is transforming the relationship among actors within and among states [and] agenda setting, policy formulation, and implementation, are becoming increasingly internationalized'. In this respect, international actors 'reach down into the state to set domestic policy agendas and influence policy formation and implementation processes' (Economy & Schreurs, 1997, p. 6).

Duffy (2006a) argues that the involvement of international actors in environmental issues and policymaking in developing countries is producing a new kind of global politics. Article 3 in this thesis highlights how emerging global politics, states, international organizations, and global corporations assist each other and simultaneously compete over control of territories (Article 3 in this thesis). Their behaviour constitutes a form of global politics whereby environmental NGOs benefit from the securitization of the environment because it grants them 'new mobility between high politics and low politics, reflected in the fact that they are increasingly invited to the "high table" to inform policy debates' (Goodhand, 2006, p. 46).

The securitization of the environment has contributed to the balancing of power in international relations, at least with regard to environmental issues. The end of the Cold War diminished the geostrategic importance of peripheral states in Africa and Latin America, as leaders in these countries lost significant power of leverage with which to resist aid conditionality, and states could no longer shelter behind the balance-of-power politics that had

prevailed during the Cold War (Dunning, 2004). Thereafter, because aid derived from one group of Western donors, African and Latin American leaders were more effectively pressed to undertake democratizing reforms (Dunning, 2004). DeSombre (2009) discusses how that post-Cold War scenario changed considerably following the securitization of the environment and the 'greening' of aid. Developing countries acquired disproportionate influence in international environmental cooperation because environmental issues required the cooperation of all states. Unlike other types of cooperation, if a state chooses not to participate in a global environmental treaty it might prevent other states from achieving their goals. Traditionally, developing countries have been considered as having little or no power in international relations and multilateral cooperation because they have little military power and economic leverage. However, in environmental negotiations, the power position of developing countries has changed as they now have the ability to exclude parties and destroy resources of common interest, and this way spoil negotiations (DeSombre, 2009).

Kythreotis (2012) argues that the climate negotiations in Copenhagen and Cancun show that the environmental debate has entered an era of *noopolitik*, defined as a networked organization that manipulates international processes by shaping public opinion through mass media in order to establish moral values regarding particular ideas (Arquilla & Ronfeldt, 1999). Noopolitik works as a form of social control whereby knowledge and innovation are used to leverage political relations at international level. When applied to environmental politics, noopolitik means that any state, regardless of economic or military power, 'has a "progressive" consensus-based platform [from] which to engage in climate change related issues' (Kythreotis, 2012, p. 458). However, this does not mean that developing countries now hold equal power to that of hegemonic states. Recipient countries still have to align their interests to international concerns. This evident from the fact that recipient countries are more likely to receive aid for non-excludable resources (resources that require cooperation) – such as migratory species or rival resources (when the use of a resource diminishes the resource's value to another actor) such as transboundary waters – than for other, more local types of resources (DeSombre, 2000). Consequently, rather than prioritizing the most acute environmental concerns, actors in recipient countries may push their governments to adopt policies that have the highest likelihood of receiving aid from donor countries.

Aid allocation patterns, particularly environmental aid, are relevant in order to understand why TBPAs are established in particular locations. When it comes to general patterns of aid, Alesina and Dollar (2000) argue that strategic foreign policy concerns explain aid allocation

rather than issues such as poverty or political-economic regimes. Thus, 'an efficient, economically closed, mismanaged non-democratic former colony politically friendly to its former colonizer, receives more foreign aid than another country with a similar level of poverty, a superior policy stance, but without a past as a colony' (Alesina & Dollar, 2000, p. 33).

General aid allocation patterns sometimes reflect environmental aid distribution, as in the case of South Africa. Due to South Africa's relative economic and political importance in the region, since 1994 the U.S has allocated more aid to South Africa than to other African countries, and since 2002 the U.S has increased its efforts towards environmental projects, particularly climate change and environmental law projects (Henk, 2006). In 2005, USAID was the largest single bilateral donor to South Africa and the second largest overall donor only after the EU (ibid.). Also in 2005, environmental military affairs between the USA and South Africa flourished. U.S aid to environmental projects in South Africa helped to sustain and develop U.S military engagement with South Africa, an important regional power at a time when regular military relations were strained between those countries (Henk, 2006).

Lewis (2002) has shown that both U.S aid and international environmental aid flows have been driven by donor interests rather than by recipients' needs. Halpern et al. (2006), and Mansourian and Dudley (2008) argue that the presence of environmental priority areas (e.g. biodiversity hotspots) explains only a small proportion of NGO spending and aid allocation, and hence there is a mismatch between conservation priorities and spending. However, more recent studies have found a more positive association between biodiversity aid and conservation needs (Miller, 2014; Miller et al., 2013).

Brockington and Scholfield (2010) investigated the spending patterns of 281 NGOs in the period 2004–2007 and found a link between conservation expenditure and conservation needs on a country level, although the correlation between the link and the amount of land set aside for conservation was weak. Holmes, Schofield, and Brockington (2012) used the same data on expenditure as Brockington and Scholfield (2010) and found that the percentage of a country's designated area as a conservation priority and NGOs' funds allocation was inconsistent. They concluded that a variety of issues ranging from political inertia and culturally powerful notions of biodiversity (e.g. charismatic wildlife) to political and economic factors all influence where money is allocated. Political stability and the previous presence of organizations and alliances in a country might be stronger determinants for fund

allocation than environmental priority areas (Lewis, 2002). For example, although large parts of Somalia are considered ecological priorities, there are no documented environmental projects (Holmes et al., 2012)

To date, there have been few systematic reviews of funding for transboundary environmental issues. Hicks, Parks, Roberts, and Tierney (2008) explore different hypotheses regarding increased funding for transboundary environmental projects, and conclude that although 'eco-functional' criteria such as natural capital stocks or regional environmental significance have been positively related to the probability of receiving environmental aid, the highest ranked factors in their study included the coalitions of the 'green and greedy' and donor country's national income. The 'green and greedy' factor refers to the coalitions composed by environmental industry groups and mainstream environmentalists (Hicks et al., 2008). Such lobbyists have a strong and positive impact on the amount of aid allocated to transboundary environmental projects and projects that benefit the global environment. In Sub-Sahara Africa one such coalition of interests has been instrumental in setting up TBPAs in the region (Spierenburg & Wels, 2010). The Peace Parks Foundation, together with international environmental organizations such as the WWF, Conservation International, and the African Wildlife Foundation, have been key actors in the drive to establish transboundary conservation schemes in Southern Africa (Adams & Hulme, 2001; Margules & Pressey, 2000).

With regards to the donor countries' national income, Hicks et al. (2008) find that the wealthiest donor countries are more likely to allocate aid to transboundary environmental projects (green aid) than to other types of local environmental projects (brown aid). The possible explanation for this is that transboundary environmental aid grants donors with comparatively more visibility, but also because such projects target global concerns as opposed to other more localized environmental issues (e.g. water sanitization and sewage). This means it is more likely for voters and governments in donor countries to relate to green aid and hence green aid is easier to 'sell' in contrast to less-related local realities. An example is the case of Denmark, which, in relation to its GDP during the 1990s, emerged as a leader in environmental aid, particularly green aid to the poorest countries in Sub-Saharan Africa (Hicks et al., 2008). As a further example, Germany's allocation of green aid during the 1990s increased considerably at the same time as support for brown aid decreased (Hicks et al., 2008). Both countries' environmental aid allocation reflected the global pattern of aid

allocation during the 1990s, when biodiversity aid increased sharply (Miller et al., 2013), particularly for the 'Big Three' (Chapin, 2004).

Through an analysis of attitudes towards aid carried out in the 1990s in the EU and separately in France, the UK, Germany, and Denmark, Rye Olsen (2001) found that public opinion is not relevant for policymaking on development aid in Africa. Rather, aid policy is determined by a top-down approach with high degrees of centralization. Public opinion might influence policy decisions within aid in Africa when it comes to emergency aid, because 'helping the poor' in the event of catastrophes and conflict through short-term assistance projects is facilitated through media coverage of selected cases, such as in Somalia (in 1992) or Mozambique (in 2000).

While the above studies are important to understand environmental aid allocation, it remains unclear who is involved in the governance of TBPAs and the criteria used for the establishment of TBPAs. These questions are explored in article 4 of this thesis through a spatial dataset that compiles the location of TBPAs, their location in relation to biodiversity hotspots, and the funding agencies for these parks. The study shows a clear pattern throughout the region, where a majority of TBPAs are not established in places with intense levels of conflict, and most TBPAs do not include large portions of areas that are considered to be biodiversity hotspots. The low spatial intersection between TBPAs, conflicts and biodiversity hotspots suggests that the decision to establish a TBPA may be based on a combination of factors other than ecological relevance or conflict severity. These findings underline the need to explore other factors influencing the spatial distribution of TBPAs in Africa and elsewhere.

A further question is how cross-border governance arrangements accompanying the establishment and management of TBPAs coexist spatially and institutionally with other forms of organization. Reed and Bruyneel (2010) discuss how the establishment of governance structures to address global environmental issues often implies layering governance systems across geographic spaces and levels of organizations. Fall (2003) argues that governance systems are fundamentally different from each other, and that results in the superimposition of some governance structures at the expense of others. Several others have argued that proponents of transboundary conservation use the arguments of pre-existing bioregions in need of connectivity to legitimize the spatial expansion of protected areas (see discussions in Büscher & Whande, 2007; Fall & Egerer, 2004; Ramutsindela, 2004). However, the material expansion of protected areas also entails the rescaling of environmental

governance from previously nationally-bounded regimes to bioregional ones across political borders. Despite this, there has been little discussion on what this rescaling of governance to the bioregional level entails and how the transboundary scale is enacted. Article 3 in this thesis, shows that reframing environmental issues at a transboundary level can create a playground for international donors and local actors, which allows them to mobilize across governance scales and sources of funding. In Central America, this resulted in increased power of already powerful international agencies; it helped states to attract different types of funding to build their bureaucratic institutions and fund their under-budgeted ministries; and empowered actors previously considered marginalized at the expense of other local actors.

From national borders to bioregions

Central to the expansion of transboundary conservation is the mobilization of powerful imaginations of space. The establishment of TBPAs is based on a 'borderless world' logic (de Villiers, 1999; Hanks, 2003), wherein political borders are presented as disrupters of ecological flows (e.g. migratory corridors) (Braack & Petermann, 2004; Metcalfe & Thembela, 2008). Advocates of transboundary conservation strongly emphasize that protected areas should not be demarcated by national political boundaries, but by ecological divisions (Zbicz, 1999). Borders should instead be based on natural divisions delineated by bioregions – areas of land or water delimited 'natural' topographical features rather than artificial boundaries because bioregional borders have been created naturally through ecological processes (Giraut, 2011; Sale, 1985; World Resources Institute, 2000).

The choice of borderlands as sites for TBPAs is further supported by the view of borders as zones of conflict, and hence, the need to redefine their function to zones of cooperation (see Ramutsindela, 2007b for a discussion). Proponents of transboundary conservation have argued that 'political boundaries are the scars of history' (Willem van Riet of the Peace Parks Foundation as cited by Godwin, 2001) and national borders are 'artificial' (see Aberley, 1999 for a discussion). There are several problems with those arguments. First, there is broad scepticism regarding the 'naturality' of bioregions, not only because the concept of *nature* is emerging from the construction and deconstruction of space (Fall, 2010; Noe, 2010; Paasi, 2009), but also because bioregional borders are neither more nor less natural than national borders (Agnew, 2007; Newman, 2003a). Second, attempts to change the role of borders through ecological arguments for purposes of peace are misconceived because 'the origins and functions of borders are inextricably linked to national, regional and international complexes. Moreover, disputes over borders have their own peculiar histories that cannot be

subjected to general and common solutions' (Ramutsindela, 2007b, p. 33). Third, the argument of supposedly pre-existing natural borders downplays the political aspects of borders, whereas their ecological significance is used as a justification for the enlargement of conservation areas. Thus, advocates of transboundary initiatives create a discourse in which national borders are portrayed as socially produced, but ecological areas are not similarly presented as socially constructed (King & Wilcox, 2008). Fourth, the understanding of ecological borders as natural lines of division assumes that colonial history and other periods in history did not play a role in producing 'natural' spaces (Schroeder, 1999), and it ignores the active role that local communities have had in producing and protecting biodiversity (Fairhead & Leach, 1996).

The misconception of bioregional borders as more natural than state borders originates from a lack of conceptualization of borders. It is thus pertinent to recall that geographers have advocated that borders should be understood as cultural, social, and political processes and products (Newman, 2006b), particularly because borders are part of the creation and institutionalization of territories, as well as the production of national identities and the identification of 'otherness' (Newman & Paasi, 1998). Their inward-oriented character makes state borders complex objects of study: they are closely associated with the state apparatus and with ideological practices such as nationalism, and territoriality. Territoriality is 'an ideological practice and discourse that transforms national spaces and histories, cultures, economic success and resources into bounded spaces' (Paasi, 2011, p. 14).

If borders (whether national or bioregional) are constructed, questions of power become relevant, particularly when social groups aim at defining and redefining relations between social and physical spaces (Agnew, 1993). Borders are always created by someone and for something (Newman, 2003b). Often, borders are created as a means to separate *us* from *them*, as a means of perceived defence from others outside. They are both erected and opened by those who have the power to decide who and what is inside and outside. Once established, they function like institutions of border management, controlling the means of border crossing (Newman, 2011).

Following the above discussion, it could be argued that TBPAs are part of border processes whereby actors attempt to redefine the meaning and uses of borders and nature. However several questions emerge from this. First, why would actors use TBPAs for border control? Article 2 in this thesis shows that transboundary conservation can be used as "soft" rhetoric to

control and militarize previously uncontrolled borderlands. The territorial character of transboundary conservation indicates that TBPAs should be treated as territorial formations rather than neutral ecological entities.

Second, it is unclear how the delineation of new bioregional borders affects the role of the state in nature conservation and border processes. Whereas advocates of transboundary conservation argue that managers of bioregions should not be constrained by traditional boundaries, such as the nation state, but instead should follow the boundaries of ecosystems (Pirot et al., 2000), Articles 2 and 3 in this thesis show that the state remains a pivotal actor in the establishment and management of TBPAs. For conservation organizations, the state is fundamental in environmental governance for linking local and global actors (Ramutsindela, 2007b); whereas for the state, conservation projects can be crucial for financing and strengthening state institutions (Article 3). Ultimately, the Central American case highlights how states, international agencies, and private corporations aid each other in the process of gaining control over spaces to form new territories. This not only reinforces states' territorial authority but also allows international agencies and private corporations to benefit from states' increased territorial control (Article 2 and 3 in this thesis).

Third, while several studies have highlighted that TBPAs can be useful tools for gaining control over borderlands (Ramutsindela, 2007b; Ramutsindela & Noe, 2012; Singh & Van Houtum, 2002; Wolmer, 2003), the link between territorial control and inter-state relations is less clear. In other words, how do control mechanisms enforced through TBPAs affect relations between states? Article 1 finds a regional variation on the effect of TBPAs upon inter-state relations and highlights the importance of context to understand the role that transboundary conservation may have upon state's relations. While this should come as no surprise, most of the conclusions concerning the peace-building aspect of transboundary conservation originate from local studies carried out in Africa, at best, and wishful thinking, at worst. Articles 2 and 3 reinforce the findings of Article 1 and conclude that transboundary conservation in Central America has not contributed to improved inter-state relations. Rather, TBPAs seem to aid states' individual territorial agendas rather than contribute to regional cohesion.

A fourth and related question to the above is regarding the lack of practical and theoretical clarity of the concrete actions used to establish peace through TBPAs. Proponents of the environmental peacemaking hypothesis assume that cross-border cooperation can be initiated

through common environmental concerns, and subsequently expand this cooperation to other more politicized areas (Conca & Dabelko, 2003). According to this logic, the establishment and management of TBPAs should lead to increased formal and informal cooperation that eventually will lead states to communicate and cooperate even in cases of ongoing conflict (Ali, 2007). Whereas proponents of transboundary conservation consider that decades-long conflicts between India and Pakistan and between Israel and Palestine could be solved through the establishment of a TBPA along their shared borders, TBPA establishment treaties do not include any peacebuilding or conflict-preventive activities (Carius, 2007; Ramutsindela, 2007b). The lack of measuring indicators makes it difficult to assess the contribution of TBPAs into peacebuilding efforts. By focusing on the establishment and management of a transboundary initiative in Central America Articles 2 and 3 attempt to reflect upon the role of a TBPA in regional cooperation. Given the lack of clear indicators, reflecting on the driving factors behind the establishment of the TBPA, the discourse used for its' establishment, the agencies funding the initiative, and the current status of the park, may help us understand whether the establishment and management of the TBPA has contributed to greater regional cooperation and more peaceful relations as suggested by supporters of transboundary conservation.

Fifth, the link between transboundary conservation and peacebuilding is undertheorized. Ramutsindela (2007b, p. 38) argues that in order to understand the role of TBPAs in the promotion of peace, it is necessary to understand what is implied by 'peace', the location of TBPAs in relation to zones of political conflict, and the causes of conflict in the places where TBPAs are established and how these parks respond to them. TBPAs deal with states and their behaviour and support the idea that peace can be achieved by state's engagement at the supranational level. However, there remain several questions on how TBPAs are to impact regional cooperation and their relation to conflicts. One set of questions concern the location and role of TBPAs in cases of inter-state disputes: Are all TBPAs established in borders that have experienced inter-state conflict? If so, when were TBPAs established, previous to or following the dispute? Are TBPAs a cause or a consequence of peace? Do TBPAs have the same effect in all regions of the world? The conclusion in Article 1 that TBPAs may enhance peace in some regions but not others is partly strengthened in Article 2. Regarding the causal relationship between TBPAs and conflict, it seems that the peaceful effect of TBPAs is related to the existence of TBPAs rather than their recent establishment. A further discussion of this is presented in Article 1. The second set of questions relates to intra-state and non-state

sources of conflict and the risk for contagion – a conflict in one country spurring and sparkling conflict in a neighbouring country within a short time period (Buhaug & Gleditsch, 2008). If TBPAs are established in conflictive borderlands to specifically target border state conflicts, the question is then how do TBPAs behave with other sources of conflict taking place in areas outside of what might be consider the "border", and how are spill-over effects of these conflicts approached. This issue is problematic for analytical purposes for two reasons: first, it is unclear what proponents of TBPAs mean with "borderland"; and second, if one is to measure the impact of TBPAs upon peace and vice versa, where should the line be drawn, which conflicts should be included, and how should the spatial analytical dimension be delimited given that TBPAs may cover border areas or not? In an attempt to go round these problems, the thesis uses two different conflict datasets and regional delimitations in Articles 1 and 4. Article 1 looks at the relationship between TBPAs and inter-state border disputes globally, while Article 4 focuses on different types of conflicts (state and non-state) with a larger death threshold in Africa (see section on "Quantitative Data" for a discussion).

Central American integration process and the African Renaissance

The movement from government to governance and from national protected areas to bioregions in nature conservation has been aided by particular regional discourses. For the interest of the thesis and the focus of articles 2-4, this section focuses on describing the regional integration processes in relation to transboundary conservation in Sub-Saharan Africa and Central America.

The 'African Renaissance' discussion in Sub-Saharan Africa (Vale & Maseko, 1998) and the process of integration in Central America (Girot, 2005; Girot & Granados, 1997) helped proponents of transboundary conservation to expand a discourse of a unified nature that resembled the discourses of social integration advocated at the end of the 1990s.

According to Vale and Maseko (1998), there are two understandings of an African Renaissance: an Africanist and a globalist. The Africanist understanding is that the renaissance aims to change the image of Africans by reinterpreting their history and culture differently compared to the colonial construction. A successful African Renaissance would end with the discriminatory economic position that the continent has historically faced. This is a post-structuralist reading of politics in the continent that seeks emancipation before market liberalization, and it is primarily advocated by intellectuals hoping for a new future for Africa. By contrast, the globalist reading suggests a continental effort led by South Africa whereby

African states achieve economic globalization (Vale & Maseko, 1998). The idea that 'what is good for South Africa is good for Africa' reflects international expectations of South Africa to resolve the continent's problems.

Globalist understandings of an African Renaissance were championed by South Africa's former president Thabo Mbeki, who advocated a neoliberal ideology of African development. Economic growth through foreign investment was to be the panacea for the continent's multiple problems. However, Taylor and Williams (2001) argue that the understanding of the African Renaissance sought to maximize South Africa's strategic options on the continent. By advocating the liberalization of markets, trade, and institutions, Mbeki expected the international society to provide debt relief for Africa, encourage larger flows of capital, provide market access for African products, and for Africa to gain political influence internationally. Thus, besides being a South African concept, the African Renaissance is also a foreign policy doctrine where the expansion of TBPAs in Africa, particularly Peace Parks, has been used as a concrete means to realize the dream of the African Renaissance. Advocates of Peace Parks often promote and justify the concept on that basis (van Amerom & Büscher, 2005).

In Central America there have been several attempts at regional integration. Although all states share the same language and a similar colonial history, attempts at regional integration have repeatedly failed. Girot (2005) highlights the evident lack of a regional identity at the end of the colonial period. At that time, Central America was formed only by scattered centres of densely settled populations. Despite the colonizers' efforts to organize the region under the Captaincy of Guatemala, the countries were poorly interconnected and their citizens lived in a state of local autarky. The failure of the Central American Republic in the period 1821–1842 is attributed to the lack of territorial, economic, and social integration between the provincial units (Girot & Granados, 1997). Between 1842 and 1863 several attempts to reunite the Central American Federation ended in failure. As with previous regionalist efforts, the attempts failed because regional integration lacked strong foundations and the social fabric necessary to achieve such integration was not in place (Girot, 2005; Girot & Granados, 1997).

During the 1990s, there was a revived interest among the Central American states to establish a 'common regional action' to reduce the costs of international openness (Lizano, 1996). There was also motivation to defend the region from eventual communist aggression in the territory and an opportunity to profit from the U.S willingness to provide financial support to

counter-insurgency and civic action programmes (Schmitter, 2008). Hence, a series of regional and subregional integration projects were implemented with the aim of assimilating the Central American economies into the global markets. Initially, there was a strong focus on economic development and market liberalization, but eventually the Central American integration programmes included goals of reinforcing peace and democracy, and strengthening regional integration, which involved strengthening civil society, sustainable development, protection of the environment, the eradication of poverty, and eradication of violence, corruption, and drug and arms trade (Corte Centroamericana de Justicia, 2007). As part of the regional integration process, 10 TBPAs grouped in the Mesoamerican Biological Corridor (MBC) were suggested as a way to link nature and people in Central America. The discourse advocated by proponents of transboundary conservation resonated well with the discourse of a Central American identity. More importantly, it provided concrete tools to demarcate previously uncontrolled territories and it served to dissipate opposition from indigenous groups and environmental activists against the neoliberal economic projects of the 1990s (Barquet, Forthcoming-a). Having situated the thesis in a wider theoretical context I now turn to describe the methodology and data used in the four articles presented in Part II.

METHODOLOGY AND DATA

In this thesis I take a pragmatic approach and used qualitative, spatial and quantitative methods in my research. Mixed methods are increasingly advocated in the social sciences and studies of violence and conflict have started to make use of what Laitin (2003) calls a 'tripartite' methodology, whereby narratives are analysed in relation to individual cases as well as through statistical analysis in order to increase a study's scientific leverage.

The field of peace and conflict studies has acknowledged the usefulness of a mixed methodology approach. Quantitative methods are useful to identify causal factors, whereas qualitative methods can help us explain complex issues (Geddes, 2003). Snyder (1978) recognized the problems of measurement and inference in quantitative analysis in the study of violence, and Bryman (1988, p. 140) argued for bringing together patterns and processes in social organization because 'qualitative research presents a processual view of social life, whereas quantitative provides a static account'. A static view in quantitative research accounts for the regularities and patterns of structure inherent in social life, whereas qualitative studies grasp the changes occurring through time (Thaler, 2012).

Often, quantitative research has focused on explaining the macro-level conditions of violence and patterns of conflicts, while the micro-level has been typically investigated through qualitative methods (Thaler, 2012). Recently, the availability of local data has made it possible for large-N studies[3] to be conducted at community levels. However, in order to produce comprehensible studies, a mixed approach is necessary, because whereas systems of social relations and meaning in which social action takes place can be studied empirically through any of the above mentioned methods, quantitative studies provide a clearer structure (Hays, 1994). However, in structure, action results from the decisions of individual agents and identical behaviours can be based on varied constellations of motives (Oakley, 1997). To capture motives and processes of thought, qualitative methods are more suitable. If, following Giddens (Giddens, 1984), structure and agency are interlinked such that agents' actions are shaped by and produce structure, then mixed methods are ideal for analysing the interaction between structure and agency (Thaler, 2012).

Quantitative data

The idea of carrying out quantitative statistical and spatial analyses emerged from the realization that there was a lack of quantitative studies to support the claims being made concerning the role of transboundary conservation in interstate relations. Supporters and critics of transboundary conservation alike have relied on case studies to generalize their claims. Inspired by the peace and conflict research investigating the relation between climate change and violence, as well as studies on the role of natural resources and conflict, I became interested in identifying patterns of TBPA establishment and interstate relations. Following the goals of transboundary conservation to establish peace between states, article 1 tests the relationship between inter-state disputes and TBPAs. For this I used the Militarized Interstate Dispute (MID) dataset because it is the only georeferenced dataset on global state-to-state conflict that does not exceed 25 related battle deaths. The rationale for using low-level violence conflicts in the article was the assumption that if TBPAs were to have an effect on levels of violence, they would most likely impact small-scale disputes rather than civil wars.

Article 4 focuses in the African region. The rationale for carrying out a regional study in Africa (and not in Latin America or elsewhere) is that a) TBPAs in Africa are by far better documented than anywhere else in the world, which means there is more and more reliable data available for the individual parks; b) the peace-building element of most African TBPAs

[3] Large-N studies look for patterns in a large number of cases.

is more explicit than elsewhere in the world: c) there are more TBPAs with cross-border cooperation in Africa than in other regions; and d) Africa has been the locus of TBPA interventions since early 2000. Besides this, Africa is particularly interesting for studying the relationship between TBPAs and conflict, as the region accounted for most of the major armed conflicts of the 1990s (Seybolt, 2000; Wallensteen & Axell, 1994), and while armed conflict in the early 2000 declined globally, in Sub-Saharan Africa more people were being killed in wars than in the rest of the world (Human Security Center, 2005). At the same time, throughout the end of the 1990s and 2000 Africa has had the largest concentration of peace operations in the world (SIPRI, 2013), including the establishment of TBPAs for peacebuilding, as revealed in Article 4.

I used a different conflict dataset than in article 1: the Georeferenced Event Dataset v.1.5-2011 (GED) from the Uppsala Conflict Data Program (UCDP) on organized violence in Africa (Sundberg & Melander, 2013). I use the GED dataset because it includes all types of conflicts in Africa (whether interstate, intrastate, or one-sided violence) and uses a higher death threshold than the MID dataset (GED includes all conflicts that have crossed the 25 battle-related death threshold). Also, using two different conflict datasets allowed me to examine different time frameworks. While MID dataset covers the period of time 1945–2001, GED covers the period 1989–2010, which was important for the research questions of this thesis because many of the newly established and planned TBPAs could not be included in the analysis in Article 1.

The rationale for using the GED was to further test whether TBPAs are established in places that experienced conflict. While Article 1 gave us positive results when using MIDs along borders, MID data also showed that most borders in the world have experienced conflict at some point in time. The question that emerged from this spatial relation between TBPAs and MIDs was whether TBPAs were established in places where other types of conflict had occurred. This question is relevant given that following the end of the Cold War, the causes of conflict shifted from inter-state to civil wars. Between 1945 and 1990, about 5 civil conflicts occurred per each inter-state war (O'Loughlin, 2005) but by 2003, the ratio had increased to 8.5 per inter-state war (SIPRI, 2004). While the number of inter-state wars has decreased, the number of internationalized intra-state conflicts has increased, as a result of that most intra-state conflicts do not remain confined within the borders of a single country (Melvin, 2014). As the nature and effects of internal strife have become international in nature, it is increasingly difficult to classify and address conflicts as internal or external of a country. For

instance, research has shown that an important predictor of civil war in a country is whether its neighbours are experiencing internal strife (Buhaug & Gleditsch, 2008). Ignoring the contagious effect of conflicts is to neglect one of the most obvious explanations of conflict, and this is particularly relevant when establishing TBPAs as regional peacebuilding tools because

> *Regional conflicts are, per definition, a mixture of intra-national, intra-regional, and extraregional conflicts. Considering that most conflict is currently intra-state and regional conglomerations of weak states are at internal risk because of conflict diffusion, international interests exacerbate tensions and power relationships inside regions resulting in shatterbelt-like scenarios* (O'Loughlin & Raleigh, 2008, p. 498)

Africa is the region that has had the highest share of domestic conflict in the world (Buhaug & Rød, 2006). For many of these domestic conflicts, cross-border sanctuaries have been fundamental to fuel and escalate wars, as it was the case in Rwanda, Burundi, DRC, Uganda and Liberia. In these cases rebel groups operated beyond the national boundary often with support from the neighbouring regime (Buhaug & Rød, 2006). The case of Uganda reflects how "civil wars [can] become international wars because of the porous nature of borders and the alliances that are built across them by governments and rebels" (O'Loughlin & Raleigh, 2008). In cases like The Greater Virunga, TBPAs can end up in the centre of events by providing shelter and strategic locations to rebel groups and militaries; by hosting refugees fleeing from civil wars in neighbouring countries; and by providing valuable forest resources to sustain and escalate conflict (Martin, Rutagarama, Cascão, Gray, & Chhotray, 2011).

The UNEP-IUCN dataset on protected areas is used in both Articles 1 and 4 (the 2010 version for Article 1 and the 2013 version for Article 4) because it is the only georeferenced compilation of global protected areas. TBPA data are used in both articles. For Article 1 I used the TBPA dataset created by Lysenko et al. (2007), whereas for Article 4, I used my own TBPA 2014 dataset (explained below). Besides conflict and protected area data, country data from the CShapes dataset (Weidmann, Kuse, & Gleditsch, 2010) are used in both articles. Article 1 uses several control variables identified as relevant in studies of interstate cooperation (Hegre, Oneal, & Russett, 2010), and article 4 additionally uses Conservation

International's dataset on biodiversity hotspots to explore the spatial relation of TBPAs with areas considered as priorities for their biodiversity value[4]

Article 1 uses quantitative methods in the form of Geographic Information Systems (GIS) and statistics. ArcGIS is used to put together spatially referenced data on protected areas and conflicts. This georeferenced data was used to build a dataset (in STATA 13.1), with other control variables, to test whether TBPAs are located between contiguous states that engaged in conflict with one another and whether TBPAs decrease the likelihood of conflict between contiguous states. For a more comprehensive discussion of the data and analysis, see Article 1.

Article 4 introduces an updated spatially-referenced dataset of TBPAs in Africa. Polygons on individual protected areas were taken from the IUCN-UNEP Protected Planet dataset version 2013. Secondary data regarding the establishment of TBPAs was collected through governmental documents, Memorandums of Understanding (MoUs) on TBPA establishment, agency reports (e.g. World Bank, UNDP, IUCN, and GEF), and existing case-study literature. The information was assembled into the dataset, which included information such as location, size, name, and establishment date of the individual protected areas constituting the TBPAs, signing year of the MoUs, and IUCN categorization. The dataset also gathered information on the main actors funding the TBPAs. In Article 4, ArcGIS is used to show patterns of TBPA establishment in Africa in relation to density and intensity of GED conflicts and biodiversity hotspots.

The decision to include some variables and not others in both Articles 1 and 4 had to do with the availability of spatially-referenced data at local levels as well as time constraints. Although more elaborate analyses could have been done (particularly for Article 4), research deadlines had to be met. However, the methods employed in the two articles constituted a point of departure for the systematic study of transboundary conservation and interstate relations and were an exploration of what future studies could do with different data or in different regions.

Qualitative data

Articles 2 and 3 are based on qualitative data collection in Nicaragua and Costa Rica that was carried out between September and November 2011 and in March 2012. Data collection

[4] A longer discussion on the choice of this indicator is provided in Article 4

consisted on semi-structured interviews, group discussions, informal conversations, a collection of strategic documents (e.g. historical documents, Memorandum of Understandings, management plans, governmental reports, NGO-reports), and a review of existing research in the area and on the topic. The gathered data was analysed by (1) reviewing notes and listening to recorded interviews, (2) taking notes of key information from the notes and interviews, (3) reviewing strategic documents, (4) translating the data, (5) organizing the data by topic and events, (6) organizing the data by type of actors (governmental, non-governmental, locals), (7) identifying patterns according to the research questions, (8) identifying unexpected issues, (9) identifying coherent information, and (10) triangulating the data with existing research. This process was done several times.

To analyse the data, I chose to use discourse analysis to reflect upon 'the ways meanings are connected through representations, texts and behaviors' and how practices 'become forms of disciplining' (Aitken & Craine, 2005, p. 264). Discourse analysis is helpful to understand the connection between power and knowledge production and can be useful to analyse geopolitics (Müller, 2008; Tuathail & Agnew, 1992), conceptualizations of nature (Castree & MacMillan, 2001; Escobar, 1996, 1998; Gregory, 2001; Hajer & Versteeg, 2005; Soper, 1995), and border processes (Newman, 2006a; Newman & Paasi, 1998; Paasi, 1999).

The study area was chosen because Nicaragua and Costa Rica happened to be engaged in a border conflict within the delimitations of a TBPA at the time I when was planning my fieldwork. At the time, this was the only case where a TBPA was located within an ongoing territorial dispute. Bearing in mind the aims of transboundary conservation, I considered that examining a TBPA in a conflict area would be invaluable, not only because this was where the potential of transboundary conservation could be truly appreciated, but also because no earlier studies of TBPAs had been conducted in areas with ongoing conflict. Fieldwork was carried out before the final results in Article 1 were known. Thus, the conclusion that TBPAs are not related more to peace in Latin America (in Article 1) was only reached in 2013, one year after I had completed fieldwork.

Fieldwork was organized in two stages. The first part of my fieldwork (September–November 2011) took place almost entirely on the Nicaraguan side of the border. The second part of fieldwork (March 2012) was carried out entirely in Costa Rica. In Nicaragua, I started my fieldwork in Managua and Leon, while in Costa Rica, I started it in San Jose. While in Leon, I

was hosted by the University of Leon in cooperation with 'Kulturstudier'.[5] In San Jose, I was hosted by the United Nations University of Peace (UPEACE). My hosting institutions in Nicaragua and Costa Rica were crucial for introducing me to key informants and a social network through which I could explore my research questions before visiting the fieldwork site. During that time I carried out interviews with NGO staff, researchers at universities, and officials from government institutions. The informants were purposely targeted and interviews were scheduled in advance. The interviews were left semi-structured, with open-ended questions (See Appendix I and II for a list of informants and interview guides).

Additionally, I spent several weeks in Leon, Managua, and San Jose gathering background information and governmental documents. The documents were crucial to complete the information gathered through interviews because in Nicaragua many informants were unaware of the main area of focus in this study, *Sistema Integral de Areas Protegidas para la Paz* (Integrated System of Protected Areas for Peace), also referred to as Si-A-Paz, and others were reluctant to speak about issues that involved the border. The first weeks in the three cities also enabled me to gain insight into people's perceptions of the borderland and the conflict. The insight was later important to gain a perspective on the construction of borderland discourses and to understand cross-borde relations between Nicaraguans and Costa Ricans through time. While residing in Nicaragua and Costa Rica, daily conversations and activities shaped my understanding of the situation. Having Spanish as my mother tongue and coming from a similar cultural background was of considerably help when it came to understanding many situations and to collect data.

In the borderland, data were collected in the six villages closest to the Eastern border between Nicaragua and Costa Rica: San Carlos, Boca de Sabalos, San Juan de Nicaragua, Tortuguero, Barra del Colorado, and Isla Calero. Data collection consisted of field notes and participant observations, focus groups, interviews, and informal conversations carried out with government employees, staff from local and international organizations, local inhabitants, and military and police personnel. I documented 42 exchanges (including conversations, discussions, and interviews). All exchanges were conducted in Spanish (see Appendix I for a list of informants). The interviews were left semi-structured, with open-ended questions, and

[5] Kulturstudier is a company arranging university courses abroad and linked to recognized universities and colleges in Scandinavia.

informal conversations were documented where possible (see Appendix II for the interview guides).

Selection of local respondents was carried out in two ways. First, I took advantage of any opportunity to talk to anyone who was willing to talk to me. At times, such conversations took place while we were travelling on taxis and boats because people were more willing to talk there than during a scheduled interview. Borderland boat rides, which are a daily form of transport for many inhabitants commuting from village to village, can take over three hours, which means that people have the time to engage in a discussion. Informants might also have been willing to talk during boat trips because I was unable to record the interviews due to the loud noise from the boat engines, and hence they may have been less guarded about what they said than when the recorder was on. At other times I walked through the villages and found people that were willing to talk to me. This was easier on the Costa Rican side than in Nicaragua, where the locals were less keen to talk spontaneously about the conflict. That was probably because at the time when I carried out fieldwork in Nicaragua, the conflict was still too fresh in people's minds, military occupation over the borderland was widespread, and the social environment was strained. The second way of identifying respondents was through snowball sampling, whereby one informant led me to new informants. The method was particularly useful when time was short and I needed to find out specific information; but it was also useful to mentally map social networks and their role in the villages. Informants often introduced me to members of their social networks, whom otherwise I would not have met, and at other times they identified relevant actors.

The different contexts in which I carried out fieldwork in Nicaragua and Costa Rica are relevant to understand my informants' attitudes. The first part of the fieldwork took place prior to the Nicaraguan elections in 2011 and following the most intense period of the conflict when Nicaragua and Costa Rica respectively moved their army and police forces to the borderland. The social environment was tense and my informants were very cautious of what they said, particularly when the recorder was on. Many times, informants would only dare to speak informally, when the interview was over and the recorder had been switched off, particularly in the case of state officials. In Nicaraguan border towns, military personnel were hostile towards the locals and tourists. Regular check-ups at checkpoints along the San Juan River were the norm when travelling by boat, cameras were not allowed on board, and boat drivers advised us not to speak or even stare at the soldiers. They complained that they had to go through the check-ups twice daily at every checkpoint. During my boat trips from San

Carlos to San Juan de Nicaragua boats passed through five checkpoints. Thus, interviewing a soldier was out of the question.

In Costa Rica, the political situation between both countries was still strained in 2012, although the risk of the conflict escalating had decreased. In contrast to Nicaragua, the locals were more outspoken and less afraid to speak about the conflict. Civilian and border police were more approachable and I was able to carry out several interviews with them. However, during interviews an unexpected source of local tension surfaced. It became apparent that local inhabitants were more concerned about their own government's actions against them than about the supposed conflict with Nicaragua. Several of the informants claimed that the conflict with Nicaragua always came up whenever politicians wanted to distract attention from their 'dirty politics' (Interviews 19, 20, 22 March 2012).

A common trait on both sides of the border was that all informants provided a different version of what the conflict was about, why it had started in the first place, and which country was right. Most informants could not locate the village of Isla Calero (the source of the dispute) on a map or on site. Families inhabiting Isla Calero did not know that their village was part of Isla Calero. Locals from Barra del Colorado (the neighbouring village) did not know where Isla Calero started or ended. Some argue that Isla Calero was famous for being home of the 'Tarzanes', an organized drug cartel thought to have been responsible for sparking the conflict. Local informants in Nicaragua argued that the Nicaraguan military, in an attempt to catch the group, entered Costa Rican territory with armed soldiers, which Costa Rica had perceived as an invasion. Others argued that the island was owned by rich cattle ranchers with close ties to the government. Whether the rich ranchers were the 'Tarzanes' remains an open question.

Interview guides evolved during my fieldwork. For instance, prior to undertaking my fieldwork I realized that information on Si-A-Paz was very difficult to find. However, I regularly came across different management designations regarding the area. I contacted by email an official from the National System of Conservation Areas (Spanish: Sistema Nacional de Areas de Conservacion, SINAC) in Costa Rica to find out about whether Si-A-Paz existed, but her answers were too vague. Moreover, the official was also very discouraging regarding my research and advised me not to carry out any data collection in the areas near the conflict site, which were supposedly affected by Si-A-Paz, and instead referred me to La Amistad Peace Park located on the border with Panama. At that time, the conflict between Nicaragua

and Costa Rica had peaked. Next, I contacted a researcher from the Danish Institute for International Studies (DIIS) who had been working in the area. The informant confirmed that she had heard of Si-A-Paz but did not know about its status. Given the lack of concrete information, when I started my fieldwork many of my initial questions were very explorative and focused on finding out about the existence of Si-A-Paz.

The initial responses from my informants from SINAC and DIIS proved to be generally reflected in the answers I received during fieldwork in Nicaragua and Costa Rica concerning Si-A-Paz. The broad unawareness of Si-A-Paz on the part of organizations, state institutions, and the locals made me realize that transboundary conservation might only be an institutional layer whose governance was only reflected at bureaucratic levels. Si-A-Paz seemed to be the discourse of technocrats, conservationists, and politicians, particularly during the 1990s, and that prior to then had only materialized in populist speeches, regional negotiations, and development and environmental aid policies.

Ethics and power

Embedded in qualitative research are issues of relationships and power between the researcher and the researched. Feminist geographers have highlighted the intersection of power and academic knowledge that affords the researcher a privileged position (Rose, 1997). Such privileged positions allow for greater access to resources as well as to the power inherent in the production of knowledge about others. This type of power is what differentiates us, the researchers, from the researched. Thus, situating me as a researcher entails recognizing the power position from which I started my fieldwork.

While I recognize my privileged position as a researcher, the power dimension in qualitative research is not one-ended. Rather, Rose (1997) suggests considering the positions of the researcher and researched as relational (i.e. constituted through the research process itself). Thus, rather than seeing the researcher as the one sitting in a power position and the researched as passive objects of study, both actors can be equally important in determining the research outcome. Whereas the researcher is often seen as the one producing knowledge, it is the researched that, nevertheless, hold information. Informants 'are not simply passive recipients of a researcher's claim of authority and intellectual agenda but are active agents who can redefine the contours of the research, outline and restrict the researcher's role, or even steer the project in a different direction' (Guevarra, 2006, p. 527). Informants choose to give certain information, often based on their own evaluation of the researcher. The researcher

may be judged in terms of, for example, their background, gender, age, and social status. Often, researchers have little control over informants' perceptions of them. Ong (1995) goes as far as to suggest that the power in fieldwork relations does not reside primarily in the researcher. Researchers are vulnerable to how informants define and locate the researcher's place in their social networks based on the researcher's usefulness to informants and their beliefs and political agendas.

Being a researcher, linked to a university in Norway – a country that has long been involved in bilateral aid in both Nicaragua and Costa Rica and was particularly involved in the establishment of Si-A-Paz – most likely affected the information I gathered during my fieldwork. However, from my informants' reactions, I consider that a similar cultural background and having Spanish as my mother tongue helped me tone down whatever preconceptions my informants might have had about me and Norway as a donor country. In this case, similarity in background may have been beneficial as a point of entry, due to a common understanding and language, and similar 'political problems' (Aguilar, 1981).

Regardless of similar cultural background, I was still a foreigner investigating a highly disputed issue in the middle of Nicaraguan elections and a border conflict. While sometimes this was a hindrance, particularly in Nicaragua, it was also fruitful as some people, particularly in Costa Rica, engaged in heated discussions and unveiled unexpected issues. Thus, the timing of my fieldwork was an important factor affecting my informants' attitudes and willingness to participate in the research project.

Besides the challenges of being perceived as a foreigner linked to a bilateral donor country, there were various challenges linked to being a female researcher gathering data in highly religious and conservative villages. However, since these challenges had been anticipated, I made arrangements to be accompanied by a male research assistant in Costa Rica and a female research assistant in Nicaragua. Both assistants had knowledge of the respective areas and the organizations involved, and proved to be crucial for gaining access to key informants and providing background information.

While I constantly strove to obtain a gender-equal list of informants, this was not always possible. For example, in my interviews there was an overrepresentation of male state officials. Most of my informants, with the exception of the 20 students that participated in a group discussion, were over 20 years of age and the majority of those were over 30 years. The reason for selecting this age group was that the research questions required people who were

aware of management rules and the border conflict, and I assumed that informants over 20 years would be better informed than children and teenagers. However, I was still interested in knowing how Si-A-Paz and the conflict had affected people's daily lives, including those of children, and therefore held group discussions. Among the local informants, I interviewed people with different professions (e.g. fishermen, tourism operators, local entrepreneurs, housewives, teachers, and policemen) as well as different ethnic backgrounds, which I selected through both random and purpose sampling in order to enhance the credibility of the research and include different perspectives on research questions (Patton, 1990). The credibility of my research was further sought by triangulating the data (Eyles & Donovan, 1986). This was done in three ways: first by using quotes from different informants and cross-checking data from different interviews; second by combining primary and secondary collected data, such as reports and management plans; and third by corroborating some of the information with quantitative data.

SUMMARY OF THE ARTICLES

The thesis consists of four independent but interrelated articles. Article 1 has been published in *Political Geography*, and Articles 2 and 3 have been accepted for publication in *Geoforum* and *Norwegian Journal of Geography*, respectively. Two of the articles are co-authored and the other two are single-authored. In Article 1, I test the environmental peacemaking hypothesis through an analysis of TBPAs and interstate disputes. In Article 2, I continue testing the environmental peacemaking hypothesis through a case study in Nicaragua and Costa Rica. In Article 3, I discuss the process of establishing a TBPA in Central America. Article 4 contains a descriptive spatial analysis of the patterns of TBPA establishment and conflicts in Africa.

Article 1: Transboundary conservation and militarized interstate disputes

The article is co-authored with Päivi Lujala and Jan Ketil Rød (Barquet, Lujala, & Rød, 2014). In the article we test the environmental peacemaking hypothesis, which claims that environmental issues can be used to promote and improve interstate relations. The assertion is explored by empirically testing how TBPAs are related to Militarized Interstate Disputes (MIDs) between contiguous states. By using data on protected areas and MIDs, we find that TBPAs tend to be established between countries that have previously engaged in MIDs, but not in fatal MIDs. We also find some evidence that TBPAs may be related to more peaceful relations in Africa, Asia, and the Middle East but not in Latin America.

Article 2: "Yes to Peace"? Environmental peacemaking and transboundary conservation in Central America (accepted for publication in *Geoforum*)

The article explores the environmental peacemaking hypothesis through a case study of Sistema Internacional de Areas Protegidas para la Paz (Si-A-Paz) in Central America. In 2010, Nicaragua and Costa Rica were involved in a number of border conflicts within Si-A-Paz Peace Park and linked to the use of the San Juan River, contested land areas, and oil resources. The case of Si-A-Paz shows that transboundary environmental issues can provide arguments for maintaining or even strengthening conflicts rather than fostering peace between states. The case also shows the emergence of environmental issues as a new arena for geopolitical play, where actors not only justify their actions through an environmental discourse but also, the environmental discourse is stretched to include a variety of issues through which actors can obtain international support. The events in Nicaragua and Costa Rica raise questions about the role of transboundary conservation as a peacebuilding tool.

Article 3: The rise and fall of transboundary conservation in Central America – the case of Si-A-Paz (accepted for publication at the *Norwegian Journal of Geography*)

Through a study of the Mesoamerican Biological Corridor in Central America and Si-A-Paz in Nicaragua and Costa Rica, the article investigates how a transboundary scale of conservation is enacted. Through bioregional arguments, proponents of transboundary conservation argue for the need to produce a new scale of governance. How this rescaling goes about remains an undiscussed issue. The study shows that in order to meet the conditions of a bioregion, actors involved in the establishment of transboundary conservation in Central America produced accounts of social and ecological integrity that did not entirely match local narratives. Moreover, transboundary conservation provided actors with increased mobility across governance scales and sources of funding. This scalar mobility in turn, enhanced the power of already powerful actors in the area; helped states to attract international sources of funding; and empowered previously marginalized local groups at the expense of others. The study concludes that actors involved in the establishment of transboundary parks attempt to create new order and meanings of nature and society in order to produce a new scale of conservation. However, this study highlights the problems of matching discourses of nature to accounts of social unity, and underlines the political nature of scalar projects.

Article 4: The spatial distribution of transboundary conservation areas in Africa

The article, co-authored with Haakon Lein, introduces a new georeferenced dataset on TBPAs in Africa. The dataset contains information on the location of all TBPAs as well as of the organizations involved in the establishment and financing of each TBPA. A total of 38 TBPAS are identified, of which a majority are located in Southern Africa (13), whereas a considerable number of TBPAs are in the process of being set up in West Africa (9). The establishment of most TBPAs has taken, from inception until the signing of the Memorandum of Understanding, on average 10 years. A very high number of organizations, private foundations, and state agencies (209) have been involved in setting up and financing TBPAs in Africa. We observe that the same agencies involved in financing TBPAs in Southern Africa are also involved in establishing TBPAs in West Africa. To exemplify potential uses of the dataset, the article makes a simple spatial exploration of TBPAs in relation to Organized Violence, and Biodiversity Hotspots in Africa. Results from this exploration show that a majority of TBPAs in Africa are neither established in places that have experienced fatal conflict nor in areas categorized as biodiversity hotspots.

CONCLUDING REMARKS AND FUTURE RESEARCH AGENDAS

In this thesis I have sought to explore the role of transboundary conservation in interstate relations and to understand the structures, policies, and governance strategies of transboundary protected areas (TBPAs). Five research questions have been addressed through four articles:

1. Are TBPAs established in places that have experienced conflict?
2. Do TBPAs induce cooperation between contiguous states?
3. How are TBPAs established and legitimized?
4. What actors are involved in the proliferation of transboundary conservation?
5. Why are TBPAs established where they are?

With regard to Research Question 1, Article 1 finds that TBPAs are often located in areas that have experienced low levels of conflict, but not fatal Militarized Interstate Disputes (MIDs). When using a different conflict dataset (Georeferenced Event Dataset -GED), Article 4 does not find a spatial pattern of TBPA-establishment and conflicts. While the results from these two articles might seem contradictory, they are actually not. GEDs include a higher death-threshold than MIDs (at least 25 deaths), and results from Article 1 indicate that TBPAs are

not likely to be established in borders that have experienced deathly conflicts. In other words, TBPAs are likely to be established in places where conflicts did not result in casualties. Therefore, the conclusions reached in both Articles 1 and 4 are compatible. However, further studies are needed to explore more in depth the spatial relation of TBPAs and conflict. The dataset presented in Article 4 can facilitate future systematic studies on the establishment of TBPAs in Africa and their relation to other variables, including conflict.

In response to Research Question 2, Article 1 finds that TBPAs have a positive effect on interstate relations in Asia, Africa, and the Middle East, but not in Latin America. The case study in Central America presented in Article 2 partly supports the findings in Article 1 as it does not find support for the environmental peacemaking hypothesis in the region. One of the main findings of this thesis is that location and context matter when it comes to understanding the role of natural resources and environmental issues as sources of regional cooperation. Whereas transboundary conservation could be used as a tool of cooperation in some places and under particular circumstances, TBPAs might have the opposite effect in other contexts. Historically, protected areas have been intrinsically involved with complex social and political issues that traditionally fuel conflict. The impacts of protected areas upon local livelihoods, resource and land rights, power structures, and identity formation are issues that per se can create grievances and potentially escalate into more open forms of conflict (Hammill & Besançon, 2007). Expanding the material and governance scales of protected areas to a transboundary level could further elevate the risk for conflict, like in Central America, because in practice TBPAs must deal with questions of borders and territoriality which conceptually transboundary conservation does not address. Furthermore, the conditions determining the peacebuilding potential of TBPAs reside not only in the particular spatial relations of places and the understanding and uses of nature, but also in the geopolitics of particular regions, which to a certain extent may determine the course of action as well as the type of actors involved in the funding and agenda setting of TBPAs. This finding is relevant for policymaking because TBPAs are currently planned in conflictive borderlands such as those in Israel, Palestine and Jordan, India and Pakistan, and North and South Korea (Crosby et al., 2000; Swain, 2009; Westing, 2010). Understanding the conditions in which TBPAs might function as either peacebuilding tools or conflict-enhancers is not only crucial for environmental issues to be seriously considered in regional cooperation, but also fundamental for not making matters worse in places with long histories of conflict.

Research Question 3 is addressed in Articles 2 and 3. Transboundary conservation is often promoted as a tool to adapt the geography of environmental problems to institutional and spatial levels of governance. In Article 3, the findings of the study conducted in Central America reveal that the concept of bioregion is used as an argument to respatialize governance schemes to a 'transboundary scale'. In order to meet the conditions of a bioregion, actors involved in the establishment of TBPAs in Central America produced accounts of social and ecological integrity that did not match local narratives. Thus, the social and institutional fabric thought to be necessary to expand cooperation was not in place. Two further findings emerge when comparing the discourse employed to legitimize the establishment of transboundary conservation with the governance strategies and mechanisms involved in the establishment and management of TBPAs. One, it becomes evident that TBPAs are tools used by various actors to gain control over space. States may apparently agree initially or temporally to cede some sovereignty to external actors, but the case of Si-A-Paz shows that the establishment and management of TBPAs rather affords states the justification to establish and expand control over remote areas. Actors involved in the management of TBPAs cooperate with states in the control of space, in strengthening territorial borders, and in redefining and mainstreaming perceptions of nature. In Central America, this is done through highly securitized measures, such as tightening border control, as well as the use of military forces, which are legitimized in the name of protecting the environment. Such measures might not always lead to more peaceful relations between and within states. Rather, they could, as in Central America, have unintended consequences because at the heart of transboundary conservation lie fundamental questions of land distribution, access to resources, and border control and territoriality, which continue to spark conflict in many parts of the world. The other finding is that while TBPAs are advocated as peacebuilding mechanisms, there is nothing inherent in their structure or governance indicating the integration of conflict resolution and peacebuilding strategies. Rather, the peacebuilding aspect of TBPAs remains a political rhetoric. The case in Central America shows that talking peace without acting peace in areas prone to conflict could have serious implications not only for the governance of TBPAs, but more importantly for broader border dynamics and inter-state relations.

Research Question 4 is explored in Articles 3 and 4. Both articles underline the variety and number of actors involved in the establishment and funding of TBPAs. Actors involved in the establishment of TBPAs form private–public partnerships that cooperate with states, rather

than challenge them. Such constellations of actors typically operate according to global conservation discourses and are highly influential in determining environmental agendas. Understanding the type of actors involved in the establishment of TBPAs is crucial for understanding why TBPAs are established where they are (Research Question 5). Articles 3 and 4 show that the establishment of TBPAs is not random and it does not always follow ecological arguments such as species diversity or ecosystem priority. Rather, the establishment of TBPAs reflects policy priorities, the dominance of particular global environmental discourses, local interests of international conservation organizations, and the existence of influential private-public partnerships, like the Peace Parks Foundation, that can trigger support for transboundary conservation in the region. Furthermore, TBPA establishment is dependent on regional peace and conflict contexts that can create momentum and support for transboundary conservation as well as the potential for economic profit through, for instance, resource extraction or tourism, bioprospecting, carbon sequestration, scientific research, green labelling, and debt-for-nature swaps.

This thesis has systematically analysed the role of the TBPAs in interstate relations. Although the articles presented on the following pages fill some of the gaps in studies concerned with the role of the environment in conflict and specifically the potential role of nature conservation in regional cooperation, many questions remain. For example, further studies are needed to understand the conditions in which TBPAs may function as peacebuilding tools or conflict-enhancers. In addition, the role of actors in shaping environmental politics and transboundary environmental aid needs to be more carefully examined. Moreover, the debate on conservation and regional cooperation needs to be broadened to include issues pertaining to geopolitics, particularly in an era of climate change, as this would open up possibilities for increased cooperation and conflict over the exploration of resources and the protection of the environment.

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PART II.

ARTICLES 1-4

ARTICLE 1

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Transboundary conservation and militarized interstate disputes

Karina Barquet*, Päivi Lujala, Jan Ketil Rød

Department of Geography, Norwegian University of Science and Technology (NTNU), 7491 Trondheim, Norway

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ABSTRACT

Advocates of transboundary conservation argue that borderlands can be a source of cooperation between neighboring states that previously engaged in conflict. It has been stated that, by opening negotiation channels based on environmental issues, jointly managed cross-border protected areas can promote and reinforce harmonious relations between contiguous states. We explore this assertion by empirically testing how transboundary protected areas (TBPAs) are related to militarized interstate disputes (MIDs) between contiguous states. Through the use of global data on protected areas and MIDs, we find that TBPAs tend to be established between countries that have previously been engaged in MIDs. We also find some evidence that TBPAs can be related to a more peaceful co-existence between neighboring countries in Africa, Middle East, and Asia.

Introduction

In 2004, Ecuador and Peru established the Condor-Kutuku Peace Park, a transboundary protected area (TBPA). This was done after a dispute over a border area that had lasted for decades and culminated in armed clashes in January 1995, resulting in 500 casualties. In October 1998, Ecuador and Peru reached an agreement on the delineation of the border. The peace treaty called for the establishment of Adjacent Zones of Ecological Protection. Consequently, in 1999 both countries established national border-parks that eventually formed the peace park (Matthew, Brown, & Jensen, 2009).

Supporters of transboundary conservation argue that, apart from protecting biodiversity, jointly managed cross-border protected areas can reinforce harmonious relations, cooperation, and peacebuilding by opening negotiation channels based on environmental issues arising between different and sometimes opposing parties (Ali, 2003; Westing, 1993b, 1998).

Consequently, the establishment of TBPAs as an "exit strategy from conflict entrapment" (Ali, 2007, p. 14) has been given serious consideration in countries with ongoing interstate disputes, such as India and Pakistan, North and South Korea, parts of Central and Middle-East Asia, and between Jordan, Palestine, and Israel (Sandwith, Shine, Hamilton, & Sheppard, 2001).

Empirical studies that document whether TBPAs are established between countries that have previously experienced interstate disputes and whether they have contributed to peacebuilding are lacking. Much of the discussion on the role of transboundary conservation in states' relations has remained at a theoretical level, with conclusions drawn from a number of local-case studies (van Amerom & Büscher, 2005; Duffy, 2006; King & Wilcox, 2008). The few exceptions include Zbicz (2003), who surveyed the level of cooperation in the administration of transboundary parks, and Hanson et al. (2009), who investigated the spatial co-existence of armed conflict and biodiversity hotspots.

When considering the widespread support that transboundary conservation has gained, the rapid pace in which TBPAs are being established, and the role that TBPAs could play in building more peaceful relations between contiguous states, there is a need for in-depth statistical analyses. To our knowledge, this paper presents the first explorative empirical analysis of the relationship between transboundary conservation and peace.

In order to study whether TBPAs are established between countries that have previously experienced interstate disputes and whether they have achieved their stated goals of peace, we use global data on TBPAs and militarized interstate disputes (MIDs) between contiguous states for the period 1949–2001.

Our results confirm that TBPAs are established between states that previously have been involved in MIDs which did not result in casualties. Our analysis further suggests that TBPAs may be related to peace in Africa, Middle East, and Asia, whereas this is not the case in Latin America.

* Corresponding author. Tel.: +46 (0) 721610012.
E-mail addresses: karina.barquet@svt.ntnu.no, k_barquet4@hotmail.com (K. Barquet), Paivi.Lujala@svt.ntnu.no (P. Lujala), Jan.Rod@svt.ntnu.no (J.K. Rød).

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The paper proceeds as follows. First, the rationale behind transboundary conservation in promoting peace is introduced. Then, we state our hypotheses. Thereafter, we present our data, before analyzing the relation between TBPAs and MIDs. The analysis section is followed by a discussion of our findings and concluding remarks.

Transboundary conservation

Transboundary conservation as a cooperation tool can be traced back to the first half of the twentieth century. In 1924, leaders in Poland and Czechoslovakia tried to resolve a border dispute by establishing a transboundary park as a means to alleviate political tensions and prevent conflicts (Goetel, 1923). TBPAs have also been established between countries with historically friendly relations. For instance, in 1926, the United States and Canada established the Waterton Lakes Glacier as a gesture of good relations between the two countries (MacDonald, 2000).

A total of 121 TBPAs were established between 1946 and 1969. Since then, there has been a steady increase in the number of such parks. During the 1970s, 240 new parks were established, representing a huge increase in border-park establishment. This growth continued throughout the 1980s and 1990s, when the International Union for Conservation of Nature (IUCN) started to actively promote the idea of establishing conservation areas on international borders (van Amerom, 2002). In 1988, the IUCN's Commission on National Parks and Protected Areas identified 70 potential TBPAs straddling 65 national borders (Thorsell, 1990). This triggered a proliferation of conservation agencies promoting transboundary conservation, such as the Peace Parks Foundation in Southern Africa. In 2001, the IUCN established the concept of TBPAs and defined them as follows:

> *an area of land and/or sea that straddles one or more borders between states, sub-national units such as provinces and regions, autonomous areas and/or areas beyond the limit of national sovereignty or jurisdiction, whose constituent parts are especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed cooperatively through legal or other effective means* (Sandwith et al., 2001, p. 3).

Shortly afterward, the IUCN expanded the definition of TBPAs to include the promotion of peaceful relations and cooperation between states (Ali, 2007; Sandwith et al., 2001). Today, support for transboundary initiatives is widespread among international organizations such as the World Bank, development agencies such as the USAID, international conservation organizations such as IUCN, and donor groups such as Club 21.

Global establishment of TBPAs

Transboundary projects are particularly attractive for international organizations and NGOs, because funding agencies can be more easily persuaded to approve a project if it is presented as a part of a larger plan (Leibenath, Blum, & Stutzriemer, 2010). In Southern Africa, TBPAs have rapidly spread during the past two decades because the largest conservation organizations prioritize large-scale conservation projects rather than sub-national and smaller-scale ones (Chapin, 2004).

Since the Rio Summit in 1992, the World Bank became increasingly interested in funding wildlife ventures around the globe because of its economic potential (Duffy, 1997). In Africa, the opportunity for economic profit is an incentive for organizations and private actors to establish, expand, and maintain protected areas. As a result, TBPAs have become one of the most important attractions for tourism in Southern Africa (Ferreira, 2004), where TBPAs are promoted as key revenue generators and as a way of restoring investors' trust in the region (Draper, Spierenburg, & Wels, 2004). For instance, tourism in the southeast of Zimbabwe is poorly developed compared to the other major attractions around Victoria Falls and Hwange. The establishment of a TBPA[1] in the region was presented as a means to stimulate an area with little potential for anything else except wildlife development (Duffy, 2000).

In addition to the economic gains made from tourism, TBPAs also have a political motivation. For instance, in Southern Africa, TBPAs symbolically operate as parks for peace that will foster interstate cooperation (Sandwith et al., 2001). The idea that nature connects the landscape irrespective of national borders is linked with Pan-African visions of reuniting a continent artificially divided by the colonial powers (Draper et al., 2004). Transboundary parks are increasingly advocated and justified on the basis of this argument (van Amerom & Büscher, 2005).

There has been a growing interest to establish TBPAs to improve regional cooperation. For instance, in Asia, the establishment of the Emerald Triangle Peace Park between Thailand, Laos, and Cambodia was expected to attract funding to clear landmines and improve regional cooperation (Trisurat, 2007). In Eastern Europe, The Balkan Peace Park between Albania, Kosovo, and Montenegro is advocated as a tool for reconciliation in the Balkan region that can provide the grounds for cooperation "by bridging ethnic and religious differences" (REC, 2003, p. 53). In Central America, the establishment of the Mesoamerican Biological Corridor was an attempt to unite the region after decades of political instability (Barquet, 2014).

In all instances, research highlights the importance of regional and international organizations to facilitate and fund the establishment of TBPAs, as well as to help reduce transaction costs and elaborate frames of reference for projects on local and regional scales. For instance, in Southern Africa, the establishment of peace parks is largely driven by the Peace Parks foundation in connection with the WWF. Together, they have attracted a long list of donors. In Thailand, Laos, and Cambodia, the Asian Development Bank supported the establishment of the Emerald Triangle Peace Park through their program on Technical Assistance on Biodiversity Conservation Corridors Initiatives in the Greater Mekong Subregion, whilst the International Tropical Timber Organization funded the project (Trisurat, 2007).

TBPAs and environmental peacemaking

Theoretically, the rationale for establishing TBPAs is rooted in the environmental peacemaking hypothesis, which argues that the environment can act as a tool for cooperation between states (Conca & Dabelko, 2002; Hamilton, Mackay, Worboys, Jones, & Manson, 1996). The hypothesis takes on liberal principles, and suggests that overlapping ecological interdependencies can lead to Post-Westphalian governance (Swatuk, 2002). In this respect, the inclusion of environmental issues is expected to mitigate conflicts and lead to longer-lasting peace than might otherwise be achieved, because sustainable management of the environment requires long-term cooperative planning. If properly designed, environmental initiatives can reduce tensions and the likelihood of violent conflict between countries and communities (Ali, 2011).

According to Conca, Carius, and Dabelko (2005), environmental peacemaking projects such as TBPAs can be helpful in three situations. First, they can help solve environmentally induced conflicts. Second, they can be used to establish peaceful relations between parties involved in a conflict that is not specifically linked to the

environment. Third, they can be linked to efforts to achieve sustainability and thereby peace.

To achieve environmental peacebuilding, Conca and Dabelko (2002) propose two paths. First, the "strategic climate" of mistrust, uncertainty, and short-term goals can be transformed through the recognition of mutual benefits and by creating a habit of cooperation. This is in line with the liberal peace theory where it is argued that growing interdependence is a positive force for peace in world politics (Axelrod & Keohane, 1985; Doyle, 1986). Second, transboundary conservation can create and support transnational ties between civil society movements, which in turn can create opportunities to develop cross-border societal linkages that support peacebuilding efforts between countries.

In the context of environmental peacemaking, transboundary conservation has come to be perceived as an important tool in environmental and political security, for a number of reasons. First, many of the biodiversity hotspots and areas considered as environmentally rich are located along borders (Hanson et al., 2009). Advocates of transboundary conservation argue that a transboundary approach is useful because environmental challenges and management objectives related to borders tend to be similar and because biological and ecological phenomena such as species migration are not confined to political boundaries (Hamilton et al., 1996).

Second, conflicts have often taken place between neighboring countries, particularly those with long borders (Starr, 2002). In addition, many borders have been and/or remain ill-defined and have been objects of dispute (Starr & Thomas, 2005), like in the case between Peru and Ecuador and between Cambodia and Thailand.

Third, TBPAs are potentially useful tools for cooperation and the prevention of conflict in different situations (Westing, 1998). TBPAs can serve to promote or strengthen good relations between contiguous sovereign states. There are proposals to establish a peace park over the Taxkorgan Nature Reserve in China and the Khunjerab National Park and Central Karakoram National Park in Pakistan (Wallace, 2001). Also, TBPAs can serve to prevent conflicts over contested borderlands. For instance, McNeil (1991) proposed a peace park between the United States and Canada in the case of the contested Machias Seal Island, and McManus (1994) proposed a TBPA for the Spratly Islands, the ownership of which is claimed by Brunei, China, Malaysia, the Philippines, Taiwan, and Vietnam. Additionally, TBPAs can help create favorable conditions for the reunification of two divided states, like in the case of North and South Korea.

The potential of TBPAs as tools for conflict resolution has generated great interest throughout the world. The IUCN has repeatedly emphasized the critical role of transboundary conservation in resolving conflicts between neighboring states and has highlighted the "remarkable" contribution of transboundary parks to build confidence, trust, and friendly relations between the parties involved (Vasilijević & Pezold, 2011). Such claims have been further supported by agencies, such as the German Organization for Technical Cooperation, the Nordic development agencies (Sweden, Denmark, Norway, and Finland), the European Union, and the Critical Ecosystem Partnership Fund, among others (Carius, 2007; Feil, Klein, & Westerkamp, 2009; Vasilijević & McKinney, 2012). However, to date, there is not enough evidence to validate such claims. To our knowledge, this paper is a first step in exploring the role of TBPAs in inter-state relations in a large-N empirical analysis.

Hypotheses

Prior to assessing TBPAs' effect on peace, it is crucial to determine whether TBPAs have been established between neighbors with a history of hostile relations. As discussed above, TBPAs have been established between neighbors with peaceful relations, they have been used for economic profit and to expand political projects. However, the motivation for establishing TBPAs is that, beyond their environmental value, they will function as tools for cooperation and conflict prevention. It follows that TBPAs should be located in areas where disputes have taken place. Our first hypothesis is thus as follows:

Hypothesis 1: *TBPAs are located between contiguous states that have been in conflict with one another prior to establishment.*

Besides their value for biodiversity conservation, TBPAs are established to strengthen relations between neighboring countries, to promote peace and cooperation, and thereby to help reduce conflict. When it is difficult to initiate and sustain dialog on challenging issues, environmental issues can provide alternative ways to encourage cooperation at societal, governmental, and international levels. Mutual ecological interdependence can then facilitate cooperation across borders (Carius, 2007). When environmental cooperation develops and all stakeholders come together in systematic negotiations, such efforts can enhance trust, foster cooperative action, and encourage a common sense of regional identity (Adler, 1997). In turn, cooperation justified through environmental issues can bring conflictive parties closer to resolving other, more contentious issues (Molvaer, 1990; Westing, 1998).

Thus, TBPAs could, in theory, act as a tool for cooperation in a manner similar to that of transboundary cooperation over water (Brochmann & Gleditsch, 2012; Gleditsch, Furlong, Hegre, Lacina, & Owen, 2006). In other words, TBPAs are envisaged to produce a snowball effect, from cooperation on environmental issues to other, more contentious, political issues. By following this argumentation, we hypothesize:

Hypothesis 2: *TBPAs decrease the likelihood of conflict between contiguous states.*

Data

Our panel dataset covers the period 1949–2001 and includes 328 country dyads and 11 141 country-dyad-year observations (see summary statistics in Table 1).

Unit of analysis

To extract the country pairs that share a land border, we follow Brochmann, Rød, and Gleditsch (2012) and use the GIS dataset "CShapes" which provides accurate historical maps of country borders from 1945 and onwards (Weidmann, Kuse, & Gleditsch, 2010). The CShapes dataset represents each independent country by a polygon or by several polygons if borders have changed. For example, Ethiopia and Eritrea's borders are represented by three polygons in the dataset: one polygon for the period 1949–1992 and two smaller polygons for the two countries from 1993 and onwards. To extract the relevant borders, we transform the country polygons to line features, remove the coastal border, and then make yearly representations of the international boundaries from 1949 to 2001. On the basis of these border data, we compiled a dataset with the boundary-sharing dyad year as the unit of analysis.

Border area conservation

For the location of TBPAs, we use a GIS dataset from Besançon, Lysenko, and Savy (2007) on 227 TBPA complexes and parks adjoining international borders. The dataset includes 3043

Table 1
Summary statistics.

	Obs	Mean	Std. dev	Min	Max
Establishment of TBPA (dummy)	11 141	0.05	0.22	0	1
% Border covered by TBPAs	11 141	3.60	8.61	0	82
Establishment of other protected areas (dummy)	11 141	0.11	0.31	0	1
% Border covered by other protected areas	11 141	3.3	6.6	0	71
MID onsets	11 141	0.08	0.27	0	1
Number of MID onsets	11 141	0.09	0.32	0	4
MID incidences	11 141	0.11	0.31	0	1
Number of MID incidences	11 141	0.13	0.41	0	6
Fatal MIDs	11 141	0.04	0.19	0	1
Border length (km)	11 141	806	935	9	7855
Distance between capitals (km)	11 141	1154	1042	9	6421
Two democracies (dummy)	11 141	0.16	0.36	0	1
Two autocracies (dummy)	11 141	0.33	0.47	0	1
One democracy (dummy)	11 141	0.23	0.42	0	1
Inconsistent (dummy)	11 141	0.28	0.45	0	1
Average per capita income (US$ '000)	11 044	3201	4370	54	34 333
Alliance (dummy)	11 141	0.45	0.50	0	1
Total population size ('000 000)	11 141	116	255	0.78	2291
Trade (US$ '000 000)	10 200	2086	13 743	0	398 259
Shared IGO memberships	11 059	34	18	1	106
Time since last MID (years)	11 141	13	13	0	55

protected areas. A TBPA can be shared between two or more states and consist of several parks, like the Maya Tropical Forest Complex shared between Belize, Guatemala, and Mexico, encompassing 53 different parks.

All protected areas included in this dataset conform to the IUCN (2010) definition of a protected area, are adjacent to an international boundary and a protected area in a neighboring country, and may involve some form of cooperation between neighboring countries (Mittermeier et al., 2005). Unfortunately, the dataset does not specify the extent of transboundary cooperation. For this reason, we cannot differentiate for the degree of cooperation between the countries. We include all parks from the TBPA dataset in our analysis, except those (2) without an establishment year.

To test our first hypothesis on whether TBPAs have been established along the border between countries with a history of MIDs, we code a dummy variable taking the value of 1 if a TBPA was established along the boundary in a given year. Over 5% (563) of the country-dyad years were coded as years in which a TBPA had been established (Table 1).[2] A large majority of these (517) TBPAs have been established since 1970.

To control for the possibility that countries are more likely to establish any type of conservation areas and not only TBPAs, we also create an establishment dummy for all the other protected areas (OPAs). For this, we use the 2010 version of the World Database on Protected Areas (WDPA) (IUCN & UNEP, 2010) that includes more than 160 000 nationally designated protected areas (for example, national parks) and internationally recognized protected areas (for example, Ramsar Wetlands of International Importance). From the WDPA dataset, we code an establishment dummy for OPAs located along international borders. In our dataset, we have 1119 OPA establishments in the border area, of which 1049 have been established since 1970. We exclude from the dataset the OPAs (138) without an establishment year.

To test our second hypothesis that TBPAs are related to fewer disputes, we also study whether the size of the protected area influences the relationship between TBPAs and peace. This is to test the claim from TBPA proponents that more extensive protection areas require more cooperation and joint management across jurisdictions, thus promoting a more peaceful relationship between the countries (Chapin, 2004). Therefore, we construct a variable to measure the percentage of border area covered by TBPAs. Here, we define the border area as the zone inside a 50 km radius from the border. These variables are calculated separately for each year for the period 1949–2001 and for each border dyad.

In our data, the percentage of border area covered by TBPAs varies between 0% and 82%, the mean being 3.6% (Table 1). The highest percentages of TBPAs are found on the border between Venezuela and Brazil (82% in 2001) and between Benin and Burkina Faso (65% in 2001). A small majority (52%) of our country-dyad-year observations did not have TBPAs along their borders, whereas, in the case of those that have TBPAs, the parks cover 7.5% of the border area on average.

MIDs

For data on conflict, we use the MID dataset from the Correlates of War project (Ghosn & Bennet, 2003). The dataset codes occurrences when one or more states threaten or display or use force against one or more other states in the period 1816–2001. We use the dyadic version of MIDs that breaks down the overall MIDs (some of which have involved many participants) into pairs of states in dispute.

We include all MIDs that have occurred after World War II between the dyad pairs included in our dataset. Table 1 shows that 8% of our country-dyad-year observations are coded with MID onset, 11% with MID incidence (that is, the country pair had at least one MID onset or ongoing MID during the year), and 4% with MIDs in which there had been casualties (fatal MIDs).

The MID data are used both as a control (Hypothesis 1) and as a dependent variable (Hypothesis 2). For the first part of the analysis, we construct various lagged versions of MID onsets and incidences because the likelihood of establishment may depend on how many years with dispute the country pair has had recently. We first make a year-count variable on MID incidence that is based on the number of years in which there was at least one MID incidence during the lag period. Values for a four-year count, for example, vary between 0 and 4, where 0 indicates that the country dyad did not experience any year with a MID incidence during the previous four-year period and 4 indicates a case in which the pair had at least one MID incidence each year. This variable is also constructed for one-, two-, and three-year periods. In addition, we construct similar lag variables for MID onset.

Because the number of MID incidences and onsets during one year can be larger than 1, we also construct variants that count the number of incidents and onsets during the one-, two-, three-, and four-year lag periods. At the most, the four-year lagged MID incidence variable includes 20 incidents, and the four-year onset measures 11 onsets; Egypt and Israel had 20 MID incidents during the period 1958–1961 (they had 9 onsets during the same period), and Syria and Israel had 11 onsets during the period 1952–1955 (and 17 incidents).

Control variables

Because TBPAs are a form of cooperation between states, we use controls that are identified as important in studies on interstate cooperation (Hegre, Oneal, & Russett, 2010). Table 1 lists the descriptive statistics for the control variables used in the paper.

Geographic proximity creates opportunities for both cooperation and reaching each other with military force and may influence to what degree neighbors consider each other as potential partner or threat (Reed & Chiba, 2010; Robst, Polachek, & Chang, 2007). Longer borders (Starr, 2002), ceteris paribus, provide more room to set up TBPAs, but they may also create breeding ground for more

tension between the countries. Longer distance between capitals (Brochmann et al., 2012) may decrease the ability to reach each other by military force and affect the incentives to do so. Long distances may also make cooperation between the countries less relevant, making the countries less likely to establish TBPAs. We use geodesic distances when we calculate the border length and the distance between capitals.

Democratic countries may be more likely to restrain from using force or intimidation as well as to cooperate across borders (Gelpi & Grieco, 2008; Souva & Prins, 2006). Therefore, we control for regime type in our analysis. We construct dummies by using the Polity IV dataset (Gurr, Marshall, & Jaggers, 2009) as follows: the dummy for "two democracies" takes the value of 1 if both countries in the dyad are democracies (Polity score 6 or higher); "one democracy" if one country is a democracy; "two autocracies" if both countries are autocracies (Polity score −6 or less); and "inconsistent" for all the other dyads.

More affluent countries have more at stake when they engage in military disputes, which should reduce their willingness to engage in a MID (Hegre et al., 2010), although this may be counter-weighted by the fact that they have a higher capacity to do so. More developed countries may also be in a better financial position to set up and run TBPAs. To control for the level of development, we use the average per capita income for the two countries in the dyad.[3]

Larger countries are able to project power over longer distances and engage in conflict (Buhaug, Gates, & Lujala, 2009) and hence are more likely to establish TBPAs with several neighbors. We control for this by including the combined population of the two countries as a control variable. Income and population data are derived from Gleditsch (2002, data version 5.0 beta).

Countries that are interdependent should be less likely to engage in MIDs that potentially can damage their relationship (Barbieri, 1996). We include three core control variables measuring interstate cooperation. (1) Allies share political interests, and we control this by including a dummy for "alliance" that takes the value of 1 if the two countries share a defense pact or entente. The data are from Gibler and Sarkees (2004). (2) For countries that share substantial trade, a MID would jeopardize commercial interests. We control for this by including a variable for total imports between the two countries. The data are from Barbieri, Keshk, and Pollins (2008). (3) Countries who participate in the same Inter-Governmental Organizations (IGOs) have other potential ways to solve their disputes than by engaging in a MID. We control for this by taking the number of shared IGO memberships. The data are from Pevehouse, Nordstrom, and Warnke (2004).

Finally, because countries with longer peaceful relations are inherently less likely to engage in a conflict in the future as well (Owsiak, 2012), we control for the length of the peace period since the previous MID incidence between the countries. In cases in which the two neighbors had not experienced a MID, the peace period is calculated from the year when the younger of the two countries gained status as an independent state. Following Toset,

Table 2
Establishment of TBPAs and MIDs, mean comparisons, 1949–2001.

By region	Obs	Mean	Std. dev	By regime type	Obs	Mean	Std. dev
Panel A. Establishment of TBPA by all dyads and dyads with at least one MID in the past two years, 1949–2001							
Western				Two autocracies			
All dyads	1454	0.074	0.262	All dyads	3709	0.033	0.178
Dyads with at least one MID	75	0.120	0.327	Dyads with at least one MID	430	0.030	0.171
East Europe				One democracy			
All dyads	1728	0.060	0.237	All dyads	2579	0.065	0.247
Dyads with at least one MID	228	0.092	0.290	Dyads with at least one MID	543	0.068	0.252
Latin America				Two democracies			
All dyads	1647	0.071	0.257	All dyads	1748	0.088	0.284
Dyads with at least one MID	178	0.140	0.348	Dyads with at least one MID	113	0.150	0.359
Sub-Saharan Africa				Inconsistent			
All dyads	3460	0.037	0.189	All dyads	3032	0.041	0.198
Dyads with at least one MID	387	0.054	0.227	Dyads with at least one MID	577	0.069	0.254
Asia				Alliance			
All dyads	1407	0.070	0.256	All dyads	5097	0.047	0.211
Dyads with at least one MID	394	0.071	0.257	Dyads with at least one MID	523	0.073	0.260
North Africa and Middle East				At least one shared IGO membership			
All dyads	1442	0.006	0.074	All dyads	11069	0.051	0.219
Dyads with at least one MID	401	0.007	0.086	Dyads with at least one MID	1649	0.064	0.244
Panel B. Occurrence of MID onset, by all dyads and dyads with at least one existing TBPA the year previous to the MID onset, 1949–2001							
Western				Two autocracies			
All dyads	1454	0.030	0.171	All dyads	3709	0.063	0.242
Dyads with at least one TBPA	833	0.020	0.141	Dyads with at least one TBPA	1314	0.062	0.242
East Europe				One democracy			
All dyads	1728	0.075	0.263	All dyads	2579	0.122	0.328
Dyads with at least one TBPA	899	0.091	0.288	Dyads with at least one TBPA	1320	0.084	0.278
Latin America				Two democracies			
All dyads	1647	0.059	0.235	All dyads	1748	0.037	0.189
Dyads with at least one TBPA	899	0.080	0.272	Dyads with at least one TBPA	1107	0.037	0.189
Sub-Saharan Africa				Inconsistent			
All dyads	3460	0.058	0.234	All dyads	3032	0.090	0.286
Dyads with at least one TBPA	1821	0.056	0.230	Dyads with at least one TBPA	1405	0.098	0.298
Asia				Alliance			
All dyads	1407	0.150	0.357	All dyads	5097	0.055	0.228
Dyads with at least one TBPA	594	0.150	0.357	Dyads with at least one TBPA	2248	0.056	0.229
North Africa and Middle East				At least one shared IGO membership			
All dyads	1442	0.148	0.356	All dyads	11069	0.080	0.271
Dyads with at least one TBPA	98	0.102	0.304	Dyads with at least one TBPA	5129	0.071	0.257

Note. The mean comparisons use lagged variables for regime type, alliance, and IGO membership (both panels), MID incidence (Panel A), and existence of TBPA (Panel B).

Gleditsch, and Hegre (2000), we use a decay function, *d*, that assumes a constant rate in which the effect of the last MID incidence is halved for every three-year period: $d = -2^{(-\text{Peace years}/3)}$.

Analysis

In this section, we analyze the relationship between MIDs and TBPAs by using first simple mean comparisons and then multivariate analysis. We investigate (1) whether TBPAs are established between countries that have had previous dispute(s) (Hypothesis 1) and, if so, (2) whether TBPAs are related to more peaceful relationships after their establishment (Hypothesis 2). All multivariate analyses are clustered on country pairs to calculate robust White standard errors, which take into account the fact that, within the country pair, the errors are likely to be correlated. All analyses were run by using the statistical package STATA 13.1.

Mean comparisons

In this section, we use sample means as our exploratory approach to study the relationship between MIDs and TBPAs. We compare the relationship across regions and different regime types and investigate whether the countries are allied or participate in the same IGOs. The results are shown in Table 2. Panel A shows whether TBPAs are established between countries that have had previous dispute(s), and Panel B shows whether TBPAs are related to more peaceful relationships (that is, to fewer MID onsets).

When looking at Panel A and the regional samples first, we find evidence that, except for Asia, TBPAs are established to a higher degree when there has been at least one MID incidence in the previous two years. We also note that North Africa and the Middle East have relatively few TBPAs and that, although there are more TBPAs established when there has been MIDs, the increase is modest compared to the other regions. When moving to the comparison across regime types, we note that dyads in which one country is democratic or both countries are autocratic do not seem to establish more TBPAs after a MID incidence. We see, however, a tendency that democratic dyads, and to a lesser degree also inconsistent dyads, are more inclined to establish TBPAs after MIDs. Finally, allied country pairs seem to be more likely to establish TBPAs, similarly to those dyads sharing at least one IGO.

Next, we look at the TBPAs' peace effect (Panel B). The panel shows the occurrence of MID onset for all dyads and for those that had at least one TBPA established previously. The regional comparison shows that Latin-American countries, and to some extent East-European countries, might experience more MID onsets if they have established TBPAs previously. The only regions for which there is an indication of peace effect are North Africa and the Middle East. When looking across the different regime types, we find a decreased likelihood of experiencing a MID onset when TBPAs were established in dyads with one democratic regime. Other regime types, being allied or sharing IGO membership, do not seem to affect the likelihood of experiencing fewer conflicts in this simple mean comparison.

Next, we study how these relations hold in multivariate analysis and with the inclusion of control variables.

Multivariate analysis 1: location of TBPAs

To evaluate our hypothesis on whether neighboring countries that have had MIDs in previous years are more likely to establish TBPAs, we explore the effect of previous disputes across several model specifications. Table 3 presents the results for seven models. Models 1, 2 and 4 use a two-year lag for MID occurrence in the dyad, and Model 3 uses a two-year lag for *fatal* MIDs. Model 4 uses the establishment of OPAs as the dependent variable. All models include a control variable for the dispute status for the current year. The rationale behind including the status for the current year is that countries involved in disputes in the present year are probably less likely to set up a TBPA.

Table 3
Establishment of TBPAs 1949–2001.

	1	2	3	4
Disputes, 2-year lag	1.36*** (2.77)	1.39*** (3.23)		1.04 (0.36)
Disputes, current year	0.81 (−1.06)	0.80 (−1.09)	0.98 (−0.13)	0.72** (−2.19)
Border length (lag & ln)	1.69*** (5.94)	1.50*** (4.80)	1.54*** (5.15)	1.34*** (4.59)
Distance bw capitals (lag & ln)	1.00 (−0.00)	0.98 (−0.21)	0.96 (−0.38)	0.69*** (−3.38)
Two autocracies (lag)	0.71 (−1.39)	0.93 (−0.34)	0.93 (−0.33)	0.68* (−1.84)
One democracy (lag)	1.46* (1.80)	1.08 (0.41)	1.10 (0.49)	0.69** (−2.34)
Inconsistent (lag)	1.21 (1.17)	0.90 (−0.49)	0.93 (−0.35)	0.52*** (−3.87)
GDP per capita (lag & ln)	1.55*** (5.59)	1.34*** (4.07)	1.35*** (4.25)	1.76*** (8.18)
Population (lag & ln)	1.13* (1.79)	1.08 (1.24)	1.08 (1.35)	1.27*** (4.38)
Trade (lag & ln)	1.03* (1.66)	1.01 (0.86)	1.01 (0.68)	1.02 (0.93)
Alliance (lag)	0.73* (−1.80)	0.86 (−0.98)	0.86 (−1.01)	0.91 (−0.75)
Shared IGO memberships (lag & ln)	0.85 (−0.80)	0.80 (−1.45)	0.96 (−0.38)	0.65*** (−3.15)
Border area TBPAs (lag & ln)		1.14*** (10.2)	1.14*** (10.2)	1.02** (2.19)
Border area OPAs (lag & ln)		1.04** (1.98)	1.03** (1.96)	1.09*** (5.84)
Fatal disputes, 2-year lag			1.22 (0.82)	
Dependent variable: establishment of OPAs				Yes
Observations	9782	9782	9782	9782
Clusters	313	313	313	313
R-sq	0.088	0.16	0.18	0.15
Log likelihood	−1803	−1666	−2793	−1670

The table shows the odds ratios for logistic estimations. Robust *z*-values, adjusted over country dyads, in parentheses.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

The models report odds ratios for logistic estimations: values larger than 1 indicate an increase in the probability of establishing a TBPA, and values less than 1 indicate a decreased likelihood. Odds ratios provide an intuitive interpretation for discrete variables, in this case, for the occurrence of disputes during the two previous years. In Table 3, this variable takes the value of 0 if there were no disputes between the countries, 1 if there was an incidence during one of the two years, and 2 if there were incidences in both years. For example, in Model 1, the odds ratio of 1.36 is interpreted as follows: one unit increase in the control variable gives a 1.36 increase in the likelihood of the establishment of a TBPA. Moving from 0 to 2 thus entails a 1.36×1.36 (=1.8) increase in the likelihood.

The results show that country pairs that have experienced disputes during the preceding two years are substantially more likely to establish a TBPA. Model 1 includes controls for border length, distance between capitals, regime type, level of development, total population of the two countries, whether the two countries are allies, participation in IGOs, and the level of trade between them. Because it is possible that country pairs that already have TBPAs or OPAs in their border area are more likely to establish new TBPAs, in Model 2, we control for the existence of TBPAs and OPAs by including measures for the percentage of border area covered by TBPAs and OPAs in the previous year.

Table 4
MIDs 1949–2001.

	All observations				Africa, Middle East, and Asia				Latin America			
	1	2	3	4	5	6	7	8	9	10	11	12
Border area TBPAs (lag & ln)	0.99 (−0.86)				0.98*** (−2.78)				1.10*** (3.58)			
Existence of TBPA (lag)		0.89 (−0.98)				0.70*** (−2.71)				3.09*** (3.28)		
Establishment of TBPA (previous 5 years)			1.07 (0.83)				0.88 (−1.10)				1.53*** (5.23)	
Establishment of TBPA (previous 10 years)				1.01 (0.18)				0.87* (−1.86)				1.25*** (3.15)
Border length (lag & ln)	1.21** (2.28)	1.21** (2.30)	1.19** (2.05)	1.20** (2.12)	1.14 (1.57)	1.14 (1.62)	1.14 (1.53)	1.15 (1.61)	1.94*** (3.95)	1.95*** (4.22)	1.98*** (4.02)	1.99*** (3.99)
Distance bw capitals (lag & ln)	0.81*** (−3.03)	0.81*** (−3.02)	0.80*** (−3.14)	0.80*** (−3.13)	0.78*** (−2.90)	0.78*** (−2.90)	0.78*** (−3.20)	0.78*** (−3.14)	0.45** (−2.04)	0.49** (−2.02)	0.55* (−1.85)	0.54* (−1.84)
Two autocracies (lag)	1.45 (1.32)	1.45 (1.33)	1.48 (1.41)	1.46 (1.36)	0.57 (−1.58)	0.58 (−1.54)	0.59 (−1.37)	0.58 (−1.41)	3.31** (1.98)	2.91* (1.78)	2.61* (1.73)	2.95** (2.01)
One democracy (lag)	2.03*** (2.88)	2.03*** (2.89)	2.06*** (2.91)	2.04*** (2.88)	0.84 (−0.52)	0.85 (−0.49)	0.87 (−0.37)	0.87 (−0.39)	1.21 (0.58)	1.18 (0.53)	1.10 (0.36)	1.18 (0.61)
Inconsistent (lag)	1.70** (2.02)	1.71** (2.04)	1.72** (2.02)	1.70** (1.98)	0.68 (−1.14)	0.69 (−1.12)	0.67 (−1.07)	0.68 (−1.06)	1.49 (1.20)	1.39 (0.98)	1.20 (0.54)	1.40 (0.97)
GDP per capita (lag & ln)	0.99 (−0.26)	0.99 (−0.23)	0.97 (−0.66)	0.97 (−0.53)	1.09 (1.41)	1.09 (1.40)	1.08 (1.26)	1.09 (1.51)	0.93 (−0.30)	1.01 (0.045)	1.02 (0.11)	1.06 (0.28)
Population (lag & ln)	1.21*** (4.06)	1.21*** (4.06)	1.21*** (4.06)	1.21*** (4.10)	1.26*** (4.53)	1.26*** (4.55)	1.24*** (4.65)	1.25*** (4.66)	0.71* (−1.96)	0.70** (−2.13)	0.70** (−1.97)	0.71* (−1.89)
Trade (lag & ln)	0.98* (−1.78)	0.98* (−1.77)	0.98* (−1.93)	0.98* (−1.87)	0.99 (−0.95)	0.99 (−0.97)	0.99 (−1.08)	0.99 (−1.06)	1.00 (−0.22)	1.00 (−0.19)	1.03 (0.93)	1.03 (0.90)
Alliance (lag)	1.02 (0.17)	1.02 (0.16)	1.04 (0.30)	1.03 (0.28)	0.91 (−0.77)	0.92 (−0.74)	0.95 (−0.39)	0.93 (−0.56)	0.76 (−0.31)	0.68 (−0.39)	0.55 (−0.69)	0.55 (−0.58)
Shared IGO memberships (lag & ln)	1.01 (0.099)	1.01 (0.094)	1.02 (0.12)	1.01 (0.089)	0.92 (−0.55)	0.92 (−0.57)	0.91 (−0.72)	0.90 (−0.77)	1.58 (0.58)	1.64 (0.57)	1.89 (0.93)	2.07 (0.95)
Peace years	0.075*** (−17.7)	0.075*** (−17.7)	0.075*** (−17.4)	0.075*** (−17.4)	0.090*** (−14.6)	0.089*** (−14.6)	0.086*** (−14.6)	0.087*** (−14.7)	0.15*** (−5.00)	0.14*** (−5.75)	0.12*** (−6.48)	0.13*** (−5.68)
Observations	9782	9782	9781	9776	5772	5772	5772	5772	1632	1632	1632	1632
Clusters	313	313	313	313	175	175	175	175	35	35	35	35
R-sq	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.23	0.22	0.22	0.22
Log likelihood	−2141	−2141	−2141	−2142	−1490	−1491	−1495	−1494	−277	−279	−280	−282

The table shows the odds ratios for logistic estimations. Robust *z*-values, adjusted over country dyads, in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Models 1 and 2 demonstrate that the effect of previous MIDs is considerable and highly significant – a country pair with hostilities in both previous years is almost 100% more likely to set up a TBPA.[4] If, in Model 2, we keep all the other variables in their mean and only vary the two-year lag variable from 0 to 2, the likelihood of establishing a park increases from 2.4% to 4.5%.

When we analyze the data by using sub-samples for each region, we find that all regions have positive signs (results not shown) – that is, in all regions, we see a tendency that previous MIDs contribute to the establishment of TBPAs. This is in line with the results from the mean comparison. The relationship is significant for Western, Latin-American, North-African, and the Middle-Eastern countries at $p < 0.05$ and for Asia and Sub-Saharan Africa at $p < 0.20$.

Models 1–3 show that countries with longer borders are more likely to establish TBPAs probably because they have more "opportunities" to do so (Starr, 2002). Country pairs with a higher economic development are more likely to set up TBPAs as are those with existing TBPAs and OPAs in the border area. Population size and trade have positive signs but have borderline significance at the 10% level only in some of the model specifications. Being allies, regime type, being more internationally oriented, and having a shorter distance between capitals do not affect the results.

The results relating to Model 3 shown in Table 3 provide an important clarification: they do not support the above-mentioned relationship between MID incidence and the establishment of TBPAs if the two countries have experienced a fatal MID during the preceding two years.

Finally, it is possible that countries that have experienced hostilities in past years will be more likely to set up any kind of protected area near their borders. Thus, to control for this potentially spurious relationship, we use the establishment of OPAs in the border region as the dependent variable in Model 4. As Model 4 shows, the effect of previous MIDs on establishing OPAs is close to zero and not statistically significant.

Multivariate analysis 2: peace effect

The findings presented above confirm that TBPAs are established between countries that have had MIDs in the past. In this section, we investigate whether TBPAs are correlated with a lower likelihood of MIDs.

In Table 4, Models 1–4 show the results for the full sample, Models 5–8 show the results for Africa, Middle East, and Asia, and Models 9–12 show the results for Latin America. The dependent variable is MID onset. Models 1, 5, and 9 include the percentage of border area covered by TBPAs. This is an accumulative variable and thus captures the potential peace effect of all TBPAs regardless of their establishment year. It may be that the size of the TBPAs is not relevant; therefore, we also include a dummy variable which simply denotes whether a TBPA existed the previous year between the countries (Models 2, 6, and 10). In Models 3, 7, and 11, we include a dummy that takes the value of 1 if the country pair had established TBPAs over the previous 5-year period. A similar dummy for the previous 10-year period is included in Models 4, 8, and 12.

All models report odds ratios for logistic estimations and use the standard set of controls for a MID analysis: population size, border length, distance between capitals, regime type, level of development, trade dependence, alliances, involvement in IGOs, and the dyad's conflict history.

Models 1–4 show that the relationship between TBPAs and MIDs is insignificant when all observations are included. However, this masks some considerable differences between regions. For Africa, Middle East, and Asia, there is a positive and significant correlation between TBPAs and peace: TBPAs are related to a lower likelihood of MIDs when we measure the existence of TBPAs the previous year (Models 5 and 6). However, when we include the dummy for the establishment of TBPAs over the previous 5-year period (Model 7), the correlation ceases to be significant (the same is true for shorter time periods, results not shown). This implies that, if there is a causal effect, it is the accumulative effect over time that is relevant. This is supported by an analysis in which we include establishments over a 10-year period (Model 8). In this model specification, the establishments are related to fewer MID onsets at the 10% significance level. The size of the effect is relatively large. Model 6 suggests that, for Africa, Middle East, and Asia, the existence of a TBPA the previous year is related to a 30% decrease in the likelihood of MID onset.

For Latin America, we find the opposite result. Here, TBPAs are related to an increased likelihood of MIDs (Models 9–12). For other regions, we do not find a significant relationship between TBPAs and MIDs (results not shown).[5]

The models show that a larger population size, longer borders, and a shorter distance between capitals are linked to more hostilities. However, in Latin America, the population size has the opposite sign. In the full sample, democratic dyads and those that trade more are more peaceful. However, we do not find evidence for the former in the Asia, Africa, and the Middle-East samples and, in the case of the latter, neither for the sub-sample. In our analysis, income level, being allied, and shared-IGO membership do not affect the level of hostilities. Finally, we see that the longer the dyad has had no MIDs, the less likely it is to experience a new MID.

Finally, a country dyad that has established a TBPA may experience a decrease in hostilities; yet, the level of hostilities may still be higher than in more peaceful country dyads. To better identify the variation within country-dyad pairs, and not the general variation between country dyads, and to reduce the omitted-variable bias, we run checks by using fixed effects. We also include year dummies to control for possible time trends. The results are reported in Table 5 for Latin America and Africa, Middle East, and Asia. These checks confirm that the inclusion of fixed effects and time trends has no impact when all observations are included (results not shown) but that the results for sub-samples are robust to these model specifications.

Discussion

The results related to Hypothesis 1 are clear: countries that have experienced MIDs are more likely to set up TBPAs than other countries sharing a land border. This may be due to the political momentum emerging in post-conflict situations that provides a playground for the proliferation of NGOs and the implementation of donor–recipient projects, as has been the case in the African continent (Brockington, Duffy, & Igoe, 2008).

However, in contrast to the general tendency of hostile country pairs to establish TBPAs, states that have been involved in fatal MIDs are not more likely to establish TBPAs. This may be because environmental cooperation tends to be initiated when conflicts are not intense (Carius, 2007). The conditions necessary for the successful realization of the concept of peace through environmental cooperation are the same as those claimed to result from the process of transboundary cooperation (Darst, 2003): improved interstate trust, closer transnational ties among non-state actors, and the creation of a regional political community. It is most likely that these conditions are not present in cases of states experiencing intense conflict.

With regard to Hypothesis 2, our results are mixed. Although we find no support for TBPAs being related to fewer MIDs when running the analysis on the whole dataset, splitting the sample by regions brings a more nuanced picture. In Africa, Middle East, and

Table 5
MIDs 1949–2001. Fixed effects and time trends.

	Africa, Middle East, and Asia				Latin America			
	1	2	3	4	5	6	7	8
Border area TBPAs (lag & ln)	0.94*** (−2.94)				1.12** (2.43)			
Existence of TBPA (lag)		0.45*** (−2.97)				3.48** (2.04)		
Establishment of TBPA (previous 5 years)			0.93 (−0.63)				1.53** (2.09)	
Establishment of TBPA (previous 10 years)				0.86* (−1.90)				1.32* (1.80)
Observations	3873	3873	3873	3873	925	925	925	925
Clusters	109	109	109	109	20	20	20	20
R-sq	0.067	0.067	0.064	0.065	0.23	0.23	0.23	0.22
Log likelihood	−1090	−1090	−1094	−1092	−182	−183	−183	−184

The table shows the odds ratios for logistic estimations with fixed effects on country pairs and inclusion of year dummies. Robust *z*-values, adjusted over country dyads, in parentheses. The models include the same controls as the models in Table 4.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Asia, TBPAs are related to more peaceful relationships between neighboring countries. However, the peacefulness seems to be related to the existence of TBPAs and not to the recent establishment of them. This supports the claim that transboundary efforts for environmental cooperation "require long-term project cycles" (Carius & Dabelko, 2004, p. 30). Joint management of protected areas across borders is a difficult task that requires time and intense planning, and differences in state capacities affect the ability of policy implementation (Duffy, 2006). In addition, jurisdictional differences in the rules and regulations and the number of actors involved present challenges to the establishment and management of TBPAs. All these challenges limit TBPAs peacebuilding potential in the short term. Furthermore, TBPAs are not a good quick-action mechanism to emergencies, unless cooperation has been established for some time so that response policies have been worked out (Hamilton, 1997).

An interesting question is why we do not observe a similar effect for Latin America? The conditions in which parks are established may define the role of the park: for instance, the type of TBPAs, the extent of cooperation across borders, the purpose of the park, the actors involved, the amount of funding, and the type of projects implemented.

Some regions have a stronger focus toward peacebuilding and integration than other regions when establishing TBPAs. In Southern Africa, conservation projects have often been linked to the dreams of a reunited Africa (van Amerom & Büscher, 2005) because there is a larger incentive for cooperation. In contrast, in Latin America, many TBPAs have focused mostly on the biodiversity component, and in some cases where regional integration has been part of the agenda, transboundary cooperation progressively declined (Barquet, 2014; King & Wilcox, 2008; Wakild, 2009). Furthermore, the type of actors involved in the establishment of TBPAs may influence the government's willingness to establish and maintain cooperation with the neighboring country. For instance, tourism overwhelmingly occurs in conjunction with public protected areas (Weaver & Lawton, 2007). TBPAs have become an important attraction for tourism in Southern Africa, and NGOs, government agencies, and global corporations are the main beneficiaries of the establishment of parks (Ferreira, 2004). Thus, the opportunity for economic profit in Africa is an incentive for organizations and private actors to fund TBPAs. In the past decade, tourism has grown in East Asia particularly among visitors that are more attracted to vegetation and geology than charismatic megafauna (Weaver, 2002). TBPAs are interesting for this market because they are able to set aside larger areas than other type of protected areas. In contrast, in Latin America, protected areas are predominantly inhabited and governed by indigenous groups, their size remains constant, and in some cases, it has actually decreased, whereas the size of those in Africa and Asia have increased (Galvin & Haller, 2008).

Other factors may also play a role, such as the type of conflicts experienced in each region, the type of institutions established, and the efficiency of such institutions. Inter-state conflicts in Latin America have often been short-lived and rarely escalated to fatal conflicts; examples of these include the conflict between Honduras and Nicaragua in 1957, between El Salvador and Honduras in 1969, and between Peru and Ecuador in 1995. In Latin America, most states have opted for resolving disputes through regional and international institutions (Manero, 2011). Furthermore, although there is a general inter-state stability, intensifying civil and criminal strife is prominent in many countries in Latin America, particularly in border areas (Centeno, 2002). TBPAs do not address non-state conflicts. In the absence of inter-state conflict, particularly armed conflict (Kacowicz, 1998), there is no room for post-conflict scenarios that provide the playground for the type of TBPAs seen in Africa, in the Middle East, and in Asia (Sandwith et al., 2001).

Concluding remarks

This paper explored the environmental peacemaking hypothesis through TBPAs and their role in interstate relations. Our results show that country pairs that have experienced militarized interstate disputes (MIDs) are more likely to establish transboundary protected areas (TBPAs) than other countries sharing a land border. This does not hold for countries that have experienced fatal MIDs. Our analysis also suggests that the existence of TBPAs could be related to more peaceful relations between neighboring countries in Africa, in the Middle East, and in Asia but not in Latin America.

These results, together with case-study evidence, suggest that first, TBPAs as a peacebuilding mechanism require time and commitment but also the necessary conditions for the successful realization of the concept of peace through environmental cooperation. TBPAs may not be able to function as a political tool in cases where interstate trust and some form of transnational ties are lacking. Second, how people use and define protected areas determines the type of actors involved in the establishment and management of TBPAs. Actors are able to re-define practices, for instance by marketing nature through tourism. The economic value of these areas and the amount of influential actors and funding acquired influence in turn policies and may be an important factor in the political realization of TBPAs. Third, the peacebuilding

outcome of transboundary conservation initiatives cannot be assumed, and it is not predetermined. Like other regional cooperation initiatives, TBPAs may become mechanisms for peacebuilding if they clearly address it in its design and implementation.

The results presented indicate that transboundary conservation initiatives are related to less conflict in some regions, but more research is needed to ascertain whether there is a causal relationship between the two and to conclude how, and under which conditions, transboundary parks may generate more peaceful coexistence. For this, both case and large-N studies are needed as well as data collection on the level of cooperation in each TBPA.

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Endnotes

[1] The Gaza–Kruger–Gonarezhou Transfrontier Park was established in 2000 and renamed in 2001 to the Great Limpopo Transfrontier Park.

[2] The number of years with establishment of a TBPA is higher than the total number of parks, because many parks are shared between more than two countries.

[3] The following formula was used in the calculation: [Population(Country 1) × Income(Country 1) + Population(Country 2) × Income(Country 1)]/ Population(Country 1) + Population(Country 2).

[4] Analysis using one-, three-, and four-year time lags and the actual number of MIDs that occurred in the time period gave similar results. The results are robust for the period 1970–2001, when the vast majority of the TBPAs were established. The results are also robust to fixed effects specification, which has the advantage of better controlling for omitted variables such as roughness of terrain, climate, and other slowly changing variables such as ethnic composition that may affect the propensity to set up parks. Fixed effects analysis revealed a slightly larger effect of previous MIDs on the establishment of TBPAs and higher significance levels. Likewise, including year dummies makes the results slightly stronger and more significant. Dropping controls that are not significant in Model 2 does not change the results. Furthermore, the results are robust when removing 1% and 5% of the observations with the largest residuals. These results are not shown.

[5] The results in Table 4 are robust to running the analysis for the 1970–2001 period. They are also robust to removing insignificant variables and replacing the 5-year establishment variable by a dummy that denotes whether at least one TBPA was established during the period (results not shown).

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ARTICLE 2

"Yes to Peace"?

Environmental peacemaking and transboundary conservation in Central America

Karina Barquet. 2014

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Abstract: The use of transboundary conservation as tools for improving interstate relations has become a widely supported initiative in nature conservation. The rationale follows the environmental peacemaking hypothesis, which argues that seemingly neutral environmental issues can provide a sound basis for cooperation between states. The paper investigates the hypothesis' premise through the case of International System of Protected Areas for Peace (Si-A-Paz), a transboundary protected area shared by Costa Rica and Nicaragua. In recent years, both countries have been involved in a number of border conflicts within Si-A-Paz and linked to the use of the San Juan River, contested land areas, and oil resources. The case of Si-A-Paz shows that transboundary environmental issues can provide arguments for maintaining or even strengthening conflicts rather than fostering peace between states. The case also shows the emergence of environmental issues as a new arena for geopolitical play, where actors not only justify their actions through an environmental discourse but also, the environmental discourse is stretched to include a variety of issues through which actors can obtain international support. The events in Nicaragua and Costa Rica raise questions about the role of transboundary conservation as a peacebuilding tool.

Keywords: *Central America; environmental peacemaking; transboundary conservation; territorialization.*

1. Introduction

The late 1990s witnessed an expansion of regional conservation initiatives around the world in which transboundary conservation emerged as an important strategy to protect large areas across jurisdictional and international borders. This expansion has been justified through the claim that transboundary protected areas (TBPAs) can be used as a tool to improve interstate relations (Thorsell, 1990; Griffiths et al., 1999; Ali, 2007; 2011).

The rationale of transboundary conservation is often rooted in the environmental peacemaking hypothesis, which argues that environmental cooperation can be an efficient instrument for improving relations between states (Conca and Dabelko, 2003). According to this account, biodiversity is typically considered a "low politics" issue that donor agencies and states can take as a starting point for negotiations and peace (Feil et al., 2009). Based on these assumptions, the global increase of TBPAs has been welcomed as a sign of improved regional

cooperation. This has resulted in that transboundary conservation is increasingly promoted in areas with ongoing conflict (Barquet et al., 2014).

Despite much optimism, the role of transboundary conservation in interstate relations is not clear cut. Several case-studies have highlighted the problems associated with the establishment and management of TBPAs in Africa. Van Amerom and Büscher (2005) and Duffy (2006a) have highlighted that while TBPAs are advocated as a tool to foster an African Renaissance, the undemocratic, centralizing and top-down character of TBPAs may end up undermining regional cooperation. King and Wilcox argue that transboundary conservation "can minimize political context, contributes to the hegemony of international conservation agendas, and remains closely linked to economic neoliberalism and decentralization in the developing world" (2008:221). In a global empirical study on the subject, Barquet et al. (2014) find that TBPAs may play a different role in inter-state relations depending on the particular context. TBPAs may have a positive effect for interstate peace in cases of low-intensity conflict in Asia, Africa, and the Middle East, whereas in cases of fatal conflict and in Latin America TBPAs may actually enhance conflict.

This study explores the premise of the environmental peacemaking hypothesis in Central America, based on a review of experiences of the Sistema Internacional de Areas Protegidas para la Paz (International System of Protected Areas for Peace)[1], also known as Si-A-Paz ("Yes to Peace"), a TBPA established along the eastern border between Nicaragua and Costa Rica. The main research question addressed is whether Si-A-Paz has contributed to peacebuilding efforts between Nicaragua and Costa Rica as hypothesized in environmental peacemaking.

The organization of the article is as follows. In the second section I introduce the environmental peacemaking hypothesis. The third section contains a short description of the methodology. The fourth section describes the establishment of transboundary conservation in Central America, including a summary of events of the conflict between Nicaragua and Costa Rica. In the fifth section I discuss the actions that both countries have taken to control the territory and its resources. The paper ends with concluding remarks in section six.

2. Environmental peacemaking

The establishment of TBPAs has spread rapidly throughout the world (Katerere et al., 2001; Lanfer et al., 2003). In 1988, the International Union for Conservation of Nature's (IUCN) Commission on National Parks and Protected Areas identified 70 potential transboundary protected areas straddling 65 national borders (Thorsell, 1990). In 2005, a publication by Mittermeier et al. (2005) listed 188 TBPAs, and in 2007 Besançon et al. (2007) listed 227 TBPA complexes incorporating 3043 individual protected areas.

[1] Sometimes also referred to as Sistema Integrado de Áreas Protegidas para la Paz (Integrated System of Protected Areas for Peace).

As with other types of protected areas, TBPAs are established with the goal of conserving biodiversity or particularly valuable elements of nature. However, TBPAs are also established with the goals of improving relations between peoples and states that share the management of protected areas. The reasoning is grounded in the environmental peacemaking hypothesis, which argues that cross-border environmental cooperation will provide a common and "natural" basis for regional cooperation and thus help to prevent conflict (Ali, 2003; 2007). According to Mittermeier et al. (2005), TBPAs could be used as a means to solve border disputes, as a tool for reconciliation after conflict, as a means to maintain communication during a conflict, and they could provide a platform for facilitating negotiations in areas with prolonged conflict.

In building the basis for cross-border cooperation, environmental issues are perceived as less contentious and less politicized than, for example, economic or security questions (Conca et al., 2005). Discussions on seemingly technical and basically "natural," and hence non-contested, ecological issues are supposed to bring together parties in cases of conflict and serve as a platform for dialogue and trust building. Cross-border dialogue on environmental issues should in turn transform "conflict-based relations by breaking down the barriers to cooperation—transforming mistrust, suspicion, and divergent interests into a shared knowledge base and shared goal" (Conca et al., 2005, p. 8). In addition, cross-border environmental issues can generate a sense of common regional identity, and ultimately trigger the development of an imagined security community[2], thereby rendering conflicts more difficult to imagine (Adler, 1997).

The potential of TBPAs as tools for conflict resolution has generated great interest throughout the world and as result TBPAs are increasingly being established in places with a history of border conflicts (Barquet et al., 2014). Despite such support, a number of questions remain unclear. Of particular relevance to the present study are questions concerning state sovereignty and territorial control. Studies in Africa have discussed the inability of TBPAs to foster regional integration, the expansion of state control to previously uncontrolled borderlands through TBPAs (Wolmer, 2003), and the expansive power of environmental NGOs through transboundary environmental management (Duffy, 2006b). Duffield (2001), Harrison (2004) and Igoe et al., (2010) have discussed how global governance actors, such as NGOs and private companies, have become indivisible from nation-states to the extent that "policy-making, especially in the environmental arena, is carried out through multiple actors at the national and international levels" (Duffy 2006b:745). As a result of this merge, TBPAs have been useful for states to reinforce their sovereignty and gain access to cross-border areas (Singh & van Houtom, 2002).

While the above studies clearly highlight that TBPAs can be useful tools for gaining control over borderlands, the link between territorial control and inter-state relations is less clear. In other words, how do control mechanisms enforced through TBPAs affect relations between

[2] Adler (1997) defines imagined security communities as identity constructs whose borders are demarcated by shared norms of peaceful conflict resolution and peaceful exchange rather than state boundaries.

states? Barquet et al., (2014) found a regional variation on the effect of TBPAs upon inter-state relations; however their discussion on the causes of these variations is limited. Besides this, Barquet et al., study highlights the importance of context to understand the role that transboundary conservation may have upon state's relations, yet most literature focusing on the peace-building aspect of transboundary conservation has been carried out in Africa. Previous studies on the role of TBPAs in regional cooperation have seldom been carried out in cases with armed state conflict and therefore the conclusions reached concerning the impact of TBPAs on inter-state peace are limited.

The present study is carried out in Central America in an area with active conflict. The study places great focus on understanding the context of the borderland where the TBPA was established, because understanding the role of borders is crucial for understanding the role that TBPAs may play in inter-state relations. Paasi (1996) sees political borders as processes and institutions resulting from boundary-producing practices. For Newman (2003) borders are always created by someone to control the means of border crossing. The importance of borders in peace and conflict studies has been previously reiterated: their role for rebel armies and their remote location from centers of power makes them more difficult for governments to control (Buhaug and Gates, 2002). At the same time borderlands host some of the most biodiversity-rich places on earth (Hanson et al., 2009). A result of this combination, in Latin America many of the ongoing disputes between states as well as between their governments and local populations, particularly along the Caribbean coast, are rooted in disputes over resources in borderlands (Manero, 2007).

As borders are conflict-prone, controlling them is crucial to statehood (Buhaugh et al., 2009), for the creation and institutionalization of territories, as well as for territorial practices such as the production of national identities and the identification of 'otherness' (Newman & Paasi, 1998; Paasi, 2009). Territoriality is "an ideological practice that transforms national spaces and histories, cultures, economic success and resources into bounded spaces" (Paasi, 2011:14). In conservation, territorialization is understood as the delineation and mapping inherent in the establishment of protected areas (Adams et al., 2013). Protected areas are seldom considered as objects of territorial practices (Fall, 2005), despite the fact that they were crucial for ordering subjects and space in the colonial period (Neumann, 2001), and have historically been a fundamental element of states' proprietary claims (Neumann, 2004). Due to their location in unmanaged borderlands, TBPAs can be useful tools in the territorialization of spaces, particularly because defining both who can access resources and how resources are used is fundamental for state territoriality (Vandergeest and Peluso, 1995).

Following the above discussion, TBPAs are understood as territorial formations through which actors (state and non-state) attempt to redefine the meaning and uses of borders and with this gain control over particular resources. This understanding stands in stark contrast with the notion of "neutral" natural areas suggested by proponents of the environmental peacemaking hypothesis and by supporters of transboundary conservation. On the contrary, the case of Si-A-Paz in Central America, discussed in the following pages, exemplifies how the establishment of a TBPA is a territorial practice through which actors can legitimize the

use of violence. The justification of violence in the name of the environment reflects how transboundary conservation allows actors to expand the limits of what may be considered "environmental" to a range of other spectra, including economic, military, and developmental goals. As a result of this expanding sphere of influence, conservation projects increasingly qualify for international funding within a wide array of developmental and peace-building categories (Duffield, 2001). This grants non-state actors with increased political mobility and room for maneuver (Goodhand, 2006), and helps reinforce the power and control over resources of already powerful actors. Ultimately, the study reflects how TBPAs encourage states to project their power and take action to strengthen their territorial projects even more than before the establishment of the TBPA. Rather than softening borders, this indicates the emergence of a new arena for the continuation of geopolitics by other means. In the case of Si-A-Paz, these actions helped to strengthen conflict rather than to foster peace.

The following pages provide first, a methodology of the study, and then a discussion of the border-context in which Si-A-Paz was implemented.

3. Methodology

The border between Nicaragua and Costa Rica has been a source of border disputes for over a century, and because the San Juan River Basin has seen both conflict and attempts at cooperation it is possible to explore different premises in which TBPAs could act as peacebuilders (Mittermeier et al., 2005).

This study is based on fieldwork carried out in six villages located along the border between Nicaragua and Costa Rica, namely San Carlos, Boca de Sabalos, San Juan de Nicaragua, Tortuguero, Barra del Colorado, and Isla Calero. These villages are located within the delimitations of Si-A-Paz and are closest to the area of the dispute. During September and October 2011 and March 2012, I held semi-structured interviews, informal conversations, and focus group discussions (in total, 42 meetings) with 58 individuals from the communities, as well as representatives of non-governmental organizations (NGOs) (Fundación del Rio, Nitlapan, FUNDENIC, Centro Humboldt, Centro Científico Tropical, IUCN Central America, Consejo Indígena Rama, Asociación de Desarrollo Integral de Barra del Colorado) researchers, government staff and local authorities. Some of the informants were strategically chosen, particularly NGO staff, government functionaries, and community leaders. By contrast, many of the informants from the local villages were randomly selected. I triangulated the information gathered during the interviews with my field notes based on observations as well as secondary sources, including governmental documents, newspaper articles, project evaluations, and relevant literature.

4. The establishment of transboundary conservation in Central America

Environmental organizations in Central America have long advocated that the borders of the region should not be lines of tension and conflict, but rather lines of convergence and

cooperation (Valero-Martínez, 2002). This was seen as a possibility at the end of the 1980s, at a time when Central American states were eager to mark the end of a long period of civil wars and the beginning of a new era of peace and increased regional integration. The end of the civil wars was followed by a revived interest among Central American leaders to establish common regional action in order to reduce the costs of international openness (Fait, 1996). They therefore implemented a series of regional and subregional integration projects not only with the aim of assimilating their respective economies into the global markets, but also with the goals of reinforcing peace and democracy, and strengthening regional integration. The projects originated from the Esquipulas peace process, which was the regional initiative to end the civil wars in three of the Central American countries (Secretaria de Relaciones Publicas Presidencia de la Republica, 1987), headed by Costa Rica's former president, Oscar Arias.

The integration process emerging from the Esquipulas meetings had a wide-reaching agenda aiming for a new model for regional security that involved strengthening civil society, eradicating poverty, violence, corruption, drug and arms trade, and promoting sustainable development and protection of the environment (ODECA, undated). Rafael Calderon Fournier (former president of Costa Rica) and Violeta Chamorro (former president of Nicaragua) initiated the establishment of Si-A-Paz with the aim of jointly managing "border areas with natural resources and cultural characteristics of common interest," (i.e., of interest to both countries) (Amigos de la Tierra, 1995, p. 9)[3]. In 1988, the project was funded by Sweden, Norway, and the Netherlands, with the International Union for Conservation of Nature (IUCN) providing technical assistance (FUNDAR-MARENA, 2003). In 1990, Nicaragua and Costa Rica signed a document that recognized the area defined as Si-A-Paz as an indivisible unit of ecosystems (CCT, 1988; Benvenisti, 2002). In 1991, both presidents signed an agreement to strengthen cooperation and coordination over security and environmental issues in the region. In this agreement Si-A-Paz was declared as the conservation project of utmost importance (IRENA-MIREM, 1991; Amigos de la Tierra, 1995,).

Si-A-Paz includes 11 individual protected areas (Figure 1), and at the time of its establishment Si-Paz was touted as one of the most biodiversity-rich places in Central America (PNUMA & OEA, 1997). The ecological, political and historical values of the region made it a prime spot for the development of tourism and a potential point of departure for transfrontier integration (Eptisa, 2006). Officially, Si-A-Paz was intended to strengthen cooperation on environmental issues and improve control of the borderland. Ideally, the implementation of the TBPA would also lead to the establishment of an institutional framework and the legal foundations for a regime of cooperation between Nicaragua and Costa Rica. Successively, it would strengthen regional cooperation between both states and strengthen the sense of regional identity among their populations. In reality, rather than unity and integration, Si-A-Paz was characterized by struggles over property rights in Nicaragua and an aggressive agrarian colonization in Costa Rica. In Nicaragua, thousands of former Sandinista combatants and their families in Nicaragua were promised a piece of land in return for their military services at the end of the

[3] Author's own translation of the original text in Spanish

conflict. This land was allocated in Si-A-Paz, an area that for over a decade remained largely isolated and shielded from intensive agricultural activities, but which following the end of the war was host to violent disputes over land titles and resources (see Nygren, 2004). In Costa Rica, the commission assigned to manage Si-A-Paz never really worked in practice; the existence of some of the protected areas included in the TBPA has been questioned; and many of the protected areas in Si-A-Paz are seriously deforested (FUNDAR-MARENA, 2003). Additionally, Si-A-Paz was established in an area with unclear border delimitations. As a result, shortly after the signing of the peace agreement and establishment of Si-A-Paz, a century-long dispute over the border delimitations of the San Juan River Basin reemerged between Nicaragua and Costa Rica. This is discussed below.

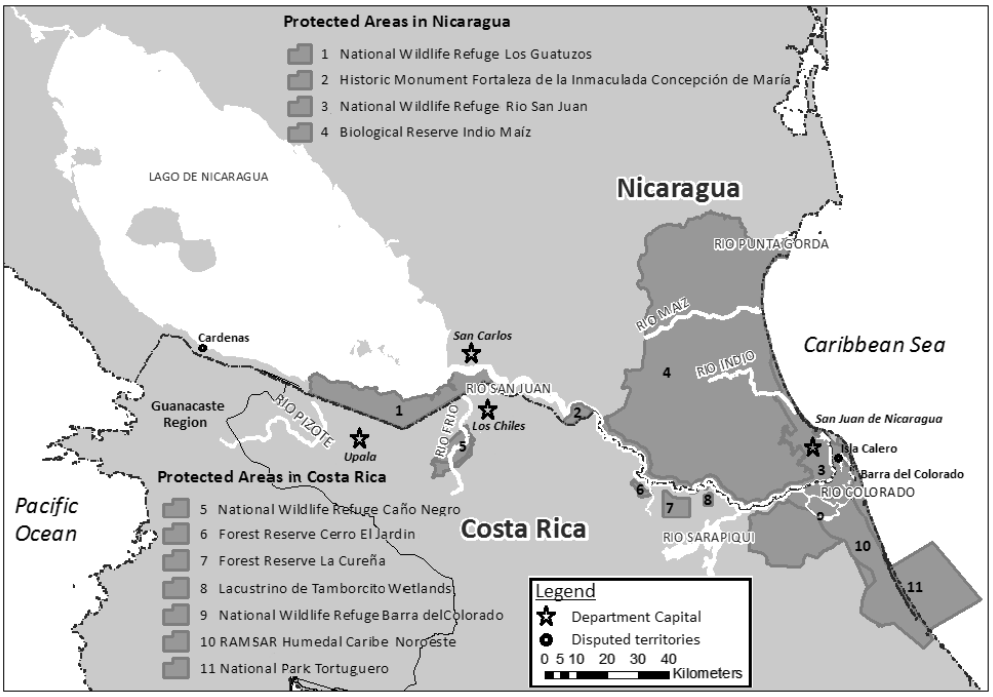

Figure 1 Si-A-Paz

4.1 The "San Juanization" of Nicaragua-Costa Rican relations

The binational watershed of San Juan River is 210 km long and flows east out of Lake Nicaragua into the Caribbean Sea at a speed of 1400 m3/s after meeting the Sarapiquí River. Intense rain periods in the region (up to 5500 mm/year) is what makes the San Juan River the most important hydrological system in Central America (Querol, 2003). The river covers two-thirds of Nicaragua's territory and one-third of Costa Rica's northern territory (Girot, 1994).) Since the 19th century, Nicaragua and Costa Rica detected a "natural" sedimentation process

that changed the flow of the river (Boeglin, 2011). Sediments from agricultural activities have further contributed to the process, making the San Juan River unnavigable during the dry season (Ballestero, 2003). This is reflected in the expansion of the shoreline to up to 50 meters during the dry season in some places in Nicaragua (Escobar Sandino, 2013). According to the Nicaraguan National Assembly, the width of the river during the dry season decreases from 454 to 80 m3/s in the delta dividing the Colorado branch from the San Juan River (Asamblea Nacional de Nicaragua, 2012). As a result of these processes, two-thirds of the total flow of the San Juan River disembogues into the Colorado River before reaching the Caribbean Sea (Gutiérrez, 2010). Only a small share of water remains in Nicaraguan territory.

Prior to the construction of the Panama Canal the San Juan River was a major route between the Atlantic Ocean and the Pacific Ocean, particularly during the "Californian Gold Rush" in 1848-1855. Throughout the mid-1800s, the river was strategically important and highly valued first by Spain, and later by England, France, and the U.S, the hegemonies in the region at the time. Imperial rivalry and differing interests in the river basin led to constant disputes that affected bilateral relations (Rabella, 1995).[4] The disputes of the 1800s resulted in Nicaragua losing sovereignty over Guanacaste Province to Costa Rica, after the inhabitants requested annexation to Costa Rica through a plebiscite. In return, Nicaragua gained full sovereign rights over the San Juan River (Herdocia, 2010).

Following the civil war in Nicaragua and the filibuster invasions in the region throughout the 1850s, Nicaragua and Costa Rica signed the Cañas-Jerez Treaty in 1858 with the intention of resolving border tensions at the time. However, proposals to construct an interoceanic canal along the San Juan River further complicated relations between Nicaragua and Costa Rica (Girot, 1994). As a result, there have been several reinterpretations of the 1858 treaty, of which the latest, the Alexander Award of 1899, realigned the boundary sector between the Caribbean Sea and the San Juan River (Marchant, 1944). With the construction of the Panama Canal in 1914, the interoceanic route along the San Juan River was no longer paramount. Nevertheless, throughout the 1900s, successive Nicaraguan governments continued to seek financial alternatives for the construction of a canal. Internationally-funded explorations along the San Juan River were often carried out during periods of hegemonic transition in the region, from Britain to the USA, and from USA to Japan (Girot, 1994).

The link between natural resources and the formation of the nation-state in Nicaragua and Costa Rica was evident throughout the 1800s. Besides availability of fresh water, fertile lands, and the significance of the San Juan River basin as a transit zone, the basin was in the early 1800s the most promising rubber zone in Central America. Rubber was abundant in Guanacaste at the time and it was Costa Rica's second most important export (Edelman, 2003). The early disputes over the San Juan River Basin and its resources were key for the formation of national identities, for sharpening previously weak or non-existent national distinctions, and for controlling remote lands and incorporate indigenous populations that

[4]See Brannstrom (1995), Dozier (1985), and Nietschmann (1992) for detailed discussions on the history of Nicaragua-Costa Rica relations.

were beyond the reach of the state. In Costa Rica, the conquest for rubber was accompanied by a discourse of Costa Ricans as friends and Nicaraguans as evil rubber tappers. This discourse helped established the foundations of the Costa Rican national myth that accompanied the country's territorial definition (Edelman, 2003). In Nicaragua, the "canalization of the San Juan River" was repeatedly used as a tool to consolidate power and a panacea to all the economic ills of the country, but which always failed to materialize (Brannstrom, 1995:77).

In 1998 a new dispute emerged when Cárdenas Municipality, located on the southwestern shore of Lake Nicaragua in the Rivas department, demanded annexation to Costa Rica (figure 1). The dispute renewed tensions between Nicaragua and Costa Rica and the Nicaraguan government accused Costa Rica of expansionist intentions (Medina-Nicolas, 2007). Shortly thereafter, a new dispute resurfaced over navigation rights. Nicaragua declared the transit of armed Costa Rican policemen along the river as a breach of sovereignty, and unilaterally imposed a tax for Costa Rican tourists travelling on the river. The International Court of Justice (ICJ) examined the issue, and its findings eventually led to a reinterpretation of the Cañas-Jerez Treaty, whereby Costa Ricans could offer activities to tourists but could not transport weapons along the San Juan River (ICJ, 2009).

In October 2010, a new dispute over the San Juan River emerged when Nicaragua initiated dredging activities, with funding from Chinese investors, for the construction of the interoceanic canal (*The Economist*, 2013). Nicaragua and Costa Rica accused each other of environmental pollution and the destruction of wetlands (MARENA and Amigos de la Tierra, 1996; Cruz-Granja, 1999; ACAN-EFE, 2010). Nicaragua argued that dredging the river was necessary in order to restore the flow of the San Juan River, which was deviated due to Costa Rica's dredging activities during the 1940s in the Colorado River. Additionally, studies had revealed a high degree of pollution due to sediments and agro-chemicals from fruit companies and cattle ranches in Costa Rica. Costa Rica argued that the dredging activities were disrupting the "balance" of the hydrological system, which in turn threatened biodiversity along the northern coasts of the Caribbean (the respective governments' arguments were eventually presented to the ICJ ruling in 2011b, p. 24).

The "environmental" dispute over the dredging of the San Juan River turned into a territorial dispute when Nicaragua argued that the dredging operations were taking place on Nicaraguan territory (Arguedas and Oviedo, 2010; Jimenez, 2010). Edén Pastora, the Nicaraguan official leading the dredging operations, based his demarcation of the border on Google maps, which placed the eastern end of the border between Nicaragua and Costa Rica south of the generally accepted dividing line, providing Nicaragua with a territorial gain of a few kilometers (Jacobs, 2012). Hereon, Nicaragua's President Daniel Ortega disputed the sovereignty of a 3 km^2 swamp that was left unmapped during the delimitation of the border in the northwest part of Isla Calero (Rodriguez, 2013). As a response in October 2010 the Costa Rican government sent 70 armed police to reinforce the protection of the border (*The Economist,* 2010), to which Nicaragua responded by stationing 50 soldiers (Aleman, 2010). As a result, diplomatic

relations broke down between the two countries, leading to the withdrawal of their respective ambassadors and breaches in institutional cooperation. The ICJ examined the dispute and the preliminary decision of the court was that both countries should remove their troops from the conflict site (ICJ, 2011a).

Internally, both countries claimed victory over the "environmental" dispute. Knowledge of the political context at the time is relevant in order to understand the situation. Nicaragua was in the middle of presidential elections. President Daniel Ortega was running for reelection but there were claims that his candidacy was corrupt and violating the country's constitution. In Costa Rica, President Laura Chinchilla was facing a scandal due to alleged corruption. Thus, in both countries, critics saw a claim to victory over the conflict as a way to divert attention from their respective domestic political scenarios.

By July 2013, Costa Rica discovered from satellite imagery that Nicaragua had initiated the construction of two new trenches in the disputed territory. Costa Rica took the case to the ICJ. On 22 November 2013, the Court unanimously decided that Nicaragua "should refrain from any dredging and other activities in the disputed territory" (ICJ, 2013a, p. 15) and that, following consultation with the Secretariat of the Ramsar Convention, Costa Rica should take any necessary measures to prevent any further irreparable damage to the environment of the disputed territory.

In February 2014, Costa Rica filed new proceedings to the ICJ against Nicaragua with regard to a "[d]ispute concerning maritime delimitation in the Caribbean Sea and the Pacific Ocean." In its application, Costa Rica requests the Court "to determine the complete course of a single maritime boundary between all the maritime areas appertaining, respectively, to Costa Rica and to Nicaragua in the Caribbean Sea and in the Pacific Ocean, on the basis of international law" (ICJ, 2014). Boeglin (2014, np.) highlights the challenge of this case because it is the first time that the ICJ has received a request for maritime delineation of two oceans at the same time: "an extremely interesting exercise is probably coming, due to the fact that arguments about one coast cannot necessarily be used for the other coast, due to different configuration and existing [fishery] resources on each side."

While the disputes over the dredging of the San Juan River were ongoing, the Costa Rican government initiated the construction of a 160 km road named "Ruta 1858, Juan Rafael Mora Porras" in response to Nicaragua's invasion, and framed under the Costa Rican government's strategy to improve the protection of the border population (Valladares, 2012). The road runs through the border towns of La Cruz, Upala, Los Chiles, Sarapiquí, San Carlos and Pococí (Gobierno de Costa Rica, 2012), and intersects in various points with protected areas (interviews with community association in Barra del Colorado, 23 March 2012; NGO in Nicaragua 21 October 2011; NGO in Costa Rica 14 March 2012) (figure 2). The road is expected to increase the government's access to the area and improve the connection to the capital, increase police mobility in the region and surveillance towers along the border, and it is seen as a way to deal with the clauses in the Cañas-Jerez Treaty that prohibits Costa Rican armed police from transiting the river (interview with local NGO, 23 March 2012).

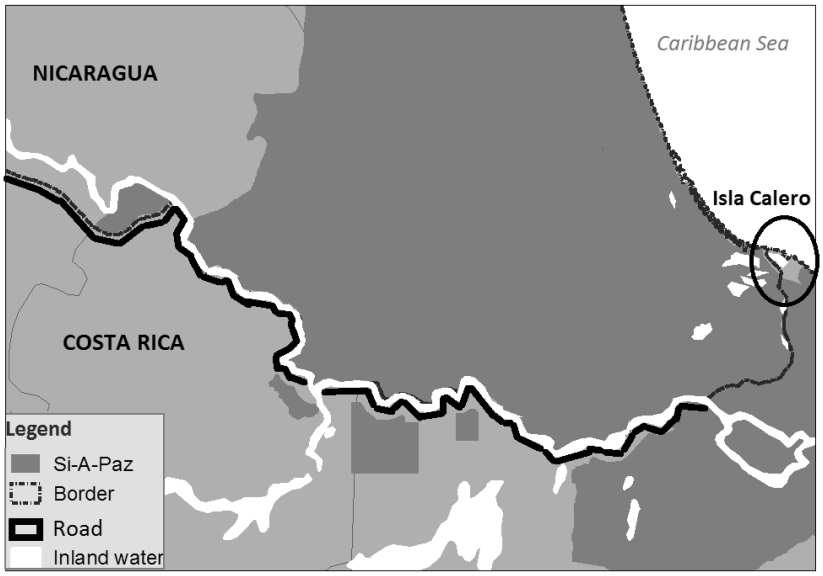

Figure 2 Route 1858, Juan Rafael Mora Porras (Adapted from the map published by Boeglin, 2013a based on an official document presented at the Costa Rican presidential house, and a map released by the Costa Rican Road's Authority (CONAVI) and published by Segura, 2012).

On 22 December 2011, following presidential elections, the Nicaraguan government filed proceedings to the ICJ concerning the road. According to the document published by the ICJ, Nicaragua argued that Costa Rica had violated Nicaragua's territorial integrity because "Costa Rica's unilateral actions ... threaten to destroy the San Juan de Nicaragua River and its fragile ecosystem, including the adjacent biosphere reserves and internationally protected wetlands that depend upon the clean and uninterrupted flow of the River for their survival" (ICJ, 2011b, p. 1). In the petition, Nicaragua argued that the construction of the road would generate large amounts of sediments, thus threatening biodiversity in the river basin. Nicaragua demanded that Costa Rica should respect the bilateral environmental agreements, including the Ramsar Convention (1971), the Convention on Biological Diversity (1992), the Central American Convention for the Conservation of Biodiversity and Protection of Priority Protected Areas (1992), and Si-A-Paz. Similar concerns had already been raised by Costa Rica's Constitutional Chamber of the Supreme Court in 2012 (Boeglin, 2013b). The Chamber considered that the situation presented by Chinchilla's government regarding a Nicaraguan invasion was not sufficient to legitimize the construction of the road. Furthermore, the road was considered inappropriate to solve the most acute problems of the region and a serious threat to the environment. Nevertheless, in December 2013, the ICJ ruled in favor of Costa

Rica regarding the construction of Ruta 1858, Juan Rafael Mora Porras. The court stated that Nicaragua had not proved that "the ongoing construction works have led to a substantial increase in the sediment load in the river" (ICJ, 2013b, p. 6-7). Studies that Costa Rica presented—and that were not refuted by Nicaragua—showed "only" a 1–3 percent increase in the total sediment load in the San Juan River. The ICJ considered this "too small a proportion to have a significant impact on the river in the immediate future" (ibid, p. 9). However, the construction of the road contradicts national laws in Nicaragua and Costa Rica, as well as international treaties for the protection of ecosystems and biodiversity. In Costa Rica, critics argue that the Estudio de Diagnóstico Ambiental (Environmental Assessment) that Costa Rican authorities claim to have carried out and used as evidence in the ICJ ruling against Nicaragua, was only done after the highway had been constructed (see the discussion in Astorga, 2011). No previous risk assessments had been carried out (interview with Costa Rican NGO, 14 March 2012; Boeglin, 2013b). This is confirmed in an evaluation report that three Nicaraguan NGOs carried out. According to the report, the road had,

> been built in one of the most fragile and ecologically sensitive main nodes of ecological connectivity of the Mesoamerican Biological Corridor [a network of TBPAs along Central America], which enjoys the highest level of protection for conservation in accordance with the legislation of both countries. These alterations are considered significant, thus threatening the biological connectivity of the isthmus, and which coupled with the adverse effects of climate change will have unpredictable consequences for the ecological stability of the region in the medium term. (Campos et al., 2012, p. 5)

The report highlights that ten protected areas had been affected by the construction of the road, five in Nicaragua and five in Costa Rica, of which two are internationally recognized Biosphere Reserves and three are designated Ramsar sites.

In order to justify the breaching of national legislation and international regulations, President Laura Chinchilla's government declared state of emergency in Costa Rica, following the dispute over the San Juan River Basin (Gobierno de Costa Rica, 2012). This was a strategic step by the government to avoid opposition from influential environmental groups (interview with Nicaraguan NGO, 14 March 2012) and opposition from critical voices within the Costa Rican government (see discussion in Boeglin, 2013b). The strategy was apparently successful. For example, in the open-pit gold mining project known as Crucitas, in the northern borderland of Costa Rica, environmental organizations played a key role in a high court ruling against former President Arias' permit to use cyanide in an area considered biologically rich. By contrast, the construction of the road did not face such opposition because it was presented as a national emergency measure (interview with Nicaraguan NGO, 14 March 2012).

The periodic conflicts between Nicaragua and Costa Rica over the delimitations of the border and rights over the San Juan River Basin need to be seen in relation to the resources within Si-A-Paz. Consequently, the actions that both governments have taken need to be interpreted as

attempts to secure access and control over a resource-rich area. In this case, Si-A-Paz has become an arena for the continuation of geopolitics and territorial control, rather than a neutral point of departure for increased cooperation as claimed by its proponents. This was further reinforced by RAMSAR's role in the ICJ, which far from enabling environmental diplomacy it played a decisive role in the ruling for the construction of the road, despite the contradiction with national laws and international environmental treaties. This in turn aided President Ortega ground his conspiracy claims against the West and undermined the legitimacy and supposed neutrality of environmental treaties in the region.

5. Controlling the territory

Following the disputes over the San Juan River, Si-A-Paz became less about integrating biodiversity and people, and more about using it as a control mechanism control and reinforcement of existing borders. This way, Si-A-Paz allowed both governments to gain control over areas previously considered "no-man's-land." For instance, the southernmost and isolated town of San Juan de Nicaragua hosted the anti-Sandinista movement during the counter-revolution in Nicaragua, and since President Daniel Ortega's assumed presidency in 2007, San Juan de Nicaragua—historically recognized as "the forgotten region"—has been the focus of several government projects, including the construction of an airstrip to link the territory to the rest of the country, and the establishment of health, education, and tourism facilities. In the process of controlling the area, naming has been important to symbolize statehood, and in 2002, Ortega's government renamed the town previously known as either San Juan del Norte or Greytown to San Juan de Nicaragua (Asamblea Nacional de Nicaragua, 2002). "To confirm that this is Nicaraguan territory", argued a local inhabitant in San Juan de Nicaragua (22 October 2011).

Additionally, in Nicaragua an increasing designation of military resources to the border has been framed as part of the efforts to protect the environment and a way to manage the area sustainably. During an interview (13 October 2011), an official of the Nicaraguan Ministry of the Environment and Natural Resources (MARENA) in charge of the state's patrimony explained that an "ecological battalion" funded by the German Federal Enterprise for International Cooperation (GIZ), had been approved by the Nicaraguan government. The battalion comprised approximately 500 Nicaraguan soldiers who were undergoing capacity building to become armed forest guards responsible for protecting parts of Si-A-Paz on the Nicaraguan side of the border. The official purpose of the battalion is to protect nature, control illegal drug activity along the border, and put a stop to illegal logging and the exploitation of fisheries. Local inhabitants were divided about military presence in the area: "since the soldiers arrived, Costa Rican fishermen stop preying in our waters and chopping down our forests" argued a local inhabitant in San Juan de Nicaragua (22 October 2011). While tourist operators highlighted the hostility of the soldiers, some of them were positive to the fact that military presence had driven away Costa Rican boat operators from "selling" Nicaraguan protected areas to tourists as Costa Rican (interviews 18 and 20 October 2011);

whilst others argued that military occupation had "killed the business" and scared Costa Rican tourists, and as a result many had been forced to move (interviews 19 and 20 October 2011).

While immense logging and fishing pressures exist in Si-A-Paz, particularly around the buffer zone of Indio Maiz Reserve (located in the municipality of El Castillo), the protection of the environment has helped the Nicaraguan government to justify the militarization of the border and the rest of the country (Nitlápan-Envío, 2010). Following the conflict, in Nicaragua, President Daniel Ortega proposed three new legal decrees to the National Assembly with regards to National Defense, the National Security Law, and Legal System Laws. These decrees allow the president to justify subordination of the military to the executive power (Sandoval-Garcia, 2012). The military occupation of San Juan de Nicaragua was the first instance where this decree was made effective.

In 2010, Costa Rica's president, Laura Chinchilla, announced that a "national defense tax" would be enforced to cover the increased costs of border security (Williams, 2011), and in March 2011, Chinchilla's government activated the country's first border police unit, a squad of over 150 men in charge of protecting the country's borders from illegal activities that damaged the environment. This took place at the same time as the arrival of 46 USA warships and 7000 USA marine troops into Costa Rican territory. The official purpose of the marine troops was to aid Costa Rica in the fight against drug trafficking in the border areas (Mata, 2010). The activation of the Costa Rican unit took place in Los Chiles (Figure 1), one of the most important gateways for Nicaraguan citizens working in Costa Rica.

The Costa Rican government scheduled a second police unit for the border within months of the establishment of the first one (EFE, 2011). This unit was to complement Costa Rica's Comando Atlántico (Atlantic Command) based in Isla Calero. According to an informant from the Comando, which was explained as a division of the Costa Rican border patrol funded by the South Atlantic Command of the United States Marines, "thanks to the agreements with the American forces [referring to the U.S], the area is under control. Otherwise, 'they' [referring to Nicaraguans] would do as they pleased" (interview 20 March 2012). The official task of Comando Atlántico in Costa Rica is to protect Costa Rican territory from further intrusions from Nicaragua, to prevent illicit activities, and to protect tourists.

In Barra del Colorado (Figure 1), an airstrip formerly used by commercial airlines for tourist purposes was rebuilt in 2011 (despite the fact that tourist planes had stopped flying into the area four years earlier and there were no plans of reinitiating tourist flights), and was thought by an informant to have been financed by the South Command Army of the U.S (interview with local inhabitant, 22 March 2012). The Costa Rican government has further plans for an airstrip in the disputed territory Isla Calero, reasoning that the area needs further installations for the development of eco-tourism and the expansion of the protected area network (interview with local inhabitant, 21 March 2012).

5.1 Protecting the environment or securing the oil?

While previous studies have argued that TBPAs should been seen as an attempt to gain control over unmanaged places situated around borders (Duffy, 2001), the case of Si-A-Paz reflects the use of an environmental discourse for the formation of new territories. Here states, international agencies, and private corporations aid each other in the process of gaining control over spaces. This not only reinforces states' territorial authority but also allows international agencies and private corporations to benefit from states' increased territorial control. This is clearly reflected in Si-A-Paz, where the disputes over the San Juan River and the rapid militarization of the border between Nicaragua and Costa Rica can be linked to emerging conflicts over oil resources in the region. The location of mainland and maritime oil fields in the border region and how oil fields overlap with five protected areas in Costa Rica are shown in Figure 3.

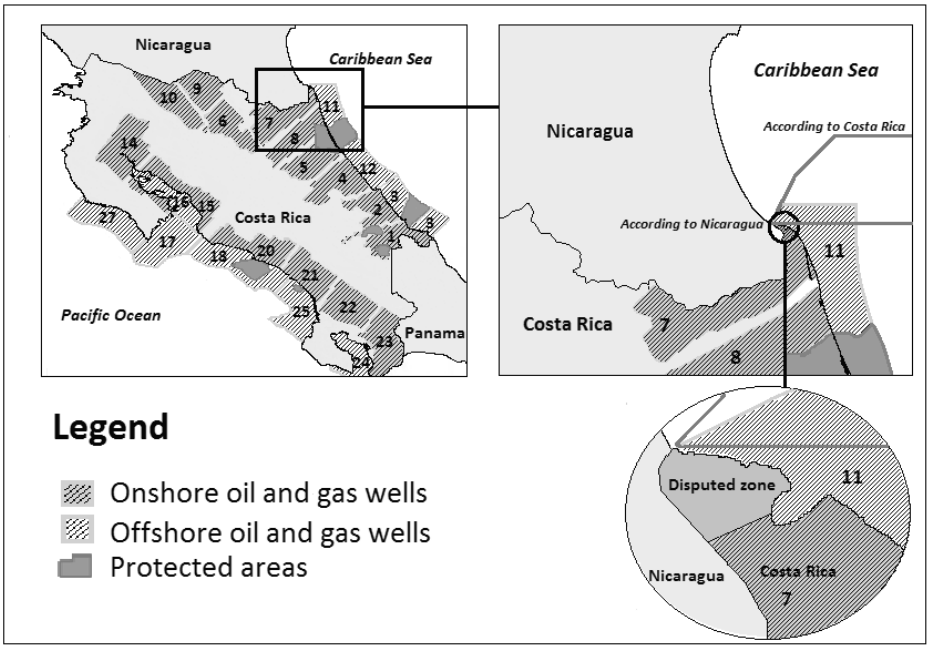

Figure 3 Oil and gas wells (Adapted from the General Directorate for Hydrocarbons, and Harken de Costa Rica-MKJ Xploration and Mallon Oil Company Sucursal de Costa Rica, published in OilWatch, 2005).

The Costa Rican Ministry of the Environment, Energy, and Communications (MINAET) granted exploration concessions for oil extraction to the USA-based companies Mallon Oil and Harken-MKJ Xploration in the early 2000, for a 20-year period. However, a series of appeals made by the environmental organization Justice for Nature resulted in the firms' plans

being put on hold for 10 years, and in the period 2002–2006, President Abel Pacheco's government in Costa Rica declared an oil moratorium that froze the projects for four years. The government led by President Laura Chinchilla reopened the possibility for exploration on the premise that it should be done in conjunction with the state-owned Costa Rican Oil Refinery (RECOPE) (EFE, 2011; Murillo, 2011; Téllez, 2011).

Block 11, an area covering 523 km^2 under the Caribbean Sea, has a potential oil production capacity of 2000 billion barrels a year according to the locals, although Mallon Oil argues they plan to extract 25 million oil barrels annually from the Caribbean Coast (EFE, 2011). According to the map made by the Costa Rican General Directorate of Hydrocarbons, Harken MKJ Xploration, and Mallon Oil Company (Figure 3), block 11 is located in the area currently disputed with Nicaragua. In 2002, the Nicaraguan government published a map of oil wells in the Caribbean Sea, with a territorial delimitation refuted by Costa Rica (upper right-hand map in Figure 3) because it included parts of the well (Boeglin, 2014). This means that any loss of Costa Rican sovereignty over the northern tip of Isla Calero would also imply a loss of Block 11. During interviews, local informants, and military and police personnel evidently believed that the purpose of Nicaragua's dredging operations in the San Juan River Basin was to redirect the flow so that the river mouth would delineate the border in Nicaragua's favor (interviews with local inhabitants in Nicaragua 21 and 22 October 2011, police 22 October 2011, and in Costa Rica 19 and 20 March 2012, Comando Atlántico, 20 March 2012).

In the north of Costa Rica, within the delimitations of Si-A-Paz, the protected area that falls within a mapped oil field corresponds to Tortuguero (one of the six studied villages located in National Park Tortuguero, an important nesting area for 4 different sea turtle species). The oil fields shown in Figure 3 overlap with places where entire communities currently reside, and several of the inland wells (7,8,9 and 10 in map 3) happen to coincide with areas where Ruta 1858, Juan Rafael Mora Porras is being built. When the local inhabitants of Barra del Colorado confronted government officials regarding the fact that the communities were not being taken into account on oil exploration maps, government officials assured them that oil exploration and future exploitations would not cause any harm to the communities because the activities would be carried out outside their area of occupation.

Nevertheless, for more than 10 years the Costa Rican government has attempted to clear the area of people in order to create strictly protected national parks as a means to expand Si-A-Paz. Since the beginning of the 1990s, the village of Barra del Colorado has had an ongoing dispute with the government regarding ownership and users rights to the area. The local inhabitants argue that they have inhabited the area for over 200 years, although they do not hold any formal property titles. The government argues that Barra del Colorado is state property where the protected area network will continue to expand. During a village meeting in Barra del Colorado (22 March 2012), a staff member of the National System of Conservation Areas (SINAC) presented plans for the area in the future, in an attempt to convince the locals that the government was on "their" side. The locals, who were surprised to see yet another map of Barra del Colorado that from their point of view did not reflect the

reality on the ground. A representative of the Development Association in Barra del Colorado argued:

> The area shown in this map has been stripped of human activity and it does not show all the political and economic deals that have gone on in the last years. For example, what about the oil wells that the government mapped some years ago? What is going to happen with those, and what is going to happen to us when the sea and the river are so polluted that we cannot longer fish?

During an interview (22 March 2012), the SINAC staff member claimed that he was not particularly aware of the situation of Si-A-Paz and that the oil issue had nothing to do with the protection of the area or the conflict. However, during informal conversations (held 22 March 2012), representatives of the Development Association explained that the Costa Rican government together with U.S based oil companies had made an initial mapping of potential wells and their capacity in the Caribbean region. The identified oil wells mapped by the U.S-based company Western Atlas International for RECOPE, and approved by the government in 1996, were located in the same places as the proposed protected areas.

The government disguises the economic interests in the region when arguing for the need to free the territory from local users in order to expand the protected area network. During a village meeting, a SINAC staff member in Barra del Colorado spoke about the need to expand Si-A-Paz to encompass areas such as Isla Calero and to establish conservation areas in order to protect water sources and the Caribbean coast (see figure 4 for the proposed expansion of Si-A-Paz). In return, locals would benefit from increased tourism. The loss of land rights would take place without compensation to the communities because the land was seen as belonging to the state, and the establishment of the park would ultimately benefit the locals. The SINAC official was confronted by the locals, who questioned why the government would allow the lands of powerful businessmen who owned cattle ranches in Isla Calero to remain and be included in tourism projects while the rest of the population would lose their lands and investments and not even qualify to benefit from such projects. The SINAC official responded by blaming the inhabitants for "complaining too much" and running the risk of losing "support" from the authorities.

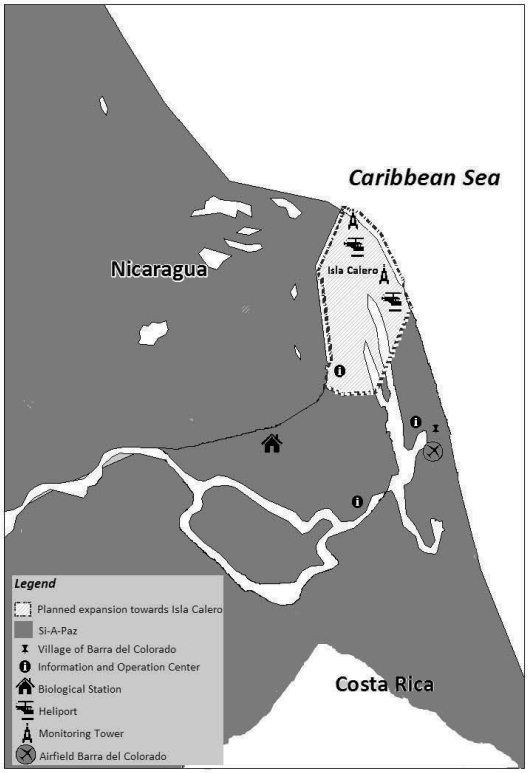

Figure 4 Expansion of Si-A-Paz in Costa Rica (Adapted from Oviedo, 2011).

Conclusions

Through the case study of Si-A-Paz in Costa Rica and Nicaragua, this article explored the premise of the environmental peacemaking hypothesis that cross-border environmental issues can be used as sources of cooperation between states.

While proponents of the environmental peacemaking hypothesis suggest treating transboundary conservation as neutral zones of cooperation, the study suggests that TBPAs should rather be treated as territorial formations through which actors may legitimize the use of violence for their own means. Although the aim of TBPAs is to enhance peaceful relations, they might further complicate animosities between states and their populations because establishing a TBPA entails redefining spatial relations and establishing new territorial formations along borders that might be contested. This is an act of power that establishes a new spatial entity, which inevitably will lead to some form of contestation simply because "to destroy or erase previous boundaries is to disorganize territoriality and consequently to lay open to question the daily existence of populations" (Raffestin, 1980, p. 156).

Si-A-Paz reflects how TBPAs encourage states to project their power and take action to strengthen their territorial projects even more than before the establishment of the TBPA. The establishment of a protected area not only grants states with increased access to borderlands but also grants them with increased financial resources gathered through the environmental agendas of international actors. Furthermore, the measures taken in the name of the environment reflects how transboundary conservation allows actors to expand the limits of what may be considered "environmental" to a range of other spectra, including economic, military, and developmental ones that ultimately serve to reinforce the power and control over resources of already powerful actors. This is an inherent irony, because while TBPAs have been seen as potential peace-making mechanisms, in practice environmental arguments have become strong rhetorical tools for tightening up borders and expanding control over borderlands and its resources. In complex geopolitical realities with historically rooted animosities between countries and emerging conflicts over valuable natural resources, cooperation over "soft" environmental issues will ultimately lose out. Even worse, in cases where borders remain important for building statehood and disputes over unclear border delimitations are a reality, TBPAs can highlight latent animosities.

The case of Si-A-Paz highlights the risks of approaching environmental issues as neutral, because as states attempt to regain control over borderlands, their actions –flagged under an environmental discourse– could threaten newly established TBPAs and risk regional cooperation in general. The use of an environmental discourse for territorial control indicates the emergence of a new arena for the continuation of geopolitics by other means. Here, non-state actors supporting TBPAs could end up supporting states in their control of territories, intentional or otherwise. In the case of Si-A-Paz, these actions helped to strengthen conflict rather than to foster peace.

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ARTICLE 3

Building a bioregion through transboundary conservation in Central America

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Abstract

Through bioregional arguments, proponents of transboundary conservation argue for the need to produce a new scale of governance. How this rescaling goes about remains an undiscussed issue. Through a study of the Mesoamerican Biological Corridor in Central America and Si-A-Paz in Nicaragua and Costa Rica, the author investigates how a transboundary scale of conservation is enacted. The study shows that in order to meet the conditions of a bioregion, actors involved in the establishment of transboundary conservation in Central America produced accounts of social and ecological integrity that did not entirely match local narratives. Moreover, transboundary conservation provided actors with increased mobility across governance scales and sources of funding. This scalar mobility in turn, enhanced the power of already powerful actors in the area; helped states to attract international sources of funding; and empowered previously marginalized local groups at the expense of others. The study concludes that actors involved in the establishment of transboundary parks attempt to create new order and meanings of nature and society in order to produce a new scale of conservation. However, this study highlights the problems of matching discourses of nature to accounts of social unity, and underlines the political nature of scalar projects.

Keywords: *Bioregions, Central America, conservation, scale, transboundary protected areas.*

Introduction

Transboundary conservation is carried out in protected areas located along borders between countries. Advocates of transboundary conservation argue for the establishment of a transboundary scale of management as a solution to environmental problems and to states' inability to cooperate with each other. The assumption is that through the co-management of transboundary protected areas (TBPAs), neighbouring countries can jointly address environmental concerns, establish cooperation, foster regional ties, and strengthen or forge peaceful relations (Ali 2007).

The logic behind transboundary conservation is based on a rescaling of conservation practices from previously nationally-bounded parks towards bioregionally-defined areas. In this context, bioregions are usually understood as entities delineated by ecological and biophysical criteria and which reflect a human identity with local and regional landscapes

(Brunckhorst 2000). Through bioregional arguments, proponents of transboundary conservation argue that two or more protected areas that adjoin across one or several international borders can be managed cooperatively between state and non-state actors. According to this logic, establishing protected areas based on bioregional boundaries makes more sense than following political borders. Given that bioregions transcend political borders, cooperation between various actors is necessary to manage TBPAs. Such cooperation over bioregions is in turn expected to gradually trigger cooperation to more politicized issues. Ultimately TBPAs could be used as tool to establish peaceful relations between neighbouring states (Ali 2007).

While transboundary conservation has become increasingly dominant in global conservation agendas it has also become increasingly complex. The discourse used for the establishment of TBPAs is 'all-encompassing'; yet, its terminology, scope, aims, and geographical extent are confusing, particularly regarding how actors are to achieve peace through rescaling conservation and how the rescaling should be done to achieve cross-border cooperation.

Through the results of a case study in Central America I investigate the process in which particular scalar constructs are produced and legitimized. The main issue of concern in this article, is if a new conservation scale is being produced through the establishment of TBPAs, how is such scale enacted, who is producing such scale, and for what purpose?

The article is organized as follows. The first section introduces the various definitions of transboundary conservation, the concept of bioregions, and a theoretical discussion on the scalar aspects of region-building. This is followed by a short description of the methodology, and an analysis of the collected data in Nicaragua and Costa Rica. The conclusions of the study are presented in the last section.

Rescaling conservation - building bioregions

There is more than one definition of transboundary conservation. Zbicz (1999) makes a distinction between TBPAs and Internationally Adjoining Protected Areas (IAPAs); the former indicates cooperation across borders whereas the latter merely indicates the location of protected areas in borderlands but without cross-border cooperation. Others have used different terms, including cross-border parks (McNeely 1993), transfrontier protected areas (Zbicz & Green 1997), transfrontier reserves (Westing 1998), transfrontier conservation areas (Hanks 2001), transfrontier protected area complexes (Ferreira 2004), and transfrontier parks (Ferreira 2006).

The IUCN (van der Linde et al. 2001: xvii) defines transboundary natural resource management as 'any process of collaboration across boundaries that increases the effectiveness of attaining natural resource management or biodiversity conservation goal(s)'. The IUCN makes a further distinction between a TBPA and a Park for Peace, whereby the former is defined as 'an area of land and/or sea especially dedicated to the protection and maintenance of biodiversity, and of natural and associated cultural resources, and managed through legal or other effective means' (van der Linde et al. 2001: 3), and the latter is a type of TBPA that besides protecting biodiversity should also be dedicated to the promotion of

peace and cooperation. In a more recent report, the IUCN makes a further distinction between TBPAs, Parks for Peace, Transboundary Conservation and Development Areas, and Transboundary Migratory Corridors (Lockwood et al. 2006). Ali (2007) distinguishes between (1) two or more contiguous protected areas across a national boundary, (2) a cluster of protected areas and the intervening land, (3) a cluster of separated protected areas without intervening land, (4) a transborder area including proposed protected areas, (5) a protected area in one country aided by sympathetic land use over the border, and (6) peace parks. The Transboundary Conservation Specialist Group explained that despite the different terminology,

> cooperative management (or co-management) is at the heart of every transboundary conservation initiative, whether its levels are low (e.g. information exchange and communication) or high (e.g. joint decision-making). Co-management is one of the most distinctive elements and prerequisites of transboundary conservation areas in comparison to protected areas of non-transboundary character. (IUCN 2014)

Regardless of terminology, transboundary conservation entails a redefinition of how nature has traditionally been governed, from nationally bounded areas to biophysically defined units – or bioregions – across political borders. This is part of a move from 'small-scale' conservation (e.g. national parks) towards larger environmental governance approaches (e.g. migratory corridors) that is intended to ensure ecological integrity (Hamilton et al. 1996).

The World Resources Institute (2000) defines a bioregion as a 'geographic space that contains one or several nested ecosystems. It is characterized by its land forms, vegetative cover, human culture, and history, as identified by local communities, governments, and scientists'. Sale (1985, 43) defines a bioregion as a place 'identified by its life forms, its topography and its biota, rather than by human dictates; a region governed by nature, not legislature'.

A common line of argument is that bioregions are entities delineated by biophysical criteria rather than political boundaries. Bioregions emerge from 'organic processes', in contrast to 'artificial' entities delineated by administrative or political boundaries (see Aberley 1999 for a discussion). Bioregions are seen as more appropriate scales of governance because their boundaries are more natural and less 'messy' than political ones (Cohen 2012), and because 'the scale of governance is matched to the scale of the resource, ecosystem function, and associated externalities' (Brunckhorst & Rollings 1999, 59). Consequently, managers of bioregions should not be constrained by traditional boundaries, such as the nation state, but instead they should follow the boundaries of ecosystems (Pirot et al. 2000).

Bioregions are commonly described as containing biological and cultural divisions, and they are often portrayed as 'real' regions with clear boundaries that can be easily identifiable on a map (see discussion in Meredith 2005). According to this concept, resources and people are organized into a particular spatial logic and locked into specific places. For instance, it has been argued that a bioregion 'reflects the perceptions of the resident human community toward its sense of place or "homeland"' (Miller 1996, 6).

There has been much critique against using the concept of bioregion for ordering space. Frenkel (1994) highlights the concept's reductionist understanding of natural regions and homogeneous human societies, its common ahistorical analysis, its environmental determinism, and its romanticized understanding of 'native' and 'traditional' communities living in harmony with the environment. Both Meredith (2005) and Fall (2003) trace the conceptual roots of bioregions to Vidalian visions of a region as a coherent unit, and Ratzelian ideas of using ecological boundaries to define political ones. Defining regions in terms of ecology and social organization implies that social life is necessarily organized according to pre-existing biophysical boundaries and therefore particular groups can inhabit a coherent ecological entity (Fall 2003). Such accounts fail to grasp the complexity of the links between places, politics, and jurisdictional arrangements (Fall 2006). More importantly, 'natural systems as metaphors for cultural coherence are difficult to sustain: forms of life (bios) within a region (regia) are not the same as ideas about them' (Meredith 2005, 84). Using ideas of pre-existing natural boundaries and bioregions in protected area planning constitutes a return to former ways of thinking (Fall 2005). Bioregions should rather be understood as cultural constructs, with inconsistent and inconsequential methods for boundary selection (Meredith 2005) and a vague definition (Fall 2003).

Despite the critique, Wolmer (2003) highlights how bioregional ideas are deeply entrenched in mainstream conservation policy, albeit with a more managerial and scientific discourse than the 'New Age' rhetoric often associated with radical bioregionalists. According to contemporary bioregional logic, conservation interventions are best implemented on a greater ecological scale. This 'bigger-is-better' approach is often coined as an 'ecosystem approach' by the IUCN (Shepherd 2008), or 'landscape-level conservation', according to the African Wildlife Foundation (Muruthi 2005). However, it could also be referred to as, for example, heartlands, corridors, hotspots, and biosphere reserves.

Based on a bioregional understanding, proponents of transboundary conservation argue that TBPAs can allow for better and more conservation 'at a scale not possible previously' (Hanks 2001) because TBPAs 'cross political borders and ecological scales and have aspects of local and international domains built into their structure' (Schoon 2013, 21). Additionally, bioregional formations such as TBPAs, will allow for a wide range of social, economic, and political benefits, including economic revenue, free movement of people and species across borders, and increased communication and peaceful relations between neighbouring countries (Ali 2007).

Several authors have argued that proponents of transboundary conservation use the arguments of pre-existing bioregions in need of connectivity to legitimize the spatial expansion of protected areas (see discussions in Fall 2003; Fall & Egerer 2004; Ramutsindela 2004; Büscher & Whande 2007). However, the material expansion of protected areas also entails the rescaling of environmental governance from previously nationally-bounded regimes to bioregional ones across political borders. Despite this, there has been little discussion on what this rescaling of governance to the bioregional level entails and how the transboundary scale is enacted.

Studies on region-building processes are helpful to understand what bioregions might actually entail and how the rescaling of conservation goes about. Region-building has

emerged as a result of rescaling processes (Jones 2006) and it is, in many places, a major goal of political actors (Agnew 2003) for various reasons: Region-building as a geopolitical tool is used to facilitate the dissemination of particular beliefs and values through particular narratives that enables the survival of specific political regimes (Smith 2002); and to benefit the management and definition of geopolitical constructions used by political and bureaucratic actors (Paasi 2001). The use of region-building enables such actors 'in a whole variety of ways and at a whole variety of scales, to insulate themselves in places from what they see as the cultural, social, political and, ultimately, threats from 'undesirable others' (Johnston 2001, 690).

Previous studies show how building regions is ultimately an act of scale-framing. For instance, in his study on the Baltic Sea, Larsen (2008) discusses how scale-framing was useful to conceptualize the sea into various spatial objectifications for intergovernmental environmental politics. He argues that the creation of the Baltic Sea as 'the region of concern' as well as its environmental problems were' largely framed and reframed as spatial objects for politics through processes of scaling' (Larsen 2008, 2000). Larsen concludes that scale-framing is pivotal in environmental governance because it defines how people conceptualize the spatial extent of a particular problem, its possible solutions, and the type of policies, actors and political structures employed. Similarly, MacDonald (2005, 259) highlights how scale-framing is useful for conservation organizations to be able to produce, 'a representation of ecological space as 'global' to facilitate the attainment of translocal political-ecological goals'. This is particularly true in nature conservation and it is reflected in Ramutsindela & Noe's study (2012), which shows how particular scalar constructions (e.g. wildlife management areas) are used in Southern Africa to create the necessary conditions for the expansion of protected areas and the rescaling of conservation practices through TBPAs.

In the next section I explore how the bioregional concept is used in Central America to justify the rescaling of conservation and to legitimize the establishment of the Mesoamerican Biological Corridor (MBC), which is a network of TBPAs covering Central America and South of Mexico. Specifically, I look at the actors involved in the establishment of Si-A-Paz, one of the TBPAs of the MBC located in Nicaragua and Costa Rica, and the narratives employed by the actors to exemplify how particular accounts of nature and society are constructed for the production of a transboundary scale.

Methodology

The discussion on the following pages is based on an analysis of policy and praxis in the establishment of a Transboundary Protected Area (TBPA) in Central America. The analysis is based on fieldwork and a review of secondary sources. Fieldwork was carried out in late 2011 and early 2012 in Sistema International de Areas Protegidas para la Paz (Si-A-Paz) (International System of Protected Areas for Peace), a TBPA in Nicaragua and Costa Rica. Interviews were carried out in Spanish in six villages located in the eastern part of the border between Nicaragua and Costa Rica. Three of the villages, San Juan de Nicaragua, Tortuguero, and Barra del Colorado, are located within Si-A-Paz, and the other three, San Carlos, Boca de Sabalos, and Isla Calero, are located in the buffer zone of the TBPA. During

September and October in 2011 and March in 2012, I recorded 43 exchanges, comprising semi-structured individual and group interviews (25), and informal conversations (17) with 58 individuals from the study villages, representatives of governmental and non-governmental organizations (NGOs), researchers, and representatives of local authorities. After organizing and translating the data and reviewing my field notes, I subsequently triangulated the information gathered during interviews and from my observations with information from secondary sources, including governmental documents, newspaper articles, project evaluations, and relevant literature.

Transboundary conservation in Central America

Central America has had a long history of political turmoil since the creation of the nation states. During the 1970s, social conflicts turned into revolutionary struggles that were dealt with through state repression. Guerrilla movements were supported by the Soviet Union and Cuba in an area that the USA considered its backyard in the context of the Cold War (Medina-Nicolas 2007). Support for guerrillas caused national struggles to spread towards border areas and neighbouring countries.

By the end of the 1980s there was a more peaceful political climate in Central America. In 1989, Central American presidents signed the Environmental Protection Agreement and established the Central American Commission on Environment and Development (CCAD) with responsibility for strengthening environmental cooperation in the region. The formation of CCAD triggered the establishment of interventions measures covering larger spaces, such as the establishment of biodiversity corridors, ecoregional planning, and landscape conservation, all which were under the umbrella of the MBC.

The MBC emerged as part of a series of attempts to integrate Central America following decades of war and instability. At the end of the 1990s, the leaders of the Central American states and Mexico launched two parallel projects: the Plan-Puebla-Panama (PPP), and the Central American Free Trade Agreement (CAFTA). PPP was supposed to expand the regional infrastructure network, such as railways and electricity grids, from Mexico to Panama, whereas CAFTA was to expand agricultural production and manufacturing exports. Concern about the projects' ecological impacts caused widespread opposition from local inhabitants and environmental groups, and from those who feared loss of sovereignty and local autonomy. The MBC was launched as a response to the opposition, and was often seen as an attempt to diffuse criticism of the PPP and CAFTA (Finley-Brook 2007).

Inspired by a proposal known as 'Paseo Pantera' (Path of the Jaguar), the MBC was established in 1997.[1] The MBC extends from southern Mexico to Panama (Fig. 1), and was 'originally conceived by conservation biologists to develop land use planning systems that would link critical habitats in Southern Mexico and Central America to ensure species survival' (IEG 2011, 1). The United States Agency for International Development (USAID) funded the proposal, which originally focused on establishing biodiversity corridors across borders. However, following opposition from indigenous populations and the rural poor inhabiting border areas, the project goals shifted towards development through conservation.

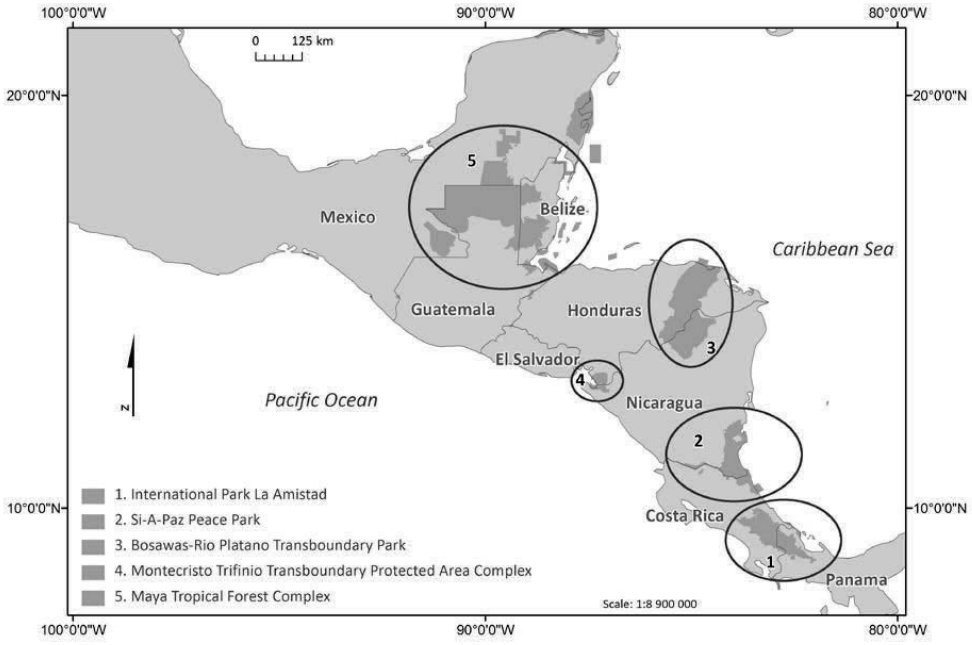

Figure 1 Mesoamerican Biological Corridor

According to the Joint Declaration adopted at the 19th Summit of the Central American Heads of State that took place in 1997 in Panama, the MBC was expected to achieve a higher order goal:

> a territorial planning system consisting of natural protected areas under a special regime whereby core, buffer, multiple use and corridor zones are organized and consolidated in order to provide an array of environmental goods and products to the Central American and the global society, offering spaces for social harmonization to promote investments in the conservation and the sustainable use of natural resources, with the aim of contributing to the improvement of the quality of life of the inhabitants of the region. (IEG 2011, v)

The expansion of the protected area network through the MBC was legitimized through a discourse of unity and integration. During the establishment of the MBC, implementing organizations regarded the environment as 'a soft issue around which nations of Central America could coalesce... where the agreements would consequently catalyze cooperation into other spheres' (IEG 2011, 4). The MBC was also to serve as a cultural bridge between the 60 different ethnic and linguistic groups that inhabited the area from southern Mexico to

Panama (Grandia 2007). Additionally, the MBC would group together many of the smaller protected areas throughout Central America into larger management units, which would give the impression of larger protected areas. In order to achieve this, the MBC was to incorporate 10 TBPAs encompassing several individual protected TBPAs along borderlands (Holland 2012). To date, only five TBPAs have been established (Fig. 1).

In Costa Rica and Nicaragua, Si-A-Paz was established as part of the MBC. Si-A-Paz is a rather complex natural and institutional bricolage consisting of 11 protected areas (Fig. 2), each with their own designations, management plans, and funding mechanisms. In Nicaragua, Si-A-Paz was formed by the National Wildlife Refuge (NWR) Los Guatuzos, Historical Monument la Fortaleza de la Inmaculada, NWR San Juan River, and the Biological Reserve Indio Maíz. In Costa Rica, Si-A-Paz includes Tortuguero National Park, NWR Barra del Colorado, the Wetlands of Tamborcito, La Cureña, and the forest reserve Cerro El Jardin, which have been grouped with NWR Maquenque to form a larger protected area named Maquenque (Table 1).

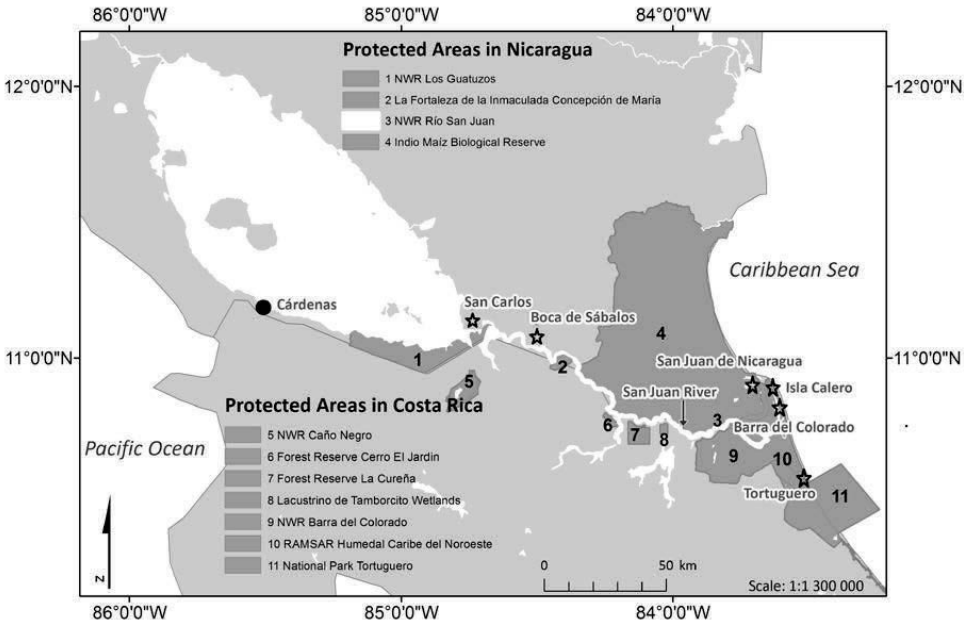

Figure 2 Si-A-Paz

Table 1. Protected areas in Si-A-Paz

Country	Name	IUCN category*	Established	Area (ha)	Fig. 2 ref. no.
Nicaragua	NWR Los Guatuzos	IV RAMSAR	1990 1997	5858 43,750	1
	Historical Monument Fortaleza de la Inmaculada Concepcion de Maria.	III	1990	375	2
	NWR Refuge Rio San Juan	RAMSAR UNESCO-MAB Biosphere Reserve	2001 2003	43,000 1,92,900	3
	Biological Reserve Indio Maíz	Ia	1990	63,980	4
Costa Rica	NWR Caño Negro	IV RAMSAR	1984 1991	10,200 9969	5
	NWR Maquenque	Proposed	1994	52,400	6, 7, 8
	NWR Barra del Colorado	IV	1985	81,177	9
	Caribe Noroeste	IV RAMSAR	1996	75,310	10
	National Park Tortuguero	II VI	1970 1990	79,249 5581	11

* IUCN Protected Area Categories System: Ia: Strict Nature Reserve; Ib: Wilderness Area; II: National Park; III: Natural Monument or Feature; IV: Habitat/Species Mangement Area; V: Protected Landscape/Seascape; VI: Protected area with sustainable use of natural resources

In addition to national legislation regulating Si-A-Paz, Nicaragua and Costa Rica have signed internationally and regionally recognized treaties for all IUCN categories of protected areas (listed in Table 1), and several international and regional treaties and agreements (Table 2). The mix of governance systems and institutional structures reflects the plurality of resource-tenure regulations and land-use struggles in Central America, which results in overlapping laws and regulations that in turn give rise to conflicts over the compatibility of norms (Nygren 2004).

Despite the institutional complexity and diversity or due to it, Si-A-Paz has been packaged and presented as an organic and integrated landscape forming a bioregion that will symbolize a new era of peace and stability in an area of 'indivisible ecosystems' (IRENA-MIREM 1991). The course of the San Juan River has been portrayed as a natural link across the border and representing the merge of indigenous, African, Caribbean, European, and Mestizo cultures (Skaaland et al. 2008). The park should symbolize the 'brotherhood' existing between both nations, and the San Juan River should represent regional unity and integration (Incer 2010).

The discourses employed in the establishment of Si-A-Paz should be seen in the light of the geopolitical context during the 1990s. A decisive factor for the establishment of Si-A-Paz was the political history in the region. In Nicaragua and Costa Rica it was important to tone down the history of conflict between both countries and the political instability of the past 30 years in Nicaragua. Following the conflicts in Nicaragua in 1980s, there was a need to

find a common and 'neutral' interest that Nicaragua and Costa Rica could use as a platform for cooperation. Environmental issues were deemed a relevant platform and the San Juan River was adopted as the symbol of the new era of cooperative relations between the two countries.

Table 2. Laws and regulations governing Si-A-Paz

International regulations	**Nicaraguan laws**	**Costa Rican laws**
Convention on International Trade in Endangered Species	Ley de Reforma Agraria (Decreto No 782/81)	Ley Forestal No 7174 (26/6/90)
CCAD	Ley de Proteccion de Suelos y Control de Erosion (Decreto No 1308/83)	Ley de Proteccion de Vida Silvestre (Ley No 7313)
Alliance for Central American Sustainable Development	Ley de Catastro e Inventario de Recursos Naturales (Decreto No 139/67)	Sistema Nacional de Areas de Conservacion (Decreto No 24652/95)
Convention of Biological Diversity	Ley General sobre Explotacion de las Riquezas Naturales (Decreto del 12/3/58)	Ley Organica del Ambiente
Indigenous and Tribal Peoples Convention	Ley Especial sobre Explotacion de la Pesca (Decreto No 557/61)	Ley de Tierras y Colonizacion (Ley No 2825/61)
RAMSAR Convention on Wetlands of International Importance	Ley de Creacion de las Areas Naturales Protegidas del Sur Este de Nicaragua (Decreto No 527/90)	Ley de Aguas (No 258)
Regional Convention for the Management and Conservation for the Natural Forest Ecosystems and Development of Forest Plantations	Decreto Creador del Servicio de Parques Nacionales (Decreto No 340/80)	Servicio Nacional de Conservacion de Suelos (Ley No 1540)
Convention of the Conservation of the Biodiversity and the Protection of the Wilderness Areas in Central America	–	Servicio Nacional de aguas subterraneas, riego y avenamiento (Ley No 6877/83)
Sustainable Development Project of the San Juan River Basin	–	Ley de Sanidad Vegetal (Ley No 6248/78)
Binational Biological Corridor El Castillo-San Juan-La Selva	–	Ley General de Salud
Binational Biological Corridor of Wetlands	–	Junta Administrativa Portuaria y de Desarrollo Economico de la Vertiente Atlantica (Ley No 3091 y No 5337)
Atlantic Biological Corridor of Nicaragua	–	Refineria Costarricense de Petroleo – RECOPE (Ley No 6812 y No 7089)
Man and Biosphere Reserve Programme	–	-

However, the discourses of unity and integration emphasized in the establishment of Si-A-Paz do not necessarily reflect the power relations, border dynamics, and relationships between the people and the environment. Although the San Juan River is referred to as the link between nations, historically it has been the major cause of tension between Nicaragua and Costa Rica, and rather than unifying them it appears to mark a dividing line between two contrasting scenarios. Nicaragua and Costa Rica have been engaged in disputes over sovereignty and user rights regarding the San Juan River for more than 100 years. The most recent dispute took place in 2010, when Costa Rica accused Nicaragua of invading an island known as Isla Calero (Fig. 2). The dispute was solved through an International Court of Justice (ICJ) ruling in favour of Costa Rica (ICJ 2013). [2]

The ecological situation on both sides of the border between Nicaragua and Costa Rica has consequences for social and economic life in the respective countries. In Costa Rica, the area has being aggressively colonized since the 1960s (Granados et al. 2007). Between 1984 and 1992 the northern part of Costa Rica experienced a deforestation rate of 25%, and in some areas, such as Los Chiles, deforestation was as high as 60% (Proyecto Estado de la Nación 1998). While deforestation rates, particularly within protected areas, have slowed down in recent years due to a deforestation ban in Costa Rica, unprotected areas continue to be used as sites for agricultural production (Fagan et al. 2013). This is highly visible in the landscape along the Costa Rican side the border, where the scenery is characterized by road construction work, monocrop plantations of fruits and palm oil, and extensive cattle ranches. By contrast, the agricultural frontier expansion on the Nicaraguan side is a relatively recent phenomenon and the forests of the Indio Maiz Biological Reserve can still be seen along the border.

Widespread agriculture not only causes deforestation but also generates employment. Thus, it is common to find at least one person per household on the Nicaraguan side of the border working in Costa Rican fields. In some border towns, a majority of the population depends on work and health and education services in Costa Rica (interviews with local informants, 19–21 October 2011 and 20–22 March 2012).

Nicaraguan migration to Costa Rica has shaped the relations between both countries at political, economic, and societal levels, and has produced particular power relations that are not only evident in the political play across borders but also in the dynamics between the populations of both countries. Racism and xenophobia expressed towards Nicaraguan immigrants are widespread in Costa Rica (Sandoval García 2004). This was reflected during interviews held in Costa Rican border towns (19–23 March 2012), where several informants accepted having Nicaraguan ‘blood’ and argued that most people living in the border regions have Nicaraguan offspring, but no one would openly admit it.[3]

The particular power relations are usually ignored in conservation discourses in which the populations inhabiting the border areas are often described as maintaining historical bonds across borders. For instance, the management plan of the NWR Los Guatuzos states that despite all transboundary conflicts and the convergence of foreign interests, the binational character of the San Juan River has triggered the emergence of a particular culture that characterizes the border (Amigos de la Tierra 1995). The Nicaraguan Ministry of Environment and Natural Resources (MARENA) has stated that

> [the] border populations … formed one culture and within the same ecological space built a common history: the history of the San Juan River. They considered themselves different from the 'others' in Nicaragua and Costa Rica and they knew that the San Juan marked their economic, social and cultural life. (FUNDAR-MARENA 2003, 32)

However, what is described as a homogenous 'border population' is a rather diverse constellation of groups of people with contrasting and sometimes opposing lifestyles, but with the common trait of inhabiting borderlands. For example, since the establishment of the Indio Maiz Biological Reserve in 1990, intense struggles over property titles and access to resources have taken place between the Rama indigenous group that inhabits the protected area, conservation authorities, colonists that migrated to San Juan de Nicaragua from elsewhere in the country, state institutions, and private extractive companies (Nygren 2004). In 2007, the Danish International Development Agency (DANIDA) provided legal and financial help to the Rama to obtain property titles in the Indio Maiz Biological Reserve (interview with local informant, 22 October 2011). However, the Nicaraguan government had previously granted property titles to other owners during the land reforms of the 1980s and during the repartition of properties in the 1990s (Nygren 2004). This resulted in animosities between the Rama and the non-indigenous populations, which in 2010 developed into armed protests (interview with local informant, 22 October 2011). In this area, the interaction of local interests with global discourses of sustainability is apparent. For the Rama, the designation of the area as protected favours them because as indigenous tribes, the land is said to belong to them because of the sustainable relation that these tribes have maintained with their environment; whilst for the non-indigenous part of the population this means an unsecure tenure situation. Such global accounts of indigenous vs non-indigenous hide the real interests of the different groups for the area. For instance, some members of the Rama community are eager to see the development of infrastructure, such as roads, health clinics and schools, inside the core of the protected area, whilst parts of the non-indigenous population favours the development of sustainable tourism (interviews local informants 21, 22 and 23 October 2011). Informants from the non-indigenous part of the community accused the Rama of cooperating with drug cartels by providing hideouts inside the Indio Maiz Biological Reserve, in exchange for economic revenue and the cartels' support in controlling the resources in the area (interview 22 October 2011). [4] The area comprising Si-A-Paz remains a disputed territory between local inhabitants, indigenous groups, and the state, and is favoured terrain for clandestine and illegal activities, and a main drug-trafficking route (interviews with local informants, 1 October 2011 and 23 October 2011).

By contrast to the accounts described above, Spanish Friends of the Earth use an ecological and social unity discourse to describe the borderland:

> Traditionally the relationships between the inhabitants of both sides of the border … have had a strong bond of kinship … For the families established in the zone, the border was an abstract concept because there was a constant migratory flow from one side to the other, and people resided without problems in a community and cultivated the lands nearby in the other country. (Amigos de la Tierra 1995, 75)

The discourse of 'unity' across borders can also be found in official political statements and often constitutes a point of departure in development and environmental projects in the region. For example, the Critical Ecosystem Partnership Fund (CEPF) has argued that since the first environmental agreements in the region were signed in 1989, 'a culture of cooperation has characterized the work of environment ministries in the region. Evidence of consensus on environmental matters in the region has been shown in the development of the Central American Environmental Agenda' (CEPF n.d.).

However, the claimed spirit of cooperation at best only lasted a few years after the establishment of Si-A-Paz. At the beginning of the 1990s, Nicaragua and Costa Rica had disagreements over the border region, and by 1998 the situation had developed into a conflict over Cárdenas Municipality, located in the western part of the Nicaragua border (Fig. 2) after Nicaraguan inhabitants expressed their interest in becoming annexed to Costa Rica. Nicaragua accused Costa Rica of expansionist intentions and the cooperation established during the signing of Si-A-Paz only lasted a few years. The dispute over Cárdenas was settled and it is still part of Nicaragua, but the dispute between both countries in 2010 resulted in the militarization of the borderland and diplomatic and institutional breach (see note 2).

A playground for donors

The MBC, which is a top-down, externally financed project, was responsible for pushing through the Si-A-Paz initiative. At least 33 international organizations have been involved in the establishment and running of the MBC. During the period 1999–2004, 70 different projects costing a total of USD 400 million were planned for 145 protected areas in the region (Miller et al. 2001). The initiative was funded by the governments of Japan, Germany, Sweden, and Finland, and international development agencies, including USAID, the Spanish Agency for Cooperation (AECID), the Norwegian Agency for Development (NORAD), the German Development Agency (GIZ), and DANIDA (see Table 3 for a complete list of the main actors).

Among the multilateral donors, the Global Environment Facility (GEF) has been the largest single funding agency of the MBC. Since 1990, the GEF has provided approximately USD 120 million to support conservation efforts in the region. In 2000, the GEF, the United Nations Development Programme (UNDP), and GIZ provided and additional USD 16.6 million. By 2001, a variety of donors (e.g. The World Bank, Inter-American Development Bank (IADB), development agencies, and business-friendly NGOs) had invested USD 888 million indirectly and USD 4.5 million indirectly in the MBC (IUCN n.d.). Between 2003 and 2012, the GEF contributed an additional USD 11 million to various projects overseen by UNDP Costa Rica (CEPF 2014).

Chassot et al. (2006) list, in addition to funding directed towards the MBC, 23 local organizations involved in the management of the protected areas comprising Si-A-Paz on the Nicaraguan side. The corresponding number of local organizations in Costa Rica was almost double (42) (Chassot et al. 2006). [5] They ranged from the national army and local police, state institutions, unions and associations with focuses, universities and research centres. In

addition, the Biological Corridor San Juan-La Selva's local council, which has headquarters in San Jose, Costa Rica, is made up of representatives of more than 20 local, national and international organizations (Corrales-Gutiérrez et al. 2011).

Table 3. Actors in Si-A-Paz

Funding organizations	**Nicaraguan actors**	**Costa Rican actors**
IUCN	MARENA	National System of Conservation Areas
USAID	Ministry of Transport and Infrastructure	Ministry of Energy, Resources and Mines
Japan	Ministry of Agriculture and Forestry	Ministry of Health
Germany	Institute of Water and Sewage	Ministry of Agriculture and Livestock
Sweden	Ministry of Economy and Development	Ministry of Public Works and Transport
Finland	Ministry of Finances	Ministry of Work
UNDP	Ministry of Social Action	Institute of Electricity
UNEP	Ministry of Health	Institute of Agricultural Development
OAS	Ministry of Tourism	National Council Production
GIZ	Ministry of Governance	Institute of Fisheries and Aquaculture
GEF	Ministry of Foreign Relations	National Technical Secretariat for the Environment
World Bank	Ministry of Work	Territorial Administrative Division Act
IADB	National Forestry Institute	Centro Cientifico Tropical
FAO	Institute of Energy	Fundacion Neotropica
CEPF	Enterprise of Energy	Apreflotas
EU	Institute of Territorial Studies	Universidad de Costa Rica
AECID	Institute of Land Reform	Border Police
NORAD	Institute of Agricultural Technology	Plataforma Campesina para el Desarrollo de la Zona Norte
DANIDA	Institute of Municipal Development	Federation of Transfrontier Governments
Nature Conservancy	National Police	Fundación Loro Parque
Wildlife Conservation Society	Army	Tropica Verde
Conservation International	Fundación del Río	Preserveplanet
Amigos de la Tierra	+ 12 other local development associations	+ 28 other local development associations

According to the Organization of American States (OAS), by 1997 there were 67 projects worth USD 40 million along the San Juan River in Nicaragua, of which 30 were ongoing (USD 21 million), 11 were planned (USD 8.4 million), and 26 projects were without financing (USD 11 million) (OEA 1997). The majority of the projects were being carried out by international NGOs working in diverse sectors (e.g. agriculture, conservation, and education), and 12 were private initiatives within the tourist industry. On the Costa Rican side of the border, there were 55 projects, and USD 87.2 million were earmarked for 35 of them (no information available for the rest) (OEA 1997).

The Central American Communication Initiative for Sustainable Development (ICCADES), a network that was supposed to facilitate local-level participatory communication regarding sustainable development, was funded by the Food and Agricultural Organization's (FAO) Forests, Trees and People Programme in Central America, and the European Union's (EU) Agriculture Frontier Programme. In Nicaragua, ICCADES was implemented through Consejo para el Desarrollo Sostenible del Rio San Juan (Council for Sustainable Development in the San Juan River Basin (CODECO)), and in Costa Rica it was funded through the Plataforma Campesina para el Desarrollo de la Zona Norte (Peasant Platform for the Development of the Northern Zone (PCDZN)) (FAO 2003 n.d.).

A further influential actor has been the CEPF, which between 2002 and 2012 funded five stages (Strategic Directions) of projects in the areas that form Si-A-Paz. The organization contributed almost USD 3.5 million for 36 projects covering an array of issues. Some of the projects were designed for the whole Mesoamerican region, while others were designed particularly for areas along the border between Nicaragua and Costa Rica (CEPF 2014).

The projects implemented within Si-A-Paz were not directed specifically towards Si-A-Paz as a regional conservation zone, but towards the communities and ecosystems on each side of the border. Similarly, under the MBC, GEF's grants were typically delivered to projects operating at a national level rather than to the regional institutions in charge of managing the MBC. This is reflected in the fact that the intergovernmental forum of ministers for the environment of CCAD was rendered almost obsolete by the national focus of most projects (IEG 2011). National projects were seen as more feasible given the variations in institutional capacity between countries as well as the different political contexts. Thus, while the goals of the projects were regional, their implementation took place at the national level (IEG 2011).

The reason why funding for regional projects is still channelled nationally rather than bioregionally became apparent during interviews. According to one informant from an environmental organization that was active in the area, the concept of transboundary conservation is still under discussion and not everyone shares the same understanding of the concept: 'different people understand the concept and implement it differently in different parts of the world' (interview, 14 March 2012). Sometimes proposals for TBPAs might include political aspects and peace-building objectives, sometimes they might only involve ecoregions, and sometimes transboundary conservation might not involve any cross-border cooperation at all. However, according to the above-mentioned informant, a common aspect in the establishment of transboundary parks is the involvement of high-end politics:

> Top government officials get together and decide to establish a transboundary park for visibility purposes. After the agreements are signed, there is very little cross-border cooperation, even in cases where two countries have good relations, as with La Amistad between Costa Rica and Panama (Interview, 14 March 2012).

According to the informant, the establishment of protected areas follows the trends in global conservation agendas set by the powerful international organizations and funding for conservation projects almost exclusively follows these trends. He explained that 'for donors, transboundary conservation initiatives are attractive because the large geographic areas covered and the amount of actors involved gives them more visibility'. In the informant's experience, 'at present, working outside the frameworks of biological corridors and bioregions is almost impossible because of donor pressure' (interview, 14 March 2012).

The largest and most powerful international environmental organizations, namely the Nature Conservancy, World Wild Fund, and Conservation International, are strong supporters of large-scale conservation interventions such as transboundary conservation. These organizations also have had a strong presence in Central America, particularly since 2007, when former Costa Rican president Oscar Arias launched the programme 'Peace with Nature', which opened the doors for increased partnership between the government and conservation organizations to manage conservation-related projects, including bioprospecting, watershed protection, carbon sequestration, ecotourism and park entrance fees, scientific research, green labelling, and debt-for-nature swaps (Nature Conservancy n.d.).

Through debt-for-nature swaps alone, Costa Rica received USD 50 million for the expansion of the protected area network. This was financed by the USA's Tropical Forest Conservation Act, private donors, the Nature Conservancy, and Conservation International. One of the areas eligible for debt-for-nature swaps is Tortuguero National Park. Debt-for-nature swaps also financed subprojects, such as 'Forever Costa Rica', whereby the Costa Rican government cooperates with the Nature Conservancy to expand and establish new protected areas throughout the country (Nature Conservancy n.d.). One of the sites for expansion is the north-eastern Caribbean coast bordering Nicaragua (including Isla Calero), where North American oil companies plan to extract oil and gas despite the presence of local residents (see note 2).

Although environmental programmes are often celebrated for their value in global environmental efforts, there is less discussion regarding the compromises that states have to make to secure funding. For example, USAID funds the Central American Regional Environmental Program (Proarca), which since 1996 has guided CCAD (Finley-Brook 2007). CCAD in turn is responsible for the coordination of regional planning and implementation of the MBC. Through CCAD, USAID has largely been able to shape decisions in the MBC. In Costa Rica, USAID, through its financial support to Costa Rica's National Biodiversity Institute, funded the conversion of conservation initiatives to market-oriented policies. These policies have been fundamental for the expansion of the protected area network in the country and the proliferation of USA-based pharmaceutical companies extracting resources in protected areas (Silva 1997).

Current status of Si-A-Paz

A decade after the establishment of the MBC in 1998, and with over USD 1 billion invested, transboundary cooperation established through the MBC has been deemed a failure in terms of biodiversity protection and empowering populations (Finley-Brook 2007; Holland 2012). The investments have been costly in relation to the results achieved in many of the projects. For example, the Nordic Consulting Group's evaluation of the project Alianzas (Alliances), funded by Sweden and Norway, concluded that while the goal of the project was to develop strong partnerships between organizations in the Mesoamerican region, the results of building alliances were not evident in the form of improved biodiversity conservation or the livelihoods of the local populations (Skaaland et al. 2008). Furthermore, environmental organizations did not expand cooperation to other governmental sectors or to the business sphere, and the development of alliances between institutions across borders was reliant on external funding and lacked internal channels of financial mechanisms.

With regards to Si-A-Paz, there has not been any cross-border cooperation since the early 2000s, and this is partly due to the political context at the time Si-A-Paz when was established. An informant from an NGO in Nicaragua (interview, 21 October 2011) explained that towards the end of the war in Nicaragua funding flooded in for different projects in the region. However, the political significance of Si-A-Paz dissipated as money from the donor countries ran out, and few years after its establishment 'the project fell into the hands of technicians' (interview, 21 October 2011). Instead, other programmes, such as the Man and Biosphere Reserve programme, were established in the area. These programmes have less ambitious political goals as they do not include the peace-building aspect that characterizes transboundary conservation. In addition, 'these programmes attract less funding, and the money that does come in through international sources, has mostly served to maintain the bureaucratic structure in the capital [Managua]' (interview, 21 October 2011).

While the post-conflict context in Nicaragua and Costa Rica helped to create favourable conditions and support for the establishment of a transboundary scale, the production of a bioregion was interesting for many actors and for various purposes. For international actors, TBPAs are interesting because of the large areas involved, which in turn give them more visibility and influence in the region (interview with NGO representative, 14 March 2012). As interviews with NGO representatives (21 October 2011, and 14 March 2012) revealed, local NGOs are interested in establishing TBPAs to secure funding from international sources, whereas states regard TBPAs as a tool to access international funding in order to complete their often under-budgeted ministries. Although the above-mentioned benefits are not exclusive to TBPAs, TBPAs are unique for the amount of actors involved in them, which translates into more and diverse funding.

More importantly, TBPAs present actors with possibilities to mobilize across spaces, discourses, and organizational levels of governance depending on current interests. An interview with a representative of an environmental organization involved in the implementation of projects in Si-A-Paz explained that approximately three years after Si-A-Paz was established, cross-border cooperation started to successively decrease (interview, 21 October 2011). The decrease in cooperation is also evident in official documents from the

area, in which the name 'Si-A-Paz' is mostly used in reference to the three first years of its establishment. More recent documents do not mention Si-A-Paz, and the few documents that do, often refer to it as a former type of management. Generally, recent policy documents refer to the area variously as: 'Wetlands of International Importance', to highlight the relevance of the area at an international level; the 'Man and Biosphere Reserve', to emphasize linkages in the bioregion; the 'binational agreements of San Juan-La Selva biological corridor', when relations between Nicaragua and Costa Rica are in focus; or national designations, such as the Indio Maiz Biological Reserve, which are often found in national documents or NGO reports. Different designations, such as local, national, binational, regional, and international designations, have different impacts depending on the audience or the type of funding being sought. However, the name Si-A-Paz started to reappear following the dispute in 2010, when Nicaragua demanded that Costa Rica should respect the treaties signed in the 1990s (ICJ 2011). This explains the belief among organizations that environmental cooperation between Nicaragua and Costa Rica is more possible today than it has ever been. Some environmental activists expect that international attention due to the conflict might create sufficient momentum for cross-border cooperation in Si-A-Paz to be re-established (informal conversation, 20 March 2012).

Conclusions

In this article I have reflected upon the process in which particular scalar constructs are produced and legitimized, through a study of a transboundary protected area (TBPA) in Central America. The questions I have sought to answer are: how is a transboundary scale of conservation enacted? Who is producing such scale? For what purpose is a transboundary scaled produced?

Transboundary conservation is often promoted as a tool to adapt the geography of environmental problems to institutional and spatial levels of governance. In this respect, the concept of bioregion is used as an argument to respatialize governance schemes to a 'transboundary scale'. In Central America, this discourse was implemented through the Mesoamerican Biological Corridor (MBC) following a period of regional conflict and instability, when governments were eager to find a common source of cooperation and regional integration. While reframing environmental issues at a transboundary level was portrayed as a point of departure for regional cooperation, the MBC rather helped actors monitor various sources of dispute and instability in much of the region; and it helped create a playground for international donors and local actors, which allowed them to mobilize across governance scales and sources of funding. This resulted in increased power of already powerful international agencies active in the area; it helped states to attract different types of funding to build their bureaucratic institutions and fund their under-budgeted ministries; and empowered actors previously considered marginalized, such as the Rama, at the expense of other local actors, like the non-indigenous groups in the Indio Maiz Biological Reserve.

In Nicaragua and Costa Rica, Sistema International de Areas Protegidas para la Paz (Si-A-Paz) has been established as part of the MBC to mark the beginning of a new era of cooperation between two historically rival countries. In order to meet the conditions of a

bioregion, funding agencies and local actors have produced accounts of social and ecological integrity that do not entirely match local narratives. Thus, the social and institutional fabric thought to be necessary to expand cooperation was not in place. As a result, three years after the establishment of Si-A-Paz, cross-border cooperation over Si-A-Paz ceased at the same time as the political situation between Nicaragua and Costa Rica worsened following the dispute between both countries in 2010.

Transboundary conservation allows us to reflect upon region-building and scale-framing processes. TBPAs are supposed to transcend and override national borders and create transboundary spaces, and this way produce a new governance scale based on bioregional attributes rather than on political divisions. However, the case in Central America illustrates that this scalar construction is no less political than any other construction. Through the production of bioregions, actors involved in the establishment of TBPAs in Central America attempted to create new order and meanings of nature and society. In the studied case, the bioregional discourse was used to naturalize and neutralize rescaling and region-building processes. Because the formation of a Central America region has had such an antagonistic history, the MBC was a way to make a contested scalar construction appear more natural. However, in Nicaragua and Costa Rica the problems of matching discourses of nature to discourses of social unity were made apparent when both countries re-engaged in a century-old dispute over the border delimitations within Si-A-Paz.

Notes

1 The initiative was first proposed by Archie Carr II of the Wildlife Conservation Society and David Carr of the Caribbean Conservation Corporation.

2 This is discussed in a paper titled "'Yes to Peace"? Environmental peacemaking and transboundary conservation in Central America, which I presented at the conference The Future of the Commons: Interfaces of Nature and Culture, held at the Centre for Baltic and East European Studies, Södertörn University, Sweden, 6–7 February 2014.

3 The reason became evident during a focus group discussion with upper secondary school students on 21 March 2012, when two Nicaraguan children who had recently arrived in Costa Rica were openly mobbed by other children in the group.

4 An informant of the Rama community denied the accusations . The informant argued that it was the non-indigenous population who hosted drug-cartels in their posadas (hostels) and serve them in their restaurants.

5 During my interviews with representatives from some of the organizations, it became apparent that most of the informants were unaware of the existence of Si-A-Paz.

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ARTICLE 4

The spatial distribution of Transboundary Protected Areas in Africa

Karina Barquet and Haakon Lein.

Department of Geography, Norwegian University of Science and Technology.

Abstract

The article introduces a new georeferenced dataset on Transboundary Protected Areas (TBPAs) in Africa containing information on the location of all TBPAs as well as of the organizations involved in the establishment and financing of each TBPA. A total of 38 TBPAS are identified, of which a majority are located in Southern Africa (13), whereas a considerable number of TBPAs are in the process of being set up in West Africa (9). The establishment of most TBPAs has taken, from inception until the signing of the Memorandum of Understanding, on average 10 years. A very high number of organizations, private foundations, and state agencies (209) have been involved in setting up and financing TBPAs in Africa. We observe that the same agencies involved in financing TBPAs in Southern Africa are also involved in establishing TBPAs in West Africa. To exemplify potential uses of the dataset, the article makes a simple spatial exploration of TBPAs in relation to Organized Violence, and Biodiversity Hotspots in Africa. Results from this exploration show that a majority of TBPAs in Africa are neither established in places that have experienced fatal conflict nor in areas categorized as biodiversity hotspots.

Introduction

Transboundary conservation gained considerable interest during the early 1990s when the International Union for Conservation of Nature's (IUCN) Commission on National Parks and Protected Areas identified 70 potential Transboundary Protected Areas (TBPAs) around the world straddling 65 national borders (Thorsell, 1990). By the end of the decade, the IUCN actively promoted the idea of establishing conservation areas on international borders (van Amerom, 2002). By 2005, Mittermeier et al. (2005) listed 188 TBPAs and Besançon, Lysenko, and Savy (2007) identified 227 TBPA complexes worldwide (including transboundary and border parks) incorporating 3,043 individual protected areas or internationally designated sites. Of these, 49 were in Sub-Saharan Africa.

By definition TBPAs straddle one or several national borders, are designated for the protection of biological diversity and are managed cooperatively through legal or other effective means (Sandwith, Shine, Hamilton, & Sheppard, 2001, p. 3). A main conservation argument in favour of transboundary conservation is that increasing habitat fragmentation and isolation pose threats to (genetic) biodiversity, and that conservation of larger, continuous habitats across national borders may be essential for securing biodiversity in the long term.

In addition to protecting biodiversity, transboundary conservation has been portrayed as a potential tool in maintaining regional peace and for conflict resolution (Shambaugh, Oglethorpe, & Ham, 2001) for two reasons. First, studies show that there is spatial overlap between biodiversity-rich areas and places with a history of conflict. According to Hanson et al. (2009) there is an overlap between valuable and threatened biodiversity and violent conflict, as 80% of conflicts with over 100 deaths in the period from 1950 to 2000 took place wholly or partially within biodiversity hotspots. Second, common environmental problems require cross-border cooperation and long-term co-management, which with time can evolve into other forms of cooperation in other more political spheres (Conca & Dabelko, 2003). Long-term sustainable management of the environment requires in turn stable institutions and organizations to facilitate and fund the establishment of transboundary environmental agreements like TBPAs (Swatuk, 2002; Trisurat, 2007). For instance, in Southern Africa, the Peace Park Foundation has been a driving force behind the growth of a particular type of transboundary conservation known as Peace Parks. Also called Parks for Peace**,** these type of protected areas are defined as TBPAs that are 'formally dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and to the promotion of peace and cooperation' (Mittermeier et al., 2005, p. 34).

Despite much optimism there remain important questions concerning the role, location and aims of transboundary conservation. For instance, the actual peace making potential of TBPAs has been contested and Ramutsindela (2007) argues that ' … there is no congruence between the location of peace parks and disputed borders in Africa' (p. 50). By contrast, Barquet et al., (2014) found a spatial relation between TBPAs and low-intensity and non-deathly conflict in borderlands. Furthermore, while transboundary conservation projects are supposed to be established along borders between neighbouring countries, it is unclear whether all TBPAs are in fact established in borders (Ramutsindela, 2007), and whether TBPAs are established in biodiversity priority areas. A response to these questions would benefit from systematic explorations of TBPAs at regional levels. However, sufficient data to carry out such analyses is missing.

With the aim of facilitating future studies on the topic, we introduce a new dataset of TBPAs in Africa. In addition to information on location, size and year of establishment of the protected area, the dataset also contains information on the organisations involved in establishing and financing the TBPAs. The difference with this dataset and existing datasets (Lysenko et al., 2007) is the criteria for inclusion: we have only included TBPAs based on their established transboundary conservation, rather than on their location in border areas.

In the first part of the paper we describe the dataset and highlight some key features of TBPAs in Africa and the organisations that have been involved in setting them up. To exemplify the potential uses of the dataset, we explore, in the second part of the paper, a) the spatial location of TBPAs in relation to conservation priority areas to see whether TBPAs have been established in areas were biodiversity has been identified as especially valuable and

threatened; and b) following the argument that TBPAs can be seen as conflict reducing mechanism, we explore whether TBPAs have been set up in particular conflict ridden areas.

Contrary to our initial expectations we find that TBPAs to a large extent are located outside areas identified as biodiversity priority areas (hotspots) and that most TBPAs are not located in conflict-ridden areas. In the concluding part of the paper we briefly discuss other possible factors that might influence the location of TBPAs.

Methods and data

A new, updated TBPA dataset, containing information on all TBPAs in Africa as well as the actors funding the initiatives, is introduced in this paper. This dataset, combined with geo-referenced datasets on Organized Violence and data on Biodiversity Hotspots in Africa, is used to explore the spatial patterns of TBPA-establishment in relation to conflict and biodiversity hotspots.

The TBPA dataset uses the polygons from the 2013 version of the Protected Planet Dataset (IUCN & UNEP, 2010). The IUCN dataset holds the most updated and reliable data regarding protected areas, and all parks included conform to the IUCN's definition of a protected area (ibid.). We only include TBPAs and individual parks for which we have found documentation regarding their establishment or planning as a transboundary conservation initiative.

TBPAs are formed by clusters of individual protected areas, and in our dataset, each TBPA is formed by individual polygons for these protected areas. The dataset includes information on the establishment date, size, location, name, and IUCN categorization of all of the individual protected areas. The establishment date of TBPAs is set to the year the Memorandum of Understanding (MoU) was signed. TBPAs without a MoU but that are in the process of establishing a TBPA (with existing documentation of the process) are referred to as "conceptual". Table 1 specifies whether TBPAs are in a conceptual phase or have signed a MoU.

We use the GIS dataset "CShapes" (version June 2013), which provides accurate historical maps of country borders from 1945 and onwards (Weidmann, Kuse, & Gleditsch, 2010). The CShapes dataset represents each independent country with a polygon or with several polygons if the borders have changed. We use the most recent layer of CShapes (2013). We assign each TBPA to a region: East, West, Central or Southern Africa (there are no established TBPAs in North Africa), according to the African Union's (AU) regional divisions. Although we acknowledge the constructed character of regional divisions, much conservation aid and policy is often directed on the basis of regional divisions. For this reason we expect to see a significant difference on the spatial distribution of transboundary conservation. Furthermore, we are aware of the different conceptual and geographical divisions of the continent; however, the AU is considered Africa's most important regional organ when it comes to political questions including conflict prevention and resolution. Besides this, the AU's goals of solidarity, unity, territorial integrity, regional integration, and peace and security have been repeatedly used to support and justify the establishment of Peace Parks (Ramutsindela, 2007).

For these reasons, it seems more relevant to use the AU's regional divisions than other economic or geographic delineations.

Table 1 Transboundary Protected Areas in Africa[1]

ID	TBPA	Region	MoU	Country A	Country B	Country C	Country D	Country E
1	Ai Ais-Richtersveld	South	2003	Namibia	South Africa			
2	Transboundary Biosphere Reserve of the Senegal River Delta	West	2005	Mauritania	Senegal			
3	Great Limpopo Transfrontier Park	South	2002	Mozambique	South Africa	Zimbabwe		
4	Kgalagadi Transfrontier Park	South	2000	Botswana	South Africa			
5	Kidepo	East	2001	Uganda	South Sudan			
6	Lubombo Transfrontier Conservation Area	South	2002	Mozambique	South Africa	Swaziland		
7	Maloti-Drakensberg Transfrontier Conservation and Development Area	South	2001	Lesotho	South Africa			
8	NYIKA	South	2004	Malawi	Zambia			
9	Tri-National de la Sangha	Central	2000	Cameroon	CAR	Congo		
10	Transboundary Biosphere Reserve "W"	West	2002	Benin	Burkina Faso	Niger	Togo	
11	Gola Forest Transboundary Peace Park	West	2009	Liberia	Sierra Leone			
12	Greater Virunga Transboundary Collaboration	Central/ East	2005	Rwanda	Uganda	DRC		
13	Kilimanjaro Heartland	East	Concept	Tanzania	Kenya			
14	Mount Elgon	East	2004	Kenya	Uganda			
15	Serengeti-Maasai Mara Ecosystem	East	Concept	Kenya	Tanzania			
16	Kavango-Zambezi Trasnfrontier Conservation Area	South	2006	Botswana	Zimbabwe	Namibia	Angola	Zambia
17	Greater Mapungubwe Transfrontier Conservation	South	2006	Zimbabwe	South Africa	Botswana		

[1] Note that there is no park with ID 36.

	Area[2]					
18	Lower Zambezi-Mana Pools TFCA	South	Concept	Zambia	Zimbabwe	
19	Chimanimani TFCA	South	2001	Zimbabwe	Mozambique	
20	Iona-Skeleton Coast TFCA	South	2003	Angola	Namibia	
21	Niassa/Selous TFCA	South East	2007	Tanzania	Mozambique	
22	Niokolo Koba-Badiar	West	Concept	Senegal	Guinea	
23	Mount Nimba	West	Concept	Senegal	Ivory Coast	Liberia
24	Sierra Leone-Guinea Complex	West	Concept	Sierra Leone	Guinea	
25	Liberia - Cote d'Ivoire Complex	West	Concept	Ivory Coast	Liberia	
26	Maiombe Forest TFCA	Central	2009	Congo	DRC	
27	Liuwa Plains-Mussuma TFCA	South	Concept	Angola	Zambia	
28	ZIMoZA TFCA	South	Concept	Mozambique	Zimbabwe	Zambia
29	Ecosysteme Gourme Sahel	West	Concept	Burkina Faso	Mali	
30	Nazing -Kabore Tambi National Park-Red Volta Ecosystem-Doungh	West	Concept	Burkina Faso	Ghana	Togo
31	Nyungwe-Kibira Complex	East	Concept	Rwanda	Burundi	
32	Rio Campo/Campo Ma'an Complex	Central	Concept	Equatorial Guinea	Cameroon	
33	TRIDOM Complex	Central	2005	Cameroon	Congo	Gabon
34	Conkouati/ Mayumba Complex	Central	Concept	Gabon	Congo	
35	Korup/Cross River/Takamanda Forest Complex	Central West	Concept	Nigeria	Cameroon	
37	Eastern Arc Mountains	East	Concept	Kenya	Tanzania	
38	Delta du Saloum	West	Concept	Senegal	Gambia	
39	Bia-Diambarakro TFCA	West	Concept	Ivory Coast	Ghana	

Data on the funding agencies was gathered through a review of MoUs, country reports, and reports from organizations such as UN bodies and the World Bank, NGOs and development agencies. A full list of sources used is provided as a supplement to the dataset (Appendix III). We include state and non-governmental organizations (NGOs) and private foundations that

[2] Previously known as Limpopo-Shashe TFCA.

were clearly specified as donors –in kind or in cash. We have not included agencies that are solely in charge of the management of the areas, as is the case with local ministries. The dataset specifies the actors involved, not the amount of funds given by each actor. Each actor is assigned a code, and in the dataset, this code is assigned a 0 if the actor was not active in a particular TBPA or 1 if the actor was involved in funding the establishment of the TBPA (Table 3 in Appendix III).

To measure conflict levels, we use the Georeferenced Event Dataset v.1.5-2011 (GED) from the Uppsala Conflict Data Program (UCDP) on organized violence in Africa (Sundberg & Melander, 2013). The dataset disaggregates state-based armed conflict, non-state conflict, and one-sided violence for the period from 1989-2010, where the conflict threshold exceeds 25 battle-related deaths.[3]

We include all of the events from the GEF dataset and create a conflict-density layer based on the accumulation of conflicts within a given area. To accomplish this, we run a Kernel algorithm using a cell size of the output raster map of 500 meters, with 250 meters distance of influence in between each point (each conflict). The density layer is divided into four categories: category 1 ("low") encompasses areas with fewer numbers of conflicts, while category 4 ("high") includes areas with most conflicts (see figure 1). We evaluate whether TBPAs are located in conflict density zones and, if so, how much of the total TBPA area falls in places with conflict.

Regarding biodiversity priority areas, we use Conservation International's dataset on biodiversity hotspots. The concept of biodiversity hotspots as presented by Myers et al (2000) is based on estimates of endemic species and habitat loss. To qualify as a biodiversity hotspot, a region 1) must have at least 1500 endemic, native vascular plant species and 2) must have already lost at least 70% of its primary, native vegetation (Myers et al., 2000). The latest updated list of biodiversity hotspots includes 25 areas worldwide that cover 17.3 % of earth's surface, 77% of endemic plant species, 60 % of all threatened mammals and birds and 80 % of all threatened amphibians (Marchese, 2015).

The concept of biodiversity hotpots has been criticised for overlooking the importance of important but less species rich areas (biodiversity 'coldspots') and for neglecting marine ecosystems. Besides this, there are a number of other competing approaches for identifying conservation priority areas (see Brooks et al., 2006 for an overview). Despite this, biodiversity hotspots have been used as a measurement by Halpern et.al., (2006) and by Holmes et. al. (2012) as a basis for discussing spatial patterns of conservation spending, and by Hanson et al (2009) in their study on biodiversity and conflicts. The concept of biodiversity hotspots was initially developed to provide a guide for conservation spending and has, according to Marchese (2015) played an important role in policy making and for international conservation agencies' prioritization, making this approach particularly relevant here. In this study we

[3] See discussion in section Quantitative Methods in Part I.

simply assess whether TBPAs are located in places identified as biodiversity hotspots and, if so, how much of the total TBPA area falls within a hotspot.

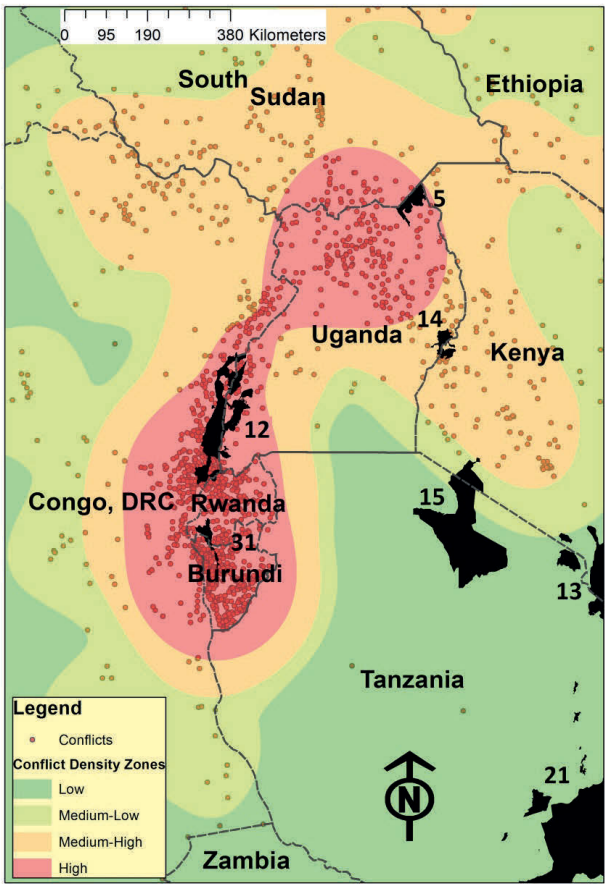

Figure 1 Conflict and density - zones

Key features of the TBPA dataset

This section describes the location of TBPAs in Africa and the agencies involved in the establishment of TBPAs. The TBPAs identified here consist of 289 individual protected areas forming 38 TBPAs covering a total of 935 535 km2.

Out of 38 TBPAs, five TBPAs are located in Central Africa, of which two (Rio Campo-Campo Ma'an Complex and Conkouati/Mayumba Complex) are in a conceptual phase. In East Africa, there are six TBPAs, of which two (Kidepo, and Mount Elgon) have signed a

MoU. West Africa is the region holding the largest number of planned TBPAs (9 out of in total 12 planned TBPAs), whereas Southern Africa holds the largest number of TBPAs (13) all with a signed MoU.

In addition there are three cross-regional TBPAs: Niassa-Selous TFCA between Tanzania and Mozambique (East-Southern Africa), Greater Virunga Transboundary Collaboration between DRC, Rwanda and Uganda (Central-East Africa), and Korup/Cross River/Takamanda Forest Complex, between Nigeria and Cameroon (Central-West Africa). Twenty-six TBPAs involves only two countries, 9 complexes involves three countries, 2 four countries and single TBPA five counties

A majority (15) of the TBPAs with a signed MoU were established between 2000 and 2005, whereas five were established between 2006 and 2009 (Table 1). The establishment of most of these TBPAs took, from the inception until the signing of the MoU, on average, 10 years. However, the individual protected areas that constitute the parks often existed for twenty or thirty years before the TBPAs were established.

Regarding the funding agencies involved in TBPAs, we have identified 209 state, non-state and private organizations. A large majority of them (135 agencies) have been involved in the establishment of only one TBPA, whereas 74 agencies are involved in several TBPAs. Amongst agencies active in a single TBPA, it is common to find niched NGOs, such as the International Gorilla Conservation Programme in the Greater Virunga Transboundary Collaboration or the Royal Society for the Protection of Birds in the Gola Forest Transboundary Peace Park. Agencies involved in several TBPAs include global institutions, such as the GEF, World Bank, and UN institutions, as well as global environmental NGOs. As table 2 shows, funding agencies seem to have slight regional preferences; however, many of the largest organizations prioritize TBPAs in West and/or Southern Africa (Table 2).

The U.S. and a few European countries (Germany, Netherlands) are the countries most involved in funding TBPAs. Donor countries often channel funds through several governmental agencies: the U.S provides funding through the State Department, USAID, the US Forest Department, and the Fish and Wildlife Services (USFWS); Germany provides funding through the Deutsche Investitions-und Entwicklungsgesellschaft (DEG), the German Development Agency (GIZ), the German Development Bank (KfW), the Federal Ministry for Economic Cooperation and Development (BMZ), and the German Federal Agency for Nature Conservation.

In addition to this, donor countries also channel funds to TBPAs through regional agencies, for instance, the EU, the European Commission, the European Consortium for Pacific Studies, the European Development Fund (EDF) and Europe Aid Natural Resources Central Africa (ECOFAC). Governments also channel funds through NGOs: the Netherlands and Sweden provide funds for PPF; Germany, Sweden and the Netherlands for WWF; and the EU and the Government of Japan channel funds through the Critical Ecosystem Partnership Fund (CEPF).

Table 2 Major agencies, NGOs and donor countries funding TBPAs in Africa

AGENCIES/NGOS			COUNTRIES	
Agency	**No. of TBPAs**	**Main region**	**Country**	**No. of TBPAs**
Global environmental facility (GEF)	20	Southern and West Africa	U.S	22
World Wild Foundation for Nature (WWF)	17	Southern Africa	Netherlands	20
United States Agency for International Development (USAID)	17	Southern and West Africa	Germany	16
World Bank (WB)	13	Southern Africa	EU	13
United Nations Development Programme (UNDP)	13	All	France	11
International Union for Conservation of Nature (IUCN)	13	West Africa	Sweden	10
Conservation International (CI)	12	West Africa	Norway	6
Wildlife Conservation Society (WCS)	10	East Africa	UK	5
German Development Agency (GIZ)	11	West Africa	Denmark	4
Peace Parks Foundation (PPF)	10	Southern Africa	Finland	1
German Development Bank (KfW)	9	West Africa	Canada	1

Private foundations have been most active in Southern Africa but also West Africa. PAMS, MacArthur, de Rothschild, Rockefeller, the Rupert Family, Jensen Charity, Kadans, and Buffett have helped finance the establishment of 8 transboundary conservation initiatives. Private companies have been involved in the establishment of 14 TBPAs. These companies often operate within the energy sector and include DeBeers Consolidated Mines, Shell Petroleum Development Company, SONGAS, Mantra, Frontier Resources and Uranex and Chevron Texaco. Other private companies include DaimlerChrysler, Ford Foundation, Ortello Business Corporation (hunting), Group Madal (agriculture), Game Frontiers of Tanzania (tourism) and Novamedia (media).

The TBPAs that involve the most organizations are Korup/Cross River TBCA (conceptual phase), between Nigeria and Cameroon, (36 actors) and Tri-National de la Sangha (established 2000), between Cameroon, Central African Republic (CAR) and Congo (22 actors). The TBPA with the least registered number of actors (5) is Kidepo (2001), between Uganda and South Sudan, followed by Serengeti-Maasai Mara Ecosystem (conceptual) with seven actors.

TBPAs, Biodiversity Hotspots and Conflict

Table 3 shows the percentage of TBPA-areas covered by one of the four conflict-density zones (1-4) and the percentage of TBPA-areas covered by biodiversity hotspots.

Table 3 TBPAs, conflict-density zones, total deaths, and biodiversity hotspots

ID	Conflict Density				% Biodiversity Hotspots
	% Low	% Medium Low	% Medium High	% High	
1	100	0	0	0	10.5
2	100	0	0	0	0
3	53.7	44.6	1.6	0.1	25.7
4	100	0	0	0	0
5	0	0	0	100	20.5
6	0	38.6	61	0.4	78.5
7	0	0	17.4	82.6	3.9
8	100	0	0	0	11.3
9	100	0	0	0	0
10	100	0	0	0	0
11	0	0	0	100	100
12	0	0	0	100	100
13	99.8	0.2	0	0	8.8
14	0	0	100	0	93.3
15	84.3	15.5	0.2	0	15.3
16	77.7	22.3	0	0	0
17	100	0	0	0	0
18	100	0	0	0	0
19	100	0	0	0	34.5
20	100	0	0	0	0
21	100	0	0	0	12.7
22	100	0	0	0	0
23	0	0	100	0	100
24	0	0	29.5	70.5	0
25	0	28	72	0	100
26	0	0	100	0	0
27	40	60	0	0	0
28	N/A	N/A	N/A	N/A	N/A
29	100	0	0	0	0
30	90.8	9.2	0	0	0
31	0	0	0	100	100
32	100	0	0	0	0
33	100	0	0	0	0
34	0	42.9	57.1	0	0
35	0	100	0	0	100
37	100	0	0	0	61.1
38	0	21.7	78.3	0	0
39	72.8%	27.2%	0.0%	0.0%	100.0%
Tot	**79.4%**	**11.5**	**3.5**	**5.6**	**12.4**

A majority of TBPAs are located in low-conflict areas. Seventeen TBPAs are entirely located in the two lowest conflict-density zones, while another 17 have portions of land located within these two zones. Nearly 80% of the total TBPA-area in Africa is located in the lowest conflict zone. Only 3.5% and 5.6% of the total TBPA area is located in the two highest conflict-density zones. In seven cases, entire TBPAs are located in one of these zones, while in 12 cases, portions of TPBAs are in areas with the highest number of conflicts. Maiombe Forest (ID. 26), Liberia-Cote d'Ivoire Complex (ID. 25), Greater Virunga Transboundary

Collaboration (ID. 12) and Gola Forest (ID. 11) are located entirely in the two densest conflict zones. This is also shown in Figure 2

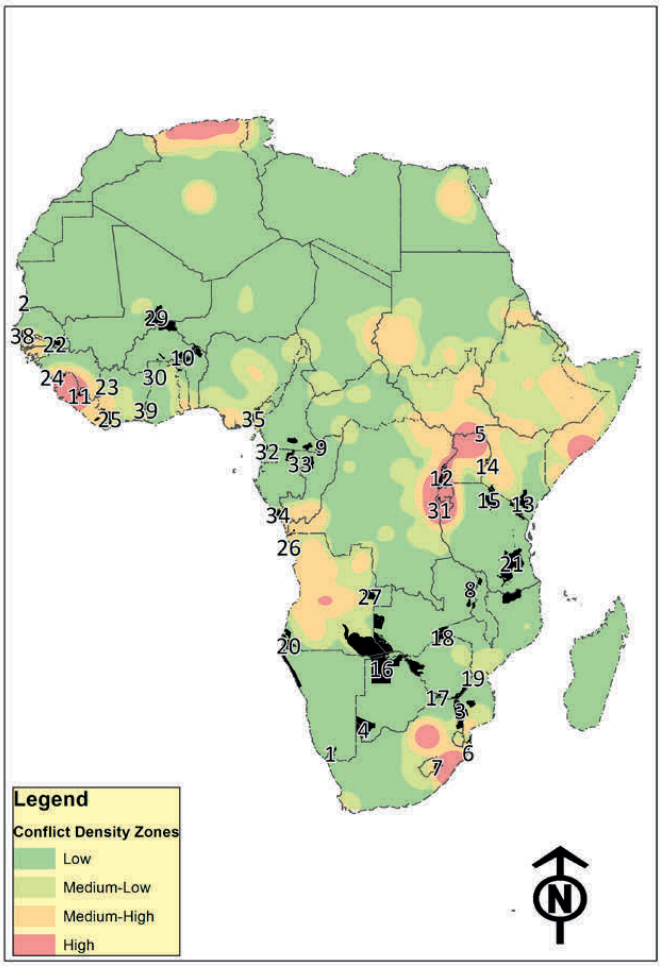

Figure 2 TBPAs and conflict-density zones in Africa

Regarding biodiversity hotspots, most TBPAs (18) are located entirely outside any biodiversity hotspot. Seven TBPAs are entirely located in a biodiversity hotspot. In three cases, over half of the total TBPA-area is covered by a biodiversity hotspot, and in nine cases, less than half of the TBPA-area is located in a biodiversity hotspot.

When taking into account both categories – conflicts and biodiversity hotspots – three cases stand out. Gola Forest Transboundary Peace Park (ID. 11), Greater Virunga Transboundary Collaboration (ID. 12), Mount Elgon (ID 14), Mount Nimba (ID. 23), Liberia-Cote d'Ivoire

Complex (ID. 25), and Nyungwe-Kibira Complex (ID. 31) are all located in the two densest conflict zones and their areas are entirely located in a biodiversity hotspot, with the exception of Mount Elgon.

Discussion

The majority of TBPAs are located in Southern and West Africa. We have been able to identify 209 funding agencies involved in the TBPAs. These agencies include small as well as large international environmental NGO, national and international donors as wells private foundations and companies. Major donor countries have been the US, EU, and major European countries as Netherlands, Germany, France and UK as well as the Nordic countries.

The spatial distribution of TBPAs has been discussed in relation to the density of conflicts, biodiversity hotspots, and transboundary conservation aid. We have shown that a majority of TBPAs are not established in places with intense levels of conflicts and that most TBPAs do not include large portions of areas that are considered to be biodiversity hotspots. The low spatial intersection between TBPAs, conflicts and biodiversity hotspots suggest that the decision to establish a TBPA is likely to be based on a combination of factors other than biodiversity hotspots (conservation priority areas) or dense-conflict zones. This underlines the need to explore other factors influencing the spatial distribution of TBPAs in Africa.

Case studies have highlighted the important role of role of certain actors in the establishment of TBPAs in Africa. (Draper, Spierenburg, & Wels, 2004; Duffy, 2006; Ferreira, 2004). Lewis (2002) has shown that environmental aid flows have been driven by donor interests rather that recipients' conservation needs. Halpern et al. (2006) and Mansourian and Dudley (2008) argue that the presence of environmental priority areas (e.g., biodiversity hotspots) explain only a small proportion of NGO-spending and aid allocation. More recent studies find a more positive association between aid and conservation needs (Miller, Agrawal, & Roberts, 2013). Brockington and Scholfield (2010) and Holmes et al. (2012) find a link between conservation expenditure and conservation needs on a country level but conclude that a variety of issues, ranging from political inertia and powerful cultural ideas of biodiversity (e.g., charismatic wildlife) to political and economic factors, influence where money is allocated.

TBPAs are in most cases formed on the basis of joining already existing protected areas which means that the location of TBPAs are outcomes of many decisions taken over a long historical period. Many protected areas have, over time, been established for a number of reasons (e.g., game, tourism) rather than purely for biodiversity protection or conflict resolution and it is thus not surprising that there is limited spatial overlap between TBPAs, conflicts and biodiversity hotspots.

Based on existing literature and the present spatial exploration, we do think that efforts to promote TBPAs as peacebuilding mechanisms are, to a large extent, guided by agencies' own interests and policies and the potential 'commercial' value of the TBPAs. Conservation organizations can market TBPAs as an opportunity to protect large areas of land regarded as

important for the survival of species and the linkage of landscapes. For donors, projects involving larger areas translate into greater visibility and more opportunities to influence a region (Draper et al., 2004). As our data reveals, the largest and most powerful organizations are supporters of transboundary conservation in Africa, particularly in Southern and West Africa. A potential explanation for this spatial spread might have to do with the actors involved in the establishment of TBPAs: organizations such as GEF and USAID, which have been closely involved in the establishment of Southern African TBPAs, are today also involved in the establishment of TBPAs in West Africa.

It is likely that TBPAs have been presented as peacebuilding tools because conflict and emergency contexts draw more media attention, appeal to wide audiences, and attract funding (Rye Olsen, 2001). Often, advocates of transboundary conservation rely on cases where a TBPA was established in conflictive areas to market their message and attract donors. One such case that is often used is the Greater Virunga Collaboration, which is established in an area that experienced intense conflict prior to and after the TBPA's MoU was signed. Rwanda, DRC and Uganda experienced some of the worst violence in the whole region during the 1990s and 2000s, while at the same time, the charismatic mountain gorilla attracted tourists and organizations from around the world. These two contexts together -conflict and charismatic wildlife- became the subject of documentaries, films, popular science magazines, tourist pamphlets and news channels. As a result, tourism is the leading source of export revenue in Rwanda (Nielsen & Spenceley, 2010), and 80% of the national tourism income in the country is generated by Parc National des Volcans (Maekawa, Lanjouw, Rutagarama, & Sharp, 2013). The Greater Virunga Collaboration is undoubtedly an impressive and important success story, but Virunga is also a special case in Africa; a majority of TBPAs are located in areas with neither conflict nor biodiversity hotspots.

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APPENDIX I: Informants

Table 1 List of informants

Number	Category	Organization/place	Date	Type
1	Researcher	Danish Institute for International Studies, Copenhagen	10.06.2011	Semi-structured Interview
2	Informant	SINAC	14.04.2011	Personal communication
3	Informant	MARENA, Managua	28.09.2011	Semi-structured Interview
4	Local entrepreneur	El Castillo	2.10.2011	Semi-structured interview and informal conversation
5	Local inhabitant 1	San Carlos	3.10.2011	Informal conversation
6	Group local tourist operators	San Juan de Nicaragua, El Castillo, San Carlos	4.10.2011	Informal group conversation
7	Local inhabitant 2	San Carlos	4.10.2011	Informal conversation
8	Researcher	Universidad Nacional Autonoma de Nicaragua, Managua	10.10.2011	Informal conversation
9	Informant	Nitlapan, Managua	13.10.2011	Semi-structured Interview
10	Group local inhabitants	San Carlos	17.10.2011	Informal group conversation
11	Group boat operators (2)	San Juan de Nicaragua, El Castillo, San Carlos	18.10.2011	Informal group conversation
12	Hotel owner	San Carlos	19.10.2011 20.10.2011	Semi-structured interview and informal conversation
13	Group local inhabitants	El Castillo	19.10.2011	Informal group conversation
14	Tourist operator	El Castillo	20.10.2011	Informal conversation
15	Informant	Rama indigenous group, Biological Reserve Indio Maiz	21.10.2011	Informal conversation
16	Local inhabitant	Boca de Sabalos	21.10.2011	Informal conversation
17	Informant	Fundación del Rio	21.10.2011	Semi-structured Interview
18	Informant	Local government, San Juan de Nicaragua	22.10.2011	Semi-structured Interview
19	Group local	San Juan de	22.10.2011	Informal group

	inhabitants	Nicaragua		conversation
20	Informant	IUCN Central America, San Jose	27.10.2011	Semi-structured interview
21	Researcher	UPEACE, San Jose	6.03.2012	Informal conversation
22	Informant	CCT, San Jose	14.03.2012	Semi-structured interview
23	Informant	UPEACE, San Jose	16.03.2012	Semi-structured interview and informal conversation
24	SINAC representative 1	Barra del Colorado	19.03.2012	Semi-structured interview
25	Hotel owner	Barra del Colorado	19.03.2012 20.03.2012	Semi-structured interview and informal conversation
26	Police 1	Barra del Colorado	20.03.2012	Informal conversation
27	Police 2	Barra del Colorado	20.03.2012	Informal conversation
28	Border police 1	Isla Calero	20.03.2012	Semi-structured interview
29	Family 1	Isla Calero	20.03.2012	informal group conversation
30	Family 2	Isla Calero	20.03.2012	Semi-structured group interview
31	Family 3	Isla Calero	20.03.2012	Semi-structured group interview
32	Border police group	Barra del Colorado	21.03.2012	Semi-structured group interview
33	Border police	Isla Calero	21.03.2012	Informal conversation
34	Students	Barra del Colorado	21.03.2012	Semi-structured group interview
35	Teachers	Barra del Colorado	21.03.2012	Semi-structured group interview
36	Local entrepreneur	Barra del Colorado	21.03.2012	Semi-structured interview
37	Police group	Barra del Colorado	22.03.2012	Semi-structured group interview
38	SINAC representative 2	Barra del Colorado	22.03.2012	Semi-structured interview
39	Informant 1	Asociacion de Barra del Colorado	22.03.2012	Semi-structured interview and informal conversation
40	Informant 2	Asociacion de Barra del Colorado	23.03.2012	Semi-structured interview
41	Tourist operator	Tortuguero	24.03.2012	Semi-structured interview
42	Local entrepreneur 1	Tortuguero	24.03.2012	Informal conversation
43	Local entrepreneur 2	Tortuguero	25.03.2012	Semi-structured interview

APPENDIX II: Interview guides

Interview guide for donor agencies, NGOs, and state institutions

1. What is the role of the organization in the area?
2. What is your role in the organization?
3. How long has the organization worked in the area?
4. What kind of projects has the organization supported, and in what way has the organization supported these projects (financial, technical expertise, management)?
5. Why is the organization active in this particular area?
6. Are you familiar with the concept of transboundary or transfrontier conservation or peace parks? If yes, how do you understand it?
    a. Are you familiar with the Mesoamerican Biological Corridor? If yes, what do you know about it?
    b. How is the MBC governed (actors and management)
7. Are you familiar with the concept of Si-A-Paz? If yes:
    a. What do you know about it?
    b. When was Si-A-Paz established?
    c. Does Si-A-Paz still exist?
    d. Do you have knowledge about the governance system (norms, rules, implementing agencies) in Si-A-Paz
    e. Who grants permits in the area and what is the basis for granting these permits (construction, extractive, agriculture, and farming)?

f. How apparent is it to local inhabitants that the Indio Maiz Reserve is part of the Peace Park?

g. Are inhabitants aware of something called 'Si-A-Paz'? Have they participated in the management of the area? If yes, how?

h. In your opinion, how have their lives have been impacted by Si-A-Paz, (more or less: mobility across borders, protection of biodiversity and resources, extractive companies, participation, tourism and economic gains, government presence, multilateral and bilateral assistance, infrastructure, connectivity)

8. Has this organization been involved with the governance of Si-A-Paz or the MBC? If yes:

    a. Have you received or granted funding to implement transboundary conservation projects? From/to whom? When? For how long?

9. Does this organization have, or has it had, any cooperation with other NGOs, donor agencies, or state institutions in the neighbouring country?

10. In your experience, is there widespread cross-border institutional cooperation over Si-A-Paz in Nicaragua and Costa Rica?

11. Is there a particular organization/individual promoting cross-border environmental cooperation?

12. In your experience, how effective has transboundary conservation been to strengthen cooperation and communication between institutions across borders?

13. What are the main challenges that transboundary conservation faces today in Nicaragua and Costa Rica, and in Central America?

14. Why do you think the name Si-A-Paz rarely appears in recent (since 2004) documents on the area (e.g. governmental documents, management plans, projects)?
15. Where is Isla Calero (show on map)?
16. Is Isla Calero part of Si-A-Paz?
17. Why is Isla Calero so important for both states?
18. What is the conflict along the San Juan River about?
19. What is the background to the conflict?
20. How has the conflict affected bilateral relations between Nicaragua and Costa Rica?
21. How has the conflict impacted Si-A-Paz?
22. How has the conflict impacted cross-border cooperation in general and environmental cooperation specifically?
23. How widespread is the conflict? Is it a diplomatic conflict, a political debate, or a military confrontation, and are civilians involved?
24. In your opinion, could strong cross-border cooperation over the environment have prevented the current conflict? Alternatively, do you think increased border control would have been beneficial for avoiding a conflict situation?
25. How do you think the conflict impacts future cooperation over transboundary conservation?
26. Where are the dredging activities taking place (point at a map)?
27. Who is financing the dredging activities?
28. What is the purpose of dredging the river?
29. How are the dredging operations affecting the sustainability of the river and its biodiversity?

30. If completed, what will be the impacts of the dredging for the communities along the basin?
31. Have any studies been carried out concerning the ecological and social impacts of the dredging activities? If yes, what are the results of those studies and who carried them out?
32. Where is the road being built?
33. Who is financing the road?
34. Have any studies been carried out concerning the ecological and social impacts of the construction of the road?
35. Does the road reach the protected areas along the Costa Rican border?
36. What is the purpose of the road?

Interview guide for local inhabitants

1. Where do you live?
2. How long have you lived there?
3. Where did you originally come from? If not from the area:
    a. Why did you move to this part of the country?
    b. Do you plan to stay here?
4. Do you work? if yes:
    a. Where do you work?
    b. What do you work with?
    c. In your work, have you ever cooperated with people employed in the same type of job in the neighbouring country? (e.g. fishermen)

5. Does any member of your family work or reside in Costa Rica/Nicaragua? If yes:
    a. Where do they work and what do they do?
6. [If interviewee resides in a different place than the location of the job] Where do you receive health care and medical attention?
7. Are you legally residing or working in the country?
8. How long have you resided and worked where you do.
9. Do you have children? If yes:
    a. Where are they born?
    b. Where do they attend school?
10. Do you have Costa Rican friends residing and/or working in Costa Rica?
11. Do you have Costa Rican friends residing and/or working in Nicaragua?
12. Do you have Nicaraguan friends residing and/or working in Nicaragua?
13. Do you have Nicaraguan friends residing and/or working in Costa Rica?
14. Do you belong to an ethnic group?
15. Do you face any difficulties in crossing the border? If yes:
    a. Has this changed following the conflict?
16. What is the conflict about?
17. Has the conflict impacted your daily lives? If yes, how?
18. Where is Isla Calero?
19. In your opinion, does Isla Calero belong to Nicaragua or Costa Rica?

20. How well do the claims made in popular media and political speeches, concerning the rivalry between Nicaraguans and Costa Ricans, fit with your reality? (explain to the interviewee what this means)

21. Are you aware that this place is part of a protected area? If yes:

    22. What is the name of the nearest protected area?

    23. Do you consider it beneficial to live near/in/bordering a protected area?

24. Do you know how many areas are protected along the border? If yes, can you name them?

25. Have you been involved in the management of the area? (explain to the interviewee what this entails) If yes, how?

26. Have you personally benefited from development/environmental projects carried out in this area? If yes:

    a. Which project and/or which organization organized the activities?

    b. How did you benefit?

    c. Do you know people whom have benefitted from these projects?

27. Have you personally faced any limitations because the area is protected?

28. Are there extractive companies here? If yes, what kind?

29. Do you receive many tourists?

30. Do you think this area has something to offer to tourists?

31. What do you think is needed for more tourists to come to the area?

32. Are you aware of something called Si-A-Paz? If yes:

a. What is it?

b. Since when do you know about it?

c. What does it entail?

d. Where is it?

e. Do you know which organizations have been involved in it? (management, funding).

APPENDIX III: Summary and References of TBPA Dataset 2014

Table 1 TBPAs in Africa

ID.	TBPA_NAME	MoU	CountryA	CountryB	CountryC	CountryD	CountryE
1	Ai Ais-Richtersveld	2003	Namibia	South Africa			
2	Transboundary Biosphere Reserve of the Senegal River Delta	2005	Mauritania	Senegal			
3	Great Limpopo Transfrontier Park	2002	Mozambique	South Africa	Zimbabwe		
4	Kgalagadi Transfrontier Park	2000	Botswana	South Africa			
5	Kidepo	2001	Uganda	South Sudan			
6	Lubombo Transfrontier Conservation Area	2002	Mozambique	South Africa	Swaziland		
7	Maloti-Drakensberg Transfrontier Conservation and Development Area	2001	Lesotho	South Africa			
8	NYIKA	2004	Malawi	Zambia			
9	Tri-National de la Sangha	2000	Cameroon	CAR	Congo		
10	Transboundary Biosphere Reserve "W"	2002	Benin	Burkina Faso	Niger	Togo	
11	Gola Forest Transboundary Peace Park	2009	Liberia	Sierra Leone			
12	Greater Virunga Transboundary Collaboration	2005	Rwanda	Uganda	DRC		
13	Kilimanjaro Heartland	conceptual	Tanzania	Kenya			
14	Mt. Elgon	2004	Kenya	Uganda			
15	Serengeti-Maasai Mara Ecosystem	conceptual	Kenya	Tanzania			
16	Kavango-Zambezi Trasnfrontier Conservation Area	2006	Botswana	Zambia	Namibia	Zimbabwe	Angola
17	Greater Mapungubwe Transfrontier Conservation Area	2006	Zimbabwe	South Africa	Botswana		
18	Lower Zambezi-Mana Pools TFCA	conceptual	Zimbabwe	Zambia			
19	Chimanimani TFCA	2001	Zimbabwe	Mozambique			
20	Iona-Skeleton Coast TFCA	2003	Angola	Namibia			
21	Niassa/Selous TFCA	2007	Tanzania	Mozambique			
22	Niokolo Koba-Badiar	conceptual	Senegal	Guinea			

ID.	TBPA_NAME	MoU	CountryA	CountryB	CountryC	CountryD	CountryE
23	Mount Nimba	conceptual	Guinea	Cote d'Ivoire	Liberia		
24	Sierra Leone-Guinea Complex	conceptual	Sierra Leone	Guinea			
25	Liberia - Cote d'Ivoire Complex	conceptual	Liberia	Cote d'Ivoire			
26	Maiombe Forest TFCA	2009	DRC	Congo			
27	Liuwa Plains-Mussuma TFCA	conceptual	Angola	Zambia			
28	ZIMoZA TFCA	conceptual	Mozambique	Zimbabwe	Zambia		
29	Ecosysteme Gourme Sahel	conceptual	Mali	Burkina Faso			
30	Nazinga - Kabore Tambi National Park - Red Volta Ecosystem-Doungh	conceptual	Burkina Faso	Ghana	Togo		
31	Nyungwe-Kibira Complex	2008	Rwanda	Burundi			
32	Rio Campo/Campo Ma'an Complex	conceptual	Equatorial Guinea	Cameroon			
33	TRIDOM Complex	2005	Gabon	Congo	Cameroon		
34	Conkouati/Mayumba Complex	conceptual	Gabon	Congo			
35	Korup/Cross River TBCA	conceptual	Nigeria	Cameroon			
36	Cross River/Takamanda Forest Complex	conceptual	Cameroon	Nigeria			
37	Eastern Arc Mountains	conceptual	Kenya	Tanzania			
38	Delta du Saloum	conceptual	Senegal	Gambia			
39	Bia-Diambarakro TFCA	conceptual	Cote d' Ivoire	Ghana			

Table 2 Individual Protected Areas within TBPAs in Africa

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
1	2003	Ai-Ais Hot Springs	NAM	National Park	II	4354	Designated	2002
1	2003	Ais - Ais/Richtersveld	ZAF	National Park	II	1609.615	Designated	1991
2	2005	Parc National du Diawling	MRT	Ramsar Site, Wetland of International Importance	Not Applicable	156	Designated	1994
2	2005	Oiseaux de Djoudj	SEN	National Park	II	160	Designated	1971
2	2005	Djoudj National Bird Sanctuary	SEN	World Heritage Site	Not Applicable	160	Inscribed	1981
2	2005	Djoudj	SEN	Ramsar Site, Wetland of International Importance	Not Applicable	160	Designated	1977
3	2002	Limpopo Valley Wildlife Utilization Area	ZAF	Game Farm	Not Reported	0.08851	Designated	0
3	2002	Banhine	MOZ	National Park	II	7000	Designated	1972
3	2002	Kruger	ZAF	National Park	Not Reported	9150.525	Designated	1926
3	2002	Klaserie	ZAF	Private Nature Reserve	IV	588.4219	Designated	0
3	2002	Timbavati Game Reserve	ZAF	Game Farm	IV	502.2047	Designated	0
3	2002	Sabie Sand	ZAF	Provincial Nature Reserve	Not Reported	205.207	Designated	0
3	2002	Manyeleti Game Reserve	ZAF	Game Farm	IV	226.2109	Designated	1967
3	2002	Manyeleti Game Reserve	ZAF	Game Farm	IV	226.2109	Designated	1967
3	2002	Sabie Sabie Game Reserve	ZAF	Game Farm	IV	59.86826	Designated	0
3	2002	Letaba Ranch Other Area	ZAF	Other Conservation Area	IV	67.17315	Designated	1981
3	2002	Gonarezhou	ZWE	National Park	II	5053	Designated	1975
3	2002	Maose-Xini	ZWE	Wildlife Management Area	Not Reported	3.698669	Designated	2002
3	2002	Sengwe	ZWE	Wildlife Management Area	Not Reported	3.036072	Designated	2002
3	2002	Chipise	ZWE	Wildlife Management Area	Not Reported	2.963327	Designated	2002
3	2002	Chibavahlengwe	ZWE	Wildlife Management Area	Not Reported	2.63819	Designated	2002

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
3	2002	Sabie Sand	ZAF	Private Natural Reserve	Not Reported	567.3632	Designated	0
3	2002	Limpopo	MOZ	National Park	II	1200	Designated	1979
3	2002	Makuleke Wetlands	ZAF	Ramsar Site, Wetland of International Importance	Not Applicable	77.57	Designated	2007
4	2000	Gemsbok	BWA	National Park	Ib	26310	Designated	1971
4	2000	Kgalagadi Transfrontier Park	ZAF	National Park	II	9475.55	Designated	1931
5	2001	Kidepo Valley	UGA	National Park	II	1430	Designated	1962
5	2001	Zulia	UGA	Forest Reserve	Not Reported	0	Designated	1950
5	2001	Nyangea - Napore	UGA	Forest Reserve	Not Reported	423.0698	Designated	1950
5	2001	Lopeichubei	UGA	Forest Reserve	Not Reported	166.6365	Designated	1963
5	2001	Lomej	UGA	Forest Reserve	Not Reported	7.6619	Designated	1963
6	2002	Maputo	MOZ	Special Reserve	IV	807.0692	Designated	1969
6	2002	Greater St Lucia Wetland Nature Reserve	ZAF	Provincial Nature Reserve	II	2133.583	Designated	1895
6	2002	Songimvelo	ZAF	Provincial Nature Reserve	Not Reported	490.7641	Designated	1983
6	2002	Turtle Beaches/Coral Reefs of Tongaland	ZAF	Ramsar Site, Wetland of International Importance	Not Applicable	395	Designated	1986
6	2002	Tembe	ZAF	Provincial Nature Reserve	IV	299.8709	Designated	1983
6	2002	Kosi Bay	ZAF	Ramsar Site, Wetland of International Importance	Not Applicable	109.82	Designated	1991
6	2002	Ndumo	ZAF	Provincial Nature Reserve	II	118.6056	Designated	1924
6	2002	Ndumo Game Reserve	ZAF	Ramsar Site, Wetland of International Importance	Not Applicable	101.17	Designated	1997
6	2002	Mlawula	SWZ	Nature Reserve	IV	170	Designated	1977
6	2002	Malolotja	SWZ	Nature Reserve	IV	181.75	Designated	1972
6	2002	Hlane	SWZ	Game Sanctuary	VI	141.64	Designated	1967
6	2002	Lake Sibaya	ZAF	Ramsar Site, Wetland of International Importance	Not Applicable	77.5	Designated	1991

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
6	2002	Hlatikulu	ZAF	Provincial Nature Reserve	II	12.10057	Designated	1987
6	2002	Zona de Vigilancia da REM	MOZ	Not Reported	Not Reported	0	Designated	0
6	2002	Phongola Nature Reserve	ZAF	Provincial Nature Reserve	Not Reported	53.29028	Designated	0
6	2002	Phongolapoort Nature Reserve	ZAF	Provincial Nature Reserve	Not Reported	150.8352	Designated	0
6	2002	St. Lucia System	ZAF	Ramsar Site, Wetland of International Importance	Not Applicable	1555	Designated	1986
6	2002	Maputaland	ZAF	Marine Protected Area	IV	385.1914	Designated	2000
6	2002	iSimangaliso Wetland Park	ZAF	World Heritage Site	Not Applicable	2395.66	Inscribed	1999
7	2001	Lesotho	LSO	National Park	Not Reported	6324.024	Proposed	0
7	2001	Sehlabathebe	LSO	National Park	IV	69.5201	Designated	1970
7	2001	Ukhahlamba Drakensberg Park	ZAF	Provincial Nature Reserve	Not Reported	2303.879	Designated	0
7	2001	Sterkfontein Dam	ZAF	Nature Reserve	IV	184.8993	Designated	1987
7	2001	Natal Drakensberg Park	ZAF	Ramsar Site, Wetland of International Importance	Not Applicable	2428.13	Designated	1997
7	2001	Royal Natal National Park	ZAF	Nature Reserve	Not Reported	0.53698	Designated	0
7	2001	Spioenkop	ZAF	Provincial Nature Reserve	IV	54.38561	Designated	0
7	2001	Maloti-Drakensberg Park	ZAF,LSO	World Heritage Site	Not Applicable	2493.13	Inscribed	2000
8	2004	Kasungu	MWI	National Park	II	2316	Designated	1970
8	2004	Vwaza Marsh	MWI	Wildlife Reserve	IV	986	Designated	1977
8	2004	Musalangu	ZMB	Game Management Area	VI	17350	Designated	1971
8	2004	Lundazi	ZMB	Forest Reserve	Not Reported	3748	Designated	1978
8	2004	Lukusuzi	ZMB	National Park	II	2720	Designated	1971
8	2004	Nyika	MWI	National Park	II	3134	Designated	1965
8	2004	Mitenge	ZMB	Forest Reserve	Not Reported	203.3	Designated	1972
9	2000	Lobéké	CMR	Parc National	II	2178.54	Designated	2001
9	2000	Mongokele	CMR	Forest Reserve	Not Reported	0	Designated	0

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
9	2000	Dzanga-Sangha	CAF	Special Reserve	VI	6865.54	Designated	1990
9	2000	Dzanga-Ndoki	CAF	National Park	II	1143.26	Designated	1990
9	2000	Nouabalé-Ndoki	COG	National Park	II	3865.92	Designated	1993
9	2000	Sangha Trinational	CMR,CAF,COG	World Heritage Site	Not Applicable	7463.09	Inscribed	2012
10	2002	W (Benin)	BEN	National Park	II	5020	Designated	1954
10	2002	Boucle de la Pendjari	BEN	National Park	II	2755	Designated	1961
10	2002	Pendjari	BEN	Hunting Zone	VI	1750	Designated	1980
10	2002	Atakora	BEN	Hunting Zone	VI	1220	Designated	1980
10	2002	Djona	BEN	Hunting Zone	VI	1880	Designated	1980
10	2002	Site Ramsar du Complexe W	BFA	Ramsar Site, Wetland of International Importance	Not Applicable	2350	Designated	2007
10	2002	W du Burkina Faso	BFA	National Park	II	2350	Designated	1954
10	2002	Pama	BFA	Partial Faunal Reserve	IV	2230	Designated	1955
10	2002	Singou	BFA	Faunal Reserve	IV	1920	Designated	1955
10	2002	Arly	BFA	Faunal Reserve	IV	760	Designated	1954
10	2002	Arly	BFA	Partial Faunal Reserve	IV	1300	Designated	1954
10	2002	Kourtiagou	BFA	Partial Faunal Reserve	IV	510	Designated	1957
10	2002	Madjoari	BFA	Faunal Reserve	IV	170	Designated	1955
10	2002	Parc national du “W”	NER	Ramsar Site, Wetland of International Importance	Not Applicable	2200	Designated	1987
10	2002	W National Park of Niger	NER	World Heritage Site	Not Applicable	2200	Inscribed	1996
10	2002	W du Niger	NER	National Park	II	2200	Designated	1954
10	2002	Tamou	NER	Faunal Reserve	IV	756	Designated	1962
10	2002	Kéran	TGO	National Park	II	1636.4	Designated	1950
10	2002	Parc national de la Keran	TGO	Ramsar Site, Wetland of International Importance	Not Applicable	1634	Designated	1995

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
11	2009	Gola	LBR	National Park	Not Reported	979.7499	Proposed	2003
11	2009	Gola Rainforest National Park	SLE	National Park	II	710.7	Designated	2010
11	2009	Foya	LBR	National Park	Not Reported	1646.28	Proposed	2003
12	2005	Mgahinga Gorilla	UGA	National Park	II	38	Designated	1930
12	2005	Volcans	RWA	National Park	II	120	Designated	1929
12	2005	Parc national des Volcans	RWA	UNESCO-MAB Biosphere Reserve	Not Applicable	125	Designated	1983
12	2005	Rwenzori Mountains	UGA	National Park	II	995	Designated	1991
12	2005	Rwenzori Mountains National Park	UGA	World Heritage Site	Not Applicable	996	Inscribed	1994
12	2005	Queen Elizabeth	UGA	National Park	II	2056	Designated	1952
12	2005	Queen Elizabeth National Park	UGA	UNESCO-MAB Biosphere Reserve	Not Applicable	7395	Not Reported	1979
12	2005	Kigezi	UGA	Wildlife Reserve	III	265	Designated	1952
12	2005	Bwindi Impenetrable	UGA	National Park	II	327	Designated	1991
12	2005	Bwindi Impenetrable National Park	UGA	World Heritage Site	Not Applicable	320.92	Inscribed	1994
12	2005	Rutshuru	COD	Domaine de Chasse	VI	660.6671	Designated	0
12	2005	Parc national des Virunga	COD	Ramsar Site, Wetland of International Importance	Not Applicable	8000	Designated	1996
12	2005	Virunga	COD	Parc National	II	7768.928	Designated	0
12	2005	Virunga National Park	COD	World Heritage Site	Not Applicable	7900	Inscribed	1979
12	2005	Semuliki	UGA	National Park	II	220	Designated	1993
13	0	Kilimanjaro	TZA	National Park	II	1668	Designated	1973
13	0	Amboseli	KEN	National Park	II	392.06	Designated	1974
13	0	Chyulu Hills	KEN	National Park	II	470.9	Designated	1983
13	0	Loitokitok	KEN	Forest Reserve	Not Reported	7.66	Designated	1977

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
13	0	Ngai Ndethya	KEN	National Reserve	VI	212.09	Designated	1976
13	0	South Kitui	KEN	National Reserve	VI	1833	Designated	1979
13	0	Tsavo East	KEN	National Park	II	11747	Designated	1948
13	0	Tsavo West	KEN	National Park	II	9065	Designated	1948
13	0	Chambogo	TZA	Forest Reserve	IV	55.2986	Designated	1958
13	0	Kilimanjaro National Park	TZA	World Heritage Site	Not Applicable	753.53	Inscribed	1987
13	0	Kwizu	TZA	Forest Reserve	Not Reported	30.0197	Designated	0
13	0	Mkomazi	TZA	National Park	IV	3245	Designated	1951
13	0	Umba	TZA	Game Reserve	Not Reported	1500	Designated	1974
14	2004	Mount Elgon	KEN	National Park	II	169.23	Designated	1968
14	2004	Mount Elgon	KEN	Forest Reserve	Not Reported	730.89	Designated	1932
14	2004	Mount Elgon	UGA	National Park	II	1110	Designated	1951
14	2004	Mount Elgon	UGA	UNESCO-MAB Biosphere Reserve	Not Applicable	0	Designated	2005
15	0	Mara North	KEN	Community Conservancy	Not Reported	309.55	Designated	2009
15	0	Masai Mara	KEN	National Reserve	II	1510	Designated	1974
15	0	Ngorongoro	TZA	Conservation Area	VI	8288	Designated	1959
15	0	Ngorongoro Conservation Area	TZA	World Heritage Site	Not Applicable	8094.4	Inscribed	1979
15	0	Serengeti	TZA	National Park	II	14763	Designated	1951
15	0	Serengeti National Park	TZA	World Heritage Site	Not Applicable	14763	Inscribed	1981
16	2006	Chobe	BWA	National Park	Ib	11000	Designated	1968
16	2006	Chobe	BWA	Forest Reserve	II	1432	Designated	1976
16	2006	Okavango Delta System	BWA	Ramsar Site, Wetland of International Importance	Not Applicable	55374	Designated	1996
16	2006	Mosi-oa-Tunya / Victoria Falls	ZMB,ZWE	World Heritage Site	Not	68.6	Inscribed	1989

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
					Applicable			
16	2006	Sioma Ngwezi	ZMB	National Park	II	5276	Designated	1972
16	2006	West Zambezi	ZMB	Game Management Area	VI	38070	Designated	1971
16	2006	Lwao	ZMB	Forest Reserve	Not Reported	46.05	Designated	1973
16	2006	Mosi-Oa-Tunya	ZMB	National Park	II	66	Designated	1971
16	2006	Mamili	NAM	National Park	II	338	Designated	1990
16	2006	Mudumu	NAM	National Park	II	716	Designated	1990
16	2006	Bwabwata	NAM	National Park	Not Reported	6277	Designated	2007
16	2006	Moremi	BWA	Game Reserve	Ib	4871	Designated	1963
16	2006	Hwange (Wankie)	ZWE	National Park	II	14651	Designated	1949
16	2006	Kazuma	ZWE	State Forest	Not Reported	240	Designated	1961
16	2006	Kazuma Pan	ZWE	National Park	II	313	Designated	1975
16	2006	Zambezi	ZWE	National Park	II	560.1	Designated	1979
16	2006	Luiana	AGO	Partial Reserve	IV	8400	Designated	1966
16	2006	Deka	ZWE	Safari Area	VI	510	Designated	1975
16	2006	Kasane Extension	BWA	Forest Reserve	II	641.11	Designated	1981
16	2006	Kasane	BWA	Forest Reserve	II	149.31	Designated	1968
16	2006	Kazuma	BWA	Forest Reserve	II	195	Designated	1981
16	2006	Luengué	AGO	Hunting Reserve	Not Reported	16700	Designated	1959
16	2006	Mabhongana	ZWE	Wildlife Management Area	Not Reported	3.998825	Designated	2002
16	2006	Matetsi	ZWE	Safari Area	VI	2955	Designated	1975
16	2006	Mateya	ZMB	Forest Reserve	Not Reported	63.1	Designated	1979
16	2006	Ngamo	ZWE	State Forest	Not Reported	1029	Designated	1930
16	2006	Sikumi	ZWE	State Forest	Not Reported	544	Designated	1961
16	2006	Sikundu	ZMB	Forest Reserve	Not Reported	17.74	Designated	1979
16	2006	Unknown 4	ZWE	Wildlife Management Area	Not Reported	2.25393	Designated	2002
16	2006	Unknown 7	ZWE	Wildlife Management Area	Not Reported	5.092595	Designated	2002

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
16	2006	Unknown 8	ZWE	Wildlife Management Area	Not Reported	3.752548	Designated	2002
16	2006	Victoria Falls	ZWE	National Park	III	23.4	Designated	1952
16	2006	Yanga	ZMB	Forest Reserve	Not Reported	40	Designated	1973
16	2006	Kwandu	NAM	Communal Conservancy	Not Reported	189.52	Designated	1999
16	2006	Kwandu	NAM	Community Forest	Not Reported	212	Designated	2006
16	2006	Caprivi	NAM	Forest Reserve	Not Reported	1484.44	Designated	1966
17	2006	Tuli	ZWE	Safari Area	VI	416	Designated	1975
17	2006	Mapungubwe	ZAF	National Park	Not Reported	210.34	Designated	1995
17	2006	Machuchuta	ZWE	Wildlife Management Area	Not Reported	2.701388	Designated	2002
17	2006	Maramani	ZWE	Wildlife Management Area	Not Reported	1.570147	Designated	2002
17	2006	Northern Tuli	BWA	Game Reserve	IV	780	Designated	1964
18	0	Mana Pools	ZWE	National Park	II	2196	Designated	1975
18	0	Chiawa	ZMB	Game Management Area	VI	2344	Designated	1989
18	0	Lower Zambezi	ZMB	National Park	II	4092	Designated	1983
18	0	Sapi	ZWE	Safari Area	VI	1180	Designated	1975
18	0	Rufunsa	ZMB	Game Management Area	VI	3179	Designated	1980
18	0	Hurungwe	ZWE	Safari Area	VI	2894	Designated	1975
18	0	Dande	ZWE	Safari Area	VI	523	Designated	1975
18	0	Mana Pools National Park, Sapi and Chewore Safari Areas	ZWE	World Heritage Site	Not Applicable	6766	Inscribed	1984
18	0	Doma	ZWE	Safari Area	VI	945	Designated	1975
18	0	Charara	ZWE	Safari Area	VI	1692	Designated	1975
18	0	Chewore	ZWE	Safari Area	VI	339	Designated	1964
19	2001	Chimanimani	ZWE	National Park	II	171	Designated	1950
19	2001	Ngorima A	ZWE	Wildlife Management Area	Not Reported	0.130556	Designated	2002
19	2001	Maronga	MOZ	Forest Reserve	V	83	Designated	1950
20	2003	Iona	AGO	National Park	II	15150	Designated	1964

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
20	2003	Namibe	AGO	Partial Reserve	IV	4450	Designated	1960
20	2003	Skeleton Coast Park	NAM	National Park	II	16820	Designated	1973
21	2007	Selous	TZA	Game Reserve	IV	44000	Designated	1905
21	2007	Niassa	MOZ	Game Reserve	IV	15000	Designated	1969
21	2007	Tunduru	TZA	Wildlife Management Area	Not Reported	1391	Designated	2009
21	2007	Selous Game Reserve	TZA	World Heritage Site	Not Applicable	44800	Inscribed	1982
21	2007	Mbaragandu	TZA	Wildlife Management Area	Not Reported	2471	Designated	2010
22	0	Niokolo Koba	SEN	National Park	II	9130	Designated	1954
22	0	Parc national du Niokolo-Koba	SEN	UNESCO-MAB Biosphere Reserve	Not Applicable	9130	Designated	1981
22	0	Badiar	GIN	National Park	II	382	Designated	1985
22	0	Badiar-sud	GIN	Classified Forest	Not Reported	73	Designated	1956
22	0	Niokolo-Koba National Park	SEN	World Heritage Site	Not Applicable	9130	Inscribed	1981
23	0	Mount Nimba	GIN	Strict Nature Reserve	Ia	130	Designated	1944
23	0	East Nimba	LBR	National Park	Not Reported	135.6896	Designated	2003
23	0	Mount Nimba Strict Nature Reserve	CIV,GIN	World Heritage Site	Not Applicable	221.3	Inscribed	1981
23	0	Mount Nimba	CIV	National Reserve	Ia	50	Designated	1944
24	0	Kilimi	SLE	National Park	Not Reported	388.5	Designated	1995
24	0	Outamba	SLE	National Park	II	738.15	Designated	1995
24	0	Soyah	GIN	Classified Forest	Not Reported	84	Designated	1945
24	0	Pinselli	GIN	Classified Forest	Not Reported	130	Designated	1945
25	0	Sapo	LBR	National Park	Not Reported	1504.818	Designated	1983
25	0	Grebo	LBR	National Park	Not Reported	971.3574	Proposed	2003
25	0	Taï National Park	CIV	World Heritage Site	Not Applicable	3300	Inscribed	1982

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
25	0	Taï	CIV	National Park	II	3300	Designated	1972
25	0	Haute Dodo	CIV	Classified Forest	Not Reported	1094	Designated	0
25	0	Gouin	CIV	Classified Forest	Not Reported	0	Designated	0
25	0	Classified Forest Name Unknown (CIV) No.58	CIV	Classified Forest	Not Reported	0	Designated	0
25	0	Classified Forest Name Unknown (CIV) No.77	CIV	Classified Forest	Not Reported	0	Designated	0
26	2009	Parc Marin des Mangroves	COD	Parc National	Not Reported	216.1925	Designated	0
26	2009	Mangrove Nature Reserve or Marine Park	COD	Nature Reserve	Not Reported	1000	Designated	1992
26	2009	Réserve forestière de Luki	COD	UNESCO-MAB Biosphere Reserve	Not Applicable	329.68	Designated	1979
26	2009	Luki	COD	Réserve de Biosphere	Not Reported	310.5933	Designated	0
26	2009	Réserve de la biosphère de Dimonika	COG	UNESCO-MAB Biosphere Reserve	Not Applicable	1360	Designated	1988
27	0	Kameia	AGO	National Park	II	14450	Designated	1938
27	0	Liuwa Plain	ZMB	National Park	II	3660	Designated	1971
29	0	Gourma	MLI	Réserve Partielle des Eléphants	IV	12500	Designated	1959
29	0	Sahel	BFA	Partial Faunal Reserve	IV	16000	Designated	1970
30	0	Kabore-Tambi	BFA	National Park	II	2427	Designated	1976
30	0	Nazinon	BFA	Classified Forest	Not Reported	317	Designated	1954
30	0	Sissili	BFA	Classified Forest	Not Reported	327	Designated	1955
30	0	Pic Nahouri	BFA	Classified Forest	Not Reported	8.36	Designated	1938
30	0	Chasi River	GHA	Forest Reserve	Not Reported	72.52	Designated	1940
30	0	Chiana Hills	GHA	Forest Reserve	Not Reported	43.59	Designated	1945
30	0	Sissili North	GHA	Forest Reserve	Not Reported	82.88	Designated	1940
30	0	Sissili Central	GHA	Forest Reserve	Not Reported	155.09	Designated	1947

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
30	0	Pudu Hills	GHA	Forest Reserve	Not Reported	54.13	Proposed	0
30	0	Ghira	GHA	Forest Reserve	Not Reported	0	Designated	0
30	0	Gambaga East	GHA	Forest Reserve	Not Reported	127.53	Designated	1948
30	0	Gambaga West I	GHA	Forest Reserve	Not Reported	115	Designated	1954
30	0	Mole	GHA	National Park	II	4840.4	Designated	1971
30	0	Fosse aux Lions	TGO	National Park	II	16.5	Designated	1954
30	0	Red Volta East	GHA	Forest Reserve	Not Reported	217.6	Designated	1953
30	0	Red Volta West	GHA	Forest Reserve	Not Reported	261.59	Designated	1962
31	2008	Nyungwe	RWA	National Park	IV	1030	Designated	1933
31	2008	Kibira	BDI	National Park	IV	400	Designated	1934
32	0	Río Ntem o Campo	GNQ	Ramsar Site, Wetland of International Importance	Not Applicable	330	Designated	2003
32	0	Rio Campo	GNQ	Natural Reserve	IV	330	Designated	2000
32	0	Campo-Ma'an	CMR	Parc National	II	2640.64	Designated	2000
33	2005	Minkebe	GAB	National Park	Not Reported	7535	Designated	2002
33	2005	Odzala-Kokoua	COG	National Park	II	13546	Designated	1935
33	2005	Dja	CMR	UNESCO-MAB Biosphere Reserve	Not Applicable	5260	Designated	1981
33	2005	Parc national d'Odzala	COG	UNESCO-MAB Biosphere Reserve	Not Applicable	1100	Designated	1977
33	2005	Dja Faunal Reserve	CMR	World Heritage Site	Not Applicable	5260	Inscribed	1987
33	2005	Dja	CMR	Réserve de Faune	IV	5260	Designated	1950
33	2005	Mwagne	GAB	National Park	Not Reported	1167	Designated	2002
33	2005	Boumba - Bek	CMR	Wildlife Reserve	IV	2487.45	Designated	0
33	2005	Boumba Bek	CMR	Parc National	II	2382.55	Designated	2005
33	2005	Nki	CMR	Parc National	II	3093.62	Designated	2005
33	2005	Mengamé	CMR	Sanctuaire à Gorille	IV	267.11	Designated	2008

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
34	0	Mayumba	GAB	National Park	Not Reported	965	Designated	2003
34	0	Conkouati-Douli	COG	National Park	II	5049.5	Designated	1999
35	0	Cross River	NGA	National Park	II	8000	Designated	1991
35	0	Korup	CMR	Parc National	II	1259	Designated	1986
36	0	Mbulu Hills	CMR	Community Forest	Not Reported	18.09	Designated	0
36	0	Cross River	NGA	National Park	II	8000	Designated	1991
36	0	Afi River	NGA	Forest Reserve	Not Reported	0	Designated	0
36	0	Mbe Mountains	NGA	Community Forest	Not Reported	0	Designated	0
36	0	Afi Mountain	NGA	Wildlife Sanctuary	Not Reported	0	Designated	0
36	0	Mawne River	CMR	Forest Reserve	Not Reported	455	Designated	0
36	0	Takamanda	CMR	Parc National	II	675.99	Designated	2008
37	0	Kasigau	KEN	Forest Reserve	Not Reported	2.02	Designated	1941
37	0	Taita Hills	KEN	Wildlife Sanctuary	Not Reported	113.4	Designated	1973
37	0	Mahenge Scarp	TZA	Forest Reserve	IV	3.87	Designated	1954
37	0	Udzungwa Mountains	TZA	National Park	II	1990	Designated	1992
37	0	Udzungwa Scarp	TZA	Forest Reserve	Ib	207.2	Designated	1929
37	0	Uluguru	TZA	Nature Reserve	Not Reported	250	Designated	2009
37	0	Uluguru North	TZA	Forest Reserve	IV	84.2174	Designated	1961
37	0	Uluguru South	TZA	Forest Reserve	IV	175.8764	Designated	1930
37	0	Nguru North	TZA	Forest Reserve	IV	140.97	Designated	0
37	0	Nguru South	TZA	Forest Reserve	Not Reported	196.46	Designated	0
37	0	Nguru ya Ndege	TZA	Forest Reserve	Not Reported	24.9245	Designated	1962
37	0	Shagayu	TZA	Forest Reserve	IV	80.4754	Designated	0
38	0	Delta du Saloum	SEN	UNESCO-MAB Biosphere Reserve	Not Applicable	1800	Designated	1980
38	0	Delta du Saloum	SEN	Ramsar Site, Wetland of International Importance	Not Applicable	730	Designated	1984

TBPA ID	MoU	NAME	COUNTRY	DESIG	IUCN_CAT	REP_AREA	STATUS	STATUS YR
38	0	Niumi	GMB	National Park	II	49.4	Designated	1986
38	0	Niumi National Park	GMB	Ramsar Site, Wetland of International Importance	Not Applicable	49.4	Designated	2008
39	0	Beki Bosse Matie	CIV	Classified Forest	Not Reported	389	Designated	0
39	0	Bia	GHA	National Park	II	77.7	Designated	0
39	0	Bia	GHA	Resource Reserve	VI	277.92	Designated	1974
39	0	Bia Tawya	GHA	Forest Reserve	Not Reported	678.58	Designated	1965
39	0	Bia Trans	GHA	Forest Reserve	Not Reported	0	Designated	0
39	0	Bia Tributaries North	GHA	Forest Reserve	Not Reported	356.13	Designated	1940
39	0	Diambarakrou	CIV	Classified Forest	Not Reported	273.5	Designated	0
39	0	Krokosua Hills FoR*	GHA	Forest Reserve	Not Reported	481.7	Designated	1935

Table 3 Actors involved in the establishment of TBPAs

TBPA_ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	26	26	26	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Org_1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Org_2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_3	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Org_4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Org_10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Org_11	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_12	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	1	1	1	0	1	0	1	1	0	0	1
Org_13	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	1
Org_14	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Org_15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_19	1	0	1	1	0	1	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Org_20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_21	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0
Org_22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Org_23	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
Org_24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Org_25	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_26	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Org_28	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Org_29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_30	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1
Org_31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_33	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_34	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TBPA_ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	26	26	26	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Org_35	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Org_36	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	1	1	0	1	0	0	1	1	0	0	1
Org_37	1	0	1	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1
Org_38	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Org_40	1	1	1	0	0	1	1	1	1	1	0	0	1	0	0	0	0	0	1	1	1	1	0	0	0	1	1	1	1	1	0	1	1	1	0	0	1	0	0	0	0	1	1
Org_41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Org_42	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Org_43	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Org_44	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_45	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_46	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_47	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0
Org_48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_50	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Org_52	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_54	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	0	0
Org_55	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Org_57	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	0	0	0	1	1
Org_58	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_60	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Org_61	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_66	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_67	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_68	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
Org_69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_70	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0

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Org_74	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Org_75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Org_77	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_78	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_79	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_80	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_81	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_83	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_84	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Org_85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0
Org_88	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_90	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	1	1	1	0	1	1	1	0	0	0	0	0
Org_91	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	0
Org_92	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	1	0	1	0	1	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Org_93	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_94	0	0	1	1	0	0	0	0	0	1	1	1	1	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	0	0	0	1	1	0	0	0
Org_95	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_96	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_97	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_98	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_100	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_101	0	0	1	0	1	0	0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	0
Org_102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_103	0	1	1	0	0	1	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	0	1	1	1	0	0
Org_104	0	0	0	0	0	0	0	1	1	1	0	1	1	0	1	1	1	0	1	0	1	0	0	0	1	0	0	0	0	0	1	1	0	0	0	1	1	0	1	1	0	1	0
Org_105	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_106	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_110	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0
Org_111	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_112	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Org_113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_114	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_115	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_116	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_117	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_118	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_119	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_120	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0
Org_121	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_122	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_123	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_124	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_125	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_126	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Org_127	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_128	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_129	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_130	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_131	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_132	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_133	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_134	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_135	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_136	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_137	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_138	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_139	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_140	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Org_141	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Org_142	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_143	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_144	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_151	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Org_152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_154	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Org_155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Org_158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_159	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Org_160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Org_161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0
Org_162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_164	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Org_167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_169	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Org_170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_171	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Org_173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_174	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Org_175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Org_176	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	0	1	0	0	0	0	0
Org_177	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Org_178	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	0	1	1	1	0	1	0
Org_179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Org_181	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Org_182	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Org_183	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Org_184	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Org_185	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Org_186	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Org_187	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Org_188	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Org_189	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_190	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0

TBPA_ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	26	26	26	26	27	28	29	30	31	32	33	34	35	36	37	38	39
Org_191	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_192	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_194	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
Org_195	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_196	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Org_197	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Org_198	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_199	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_200	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_201	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_202	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_203	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_204	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_206	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_207	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_208	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_209	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_210	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_211	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_212	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_213	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Org_214	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4 Country codes

Country	Code
Angola	AGO
Benin	BEN
Botswana	BWA
Burkina Faso	BFA
Burundi	BDI
Cameroon	CMR
Central African Republic	CAF
Congo	COG
Cote d'Ivoire	CIV
Democratic Republic of Congo	COD
Equatorial Guinea	GNQ
Gabon	GAB
Gambia	GMB
Ghana	GHA
Guinea	GIN
Kenya	KEN
Lesotho	LSO
Liberia	LBR

Country	Code
Malawi	MWI
Mali	MLI
Mauritania	MRT
Mozambique	MOZ
Namibia	NAM
Niger	NER
Nigeria	NGA
Rwanda	RWA
Senegal	SEN
Sierra Leone	SLE
South Africa	ZAF
Swaziland	SWZ
Tanzania	TZA
Togo	TGO
Uganda	UGA
Zambia	ZMB
Zimbabwe	ZWE

Table 5 Organizations' codes, abbreviations and type

Code	Organization	Abbreviation	Type
1	A Rocha Ghana	Arocha	non-state
2	Aage V. Jensen Charity Foundation	Ajfound	Private
3	African Wildlife Foundation	AWF	non-state
4	Birdlife International	Birdlife	non-state
5	Center for International Forestry Research	CIFOR	non-state
6	Center for Rural Transformation	CRT	non-state
7	Center for the Reproduction of Endagered Species/ Conservation and Research for Endangered Species	CRES	non-state
8	Centre Internationale d'Appui et Developpement	CIEDEL	non-state
9	Centro Terra Viva	CTV	non-state
10	Conservation Alliance	CA	non-state
11	Conservation Finance Alliance	CFA	non-state
12	Conservation International	CI	non-state
13	Critical Ecosystem Partnership Fund	CEPF	non-state
14	Danish Agency for International Development	DANIDA	state
15	Darwin Initiative / Department for Environment Food and Rural Affairs UK	DARWIN	state
16	DeBeers Consolidated Mines Ltd	DeBeers	Private
17	Directorate-General for International Cooperation	DGIS	state
18	Dutch Ministry of Foreign Affairs (Ministerie van Buitenlandse Zaken)	BuZa	state
19	Dutch Postcode Lottery	DEPost	state
20	Environment and Rural Development Foundation	ERuDeF	non-state
21	European Union	EU	Regional
22	European Commission	EC	Regional
23	European Consortium for Pacific Studies	ECOPAS	Regional
24	European Union aid to the Programme Regional de conservation et de valorisation des Ecosystemes Forestiers d'Afrique Central	ECOFAC	Regional

Code	Organization	Abbreviation	Type
25	Ezemvelo KZN Wildlife in South Africa	KZNWilldlife	non-state
26	Fauna and Flora International	FFI	non-state
27	Finland's Department of International Development Cooperation	DIDC	state
28	Fondation Internationale du Banc d'Arguin	FIBA	non-state
29	Fondation Tri National de la Sangha	TNS	non-state
30	Food and Agricultural Organization	FAO	International
31	Ford Foundation	FORDfound	Private
32	Forestry Development Authority of Liberia	FDA	state
33	Frankfurt Zoological Society (Zoologische Gesellschaft Frankfurt)	ZGF	non-state
34	French Centre for Agricultural Research for Development	CIRAD	state
35	French Development Agency	AFD	state
36	German Development Agency	GIZ	state
37	German Development Bank	KfW	state
38	Germany's Federal Ministry for Economic Cooperation and Development	BMZ	state
39	Ghana Institute of Foresters	GIF	non-state
40	Global Environment Facility	GEF	International
41	Government of Angola	GovAO	state
42	Government of Belgium	GovBE	state
43	Government of Denmark	GovDK	state
44	Government of France	GovFR	state
45	Government of Malawi	GovMW	state
46	Government of Mozambique	GovMZ	state
47	Government of Netherlands	GovNL	state
48	Government of Norway	GovNO	state
49	Government of Spain	GovES	state
50	Government of Sweden	GovSWE	state
51	Government of Tanzania	GovTZ	state
52	Government of Zambia	GovZM	state

Code	Organization	Abbreviation	Type
53	Grumeti Fund	GF	non-state
54	International Development Association	IDA	International
55	International Gorilla Conservation Programme	IGCP	non-state
56	International Institute of Tropical Agriculture	IITA	non-state
57	International Union for Conservation of Nature	IUCN	non-state
58	Italian Development Cooperation	IDC	state
59	Kadans Foundation	Kfound	Private
60	Le Fonds Français pour l'Environnement Mondial	FFEM	state
61	Mano River Union	MRO	Regional
62	Manya Rural Development Foundation	MARDEEF	non-state
63	Millenium Challenge Account Mozambique	MCA	non-state
64	Mr. Poon Liebenberg	PL	Private
65	NGO Coalition for the Environment	NGOCE	non-state
66	Norwegian Embassy in Malawi	NOembaMWs	state
67	Ortello Business Corporation (hunting)	OBC	Private
68	Peace Parks Foundation	PPF	non-state
69	Rockefeller Foundation	Rfound	Private
70	Royal Netherlands Embassy	NLembasRW	state
71	Rupert Family Foundations	RupertFound	Private
72	Safari Club International Foundation	SCI	non-state
73	Shell Petroleum Development Company	SPDC	Private
74	Societe de Developpement Forestier	SODEFOR	Private
75	Society for the Conservation of Nature in Liberia	SCNL	non-state
76	SONGAS (energy company)	SONGAS	Private
77	South Africa National Parks	SanParks	state
78	South African Government	GovZA	state
79	South African Nature Foundation	SANF	non-state
80	South African Wildlands Conservation Trust	WILDZA	state

Code	Organization	Abbreviation	Type
81	South Africa's National Lottery Distribution Trust Fund	NLDTF	state
82	Southern African Development Community	SADC	Regional
83	Swedish International Development Agency	SIDA	state
84	Swedish Postcode Lottery	SWEPost	state
85	Swiss Agency for Development and Cooperation	SDC	state
86	The Edmond de Rothschild Foundations	EDRfound	Private
87	The International Tropical Timber Organization	ITTO	International
88	The Japan Policy and Human Resources Development Fund	PHRD	state
89	Tusk Cross River Gorilla Research Project	TUSK	non-state
90	United National Environmental Programme	UNEP	International
91	United Nations Development Programme	UNDP	International
92	United Nations Education, Scientific, and Cultural Organization	UNESCO	non-state
93	United Nations Foundation	UNFound	International
94	United States of America International Development	USAID	state
95	Universidade Eduardo Mondlane Mozambique	UEM	state
96	University of Pretoria	UP	state
97	US Forest Service	FS	state
98	US State Department	GovUS	state
99	Veterinarians Without Borders (veterinaires sans frontieres)	VWB	non-state
100	Wild Chimpanzee Foundation	WCF	non-state
101	Wildlife Conservation Society	WCS	non-state
102	Wildlife Without Borders (Wildlife Sans Frontieres)	WSF	non-state
103	World Bank	WB	International
104	World Wild Fund for Nature	WWF	non-state
105	Zimbabwe Environmental Law Association	ZELA	non-state
106	University of Swaziland	USZ	state
107	Norwegian Agency for Development Cooperation	NORAD	state
108	Biodiversity Preservation Group	BPG	non-state

Code	Organization	Abbreviation	Type
109	UK Department of International Development (ODA)	DFID	state
110	African Development Bank	ADB	Regional
111	Netherlands Ministry of Foreign Affairs	NLministry	state
112	Senegal River Development Organization	OMVS	non-state
113	Namibian Ministry of Environmental Affairs and Tourism	Naministry	state
114	South African Department of Environmental Affairs	Zadepenv	state
115	German Federal Agency for Nature Conservation	BFN	state
116	Botswana Department of Wildlife and National Parks	MEWT	state
117	Government of Namibia	GovNA	state
118	Government of South Sudan	GovGOSS	state
119	International Conservation Education Fund	INCEF	non-state
120	Great Ape Conservation Fund - US Fish and Wildlife Services	USFWS-GreatApe	state
121	African Renaissance and International Cooperation Fund	ARF	state
122	Howard G. Buffett Foundation	BuffetFound	Private
123	CARE	CARE	non-state
124	Greater Virunga Transboundary Executive Secretariat	GVTES	non-state
125	Albertine Rift Conservation Society	ARCOS	non-state
126	Dian Fossey Gorilla Fund International- Karisoke Research Centre	GorillaFund	non-state
127	Mountain Gorilla Veterinary Project - Gorilla Doctors	GorillaDocs	non-state
128	MacArthur Foundation	MacFound	Private
129	Institute for Tropical Forest Conservation	ITFC	non-state
130	Makerere University Institute for Environment and Natural Resources	MUIENR	non-state
131	Norwegian Embassy in Kampala	NOembaKA	state
132	International Institute for Sustainable Development	IISD	non-state
133	Vogelbescherming	VG	non-state
134	Royal Society for the Protection of Birds	RSPB	non-state
135	Conservation Society of Sierra Leone	CSSL	non-state

Code	Organization	Abbreviation	Type
136	Conservation of Nature in Liberia	CFA	non-state
137	East African Community	EAC	Regional
138	Solimar International	SOLIMAR	non-state
139	Uganda Wildlife Authority	UWA	state
140	Rwanda Development Board	RDB	state
141	Institut National pour l'Environment et Conservation de la Nature au Burundi	INECN	state
142	Tanzania National Parks	TANAPA	state
143	InterWorks LLC.	Interworks	non-state
144	Kenya Wildlife Service	KWS	state
145	FUTOURIS	FUTOURIS	non-state
146	Deutsche Investitions- Und Entwicklungsgesellschaftmbh	DEG	non-state
147	Deutsche Welle at ITB Berlin	ITB	non-state
148	Group Madal	MADAL	Private
149	Ministry of Tourism	MITUR	state
150	PAMS Foundation	PAMS	Private
151	International Council for Game and Wildlife Conservation	CIC	non-state
152	Mantra (Tz) Ltd Canada (mining)	Mantra	Private
153	Frontier Resources Ltd Australia (mining)	Frontier	Private
154	African Parks Foundation	APF	non-state
155	Uranex (Tz) Ltd Australia (mining)	Uranex	Private
156	Game Frontiers of Tanzania	GFTSafari	Private
157	Zambia Wildlife Authority	ZAWA	state
158	Direction de la Protection de la Nature Côte d'Ivoire	DPN	state
159	Strichting African Parks Foundation	SAPF	non-state
160	Barotse Royal Establishment	BRE	non-state
161	West African Region Programme Office	WARPO	Regional
162	Chevron Texaco	CHEVRON	Private
163	Philadelphia Zoo	PHZ	non-state

Code	Organization	Abbreviation	Type
164	African Elephant Specialist Group	AfESG	non-state
165	Ministère du tourisme, République du Cameroun	MINTOUR	state
166	Ministère de l'Economie Forestière et de l'Environnement, Republique du Congo	MEFE	state
167	Species Surival commission	SSC	non-state
168	Economic Community of West African States	ECOWAS	Regional
169	Ministère des Fôrets et de la Faune, Republique du Cameroun	MINFOF	state
170	Ministère de L'Envionnement et de la Protection de la Nature	MINEPN	state
171	West African Economic and Monetary Union	WAEMU	Regional
172	Ghana Wildlife Division	GWD	state
173	Ministère de L'Environnement, des Eaux, Fôrets, Chasse et Peche, Republique Centre Africaine	MINEEFCP	state
174	Instituto Nacional de Desarrollo Forestal, Equatorial Guinea	INDEFOR	state
175	Habitat Ecologique et Liberté des Primates, Republic of Congo	HELP-Congo	non-state
176	Western Gorilla	WestGor	non-state
177	Netherlands Development Organisation	SNV	state
178	Convention on the Conservation of Migratory Species of Wild Animals	CMS	International
179	Senegalese National Parks Directorate (military adm)	DPNS	state
180	Lake Victoria Basin Commission	LVBC	Regional
181	**C**ongo **B**asin **F**orest **P**artnership	CBFP	non-state
182	Congo Basin Forest Fund	CBFF	non-state
183	Specialized Research Centre on Forest and Environment	CEREFEN	non-state
184	United Nations Office for Project Services	UNOPS	International
185	Government of Cameroon	GovCM	state
186	Government of Gabon	GovGA	state
187	Government of Congo	GovCG	state
188	The Central African Forest Commission	COMIFAC	Regional
189	Nigerian Conservation Foundation	NCF	non-state
190	International Monetary Fund	IMF	International
191	Government of Germany	GovDE	state

Code	Organization	Abbreviation	Type
192	Government of Canada	GovCA	state
193	European Development Fund	EDF	International
194	Fonds d'Aide et de Cooperation	FAC	state
195	ARCUS Foundation	ARCUS	non-state
196	Deparment of Parks and wildlife Management	DPWM	state
197	Japanese International Cooperation	JICA	state
198	Tanzania Wildlife Research institute	TAWIR	state
199	Amboseli Trust for Elephants	ATE	non-state
200	Canadian International Development Agency	CIDA	state
201	Spanish Agency for International Development Cooperation	AECID	state
202	MAVA foundation	MAVA	Private
203	Novamedia	NVM	Private
204	Deutsche Bank	DB	International
205	Peace Parks Foundation Sweden	PPF_SE	non-state
206	DaimlerChrysler	DAIMLER	Private
207	South African Reserve Bank	RESBANK	state
208	Government of Uganda	GovUG	state
209	Ministry of Tourism Environment and Culture Lesotho	MinLS	state
210	Organisation Panafricaine d ' Appui au Développement et de l ' Environnement	OPADE	Regional
211	Catholic mission	CatMis	non-state
212	Evangelic mission	EvMis	non-state
213	Société spécialisé dans l' exploitation et la transformation de bois au Cameroun(logging)	SEBAC	Private
214	Centre International de Formation et d ' Animation pour le Développement	CIFAD	non-state
215	Environmental Development Action in the Third World	ENDA	non-state

Table 6 Protected Area Categorization

Ia Strict Nature Reserve[1]
• Category Ia are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphical features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.
Ib Wilderness Area
• Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.
II National Park
• Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.
III Natural Monument or Feature
• Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.

[1] The IUCN categorization of protected areas (I-VI) IUCN. (2013). IUCN Categories Retrieved 9 September 2014, from http://www.iucn.org/about/work/programmes/gpap_home/gpap_quality/gpap_pacategories/

IV Habitat/Species Management Area

- Category IV protected areas aim to protect particular species or habitats and management reflects this priority. Many Category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

V Protected Landscape/ Seascape

- A protected area where the interaction of people and nature over time has produced an area of distinct charcter with significant, ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

VI Protected area with sustainable use of natural resources

- Category VI protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

World Heritage Convention[2]

- Created in 1972, the primary mission of the Convention is to identify and protect the world's natural and cultural heritage considered to be of Outstanding Universal Value. It embodies a visionary idea – that some places are so important that their protection is not only the responsibility of a single nation, but is also the duty of the international community as a whole; and not only for this generation, but for all those to come. The Convention's criteria are the following: (a) to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance; (b) to be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features; (c) to be outstanding examples representing

[2] IUCN. (2014). World Heritage Convention Retrieved 9 September 2014, from http://www.iucn.org/about/work/programmes/wcpa_worldheritage/about/world_heritage_convention/

significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals; (d) to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

UNESCO – MAB Biosphere Reserves[3]

- Biosphere reserves are sites established by countries and recognized under UNESCO's Man and the Biosphere (MAB) Programme to promote sustainable development based on local community efforts and sound science. As places that seek to reconcile conservation of biological and cultural diversity and economic and social development through partnerships between people and nature, they are ideal to test and demonstrate innovative approaches to sustainable development from local to international scales. Biosphere reserves are thus globally considered as: (a) sites of excellence where new and optimal practices to manage nature and human activities are tested and demonstrated; (b) tools to help countries implement the results of the World Summit on Sustainable Development and, in particular, the Convention on Biological Diversity and its Ecosystem Approach; and (c) learning sites for the UN Decade on Education for Sustainable Development.

RAMSAR Wetlands of International Importance[4]

- The Convention on Wetlands (Ramsar, Iran, 1971) -- called the "Ramsar Convention" -- is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories. A wetland should be considered internationally important if: (a) it contains representative, rare or unique wetland types; and (b) if it is a site of international importance for conserving biological diversity.

[3] UNESCO. (2014). About the Man and the Biosphere Programme (MAB) Retrieved 9 September 2014, from http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/about-mab/

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