The Importance of UN Peacekeeping Mission Orientation and Personnel for Environmental Quality

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ABSTRACT

UN peacekeeping is increasingly linked to social and economic outcomes other than the provision of security or peace. Peacekeepers, to this end, are also associated with improvements in environmental quality. This research advances theoretical arguments on peacekeepers' orientation and personnel composition to shed light on the underlying mechanisms of this relationship. Through mandates or direct action on the ground, peacekeeping missions can have a "green" orientation that likely strengthens their commitment to environmental protection. Moreover, civilian personnel can help developing state capacity that is necessary to implement and enforce environmental regulations. I analyze peacekeeping deployments in post-Cold War Africa and use fixed-effects models and matching. The empirical analysis provides evidence that environmental mission orientation and more civilian personnel correlate with better local water quality. This research contributes to our knowledge on peacekeeping operations' externalities, and it adds to the literature on environmental politics and security studies.

Keywords: Environmental Protection; Mission Orientation; Personnel; UN Peacekeeping; Water Quality

Introduction

Maintaining peace and providing security remain the core goals of United Nations (UN) peacekeeping operations (PKOs), and evidence suggests that the UN is indeed effective in delivering these outcomes (e.g., Di Salvatore and Ruggeri 2017; Hultman et al. 2013, 2014; Kathman and Wood 2011; Fjelde et al. 2019; Fortna 2004; Gilligan and Sergenti 2008; Doyle and Sambanis 2000; Autesserre 2014). But PKOs have evolved to more multidimensional interventions over the last few decades, comprising goals and shaping outcomes – even if only indirectly or unintentionally – that go beyond their traditional scope (see Doyle and Sambanis 2000; Fortna and Howard 2008; Da Costa and Karlsrud 2012). For example, Di Salvatore (2019) finds that PKOs affect crime in host countries, although missions do not always or directly address criminal activity in their mandates. Belgioioso et al. (2021) associate peaceful protests in post-conflict societies with PKOs, and Gizelis and Cao (2021) argue that women's access to medical services and education can be promoted by peacekeepers. UN peacekeeping operations can also influence households' well-being (Bove et al. 2022), shape the risk of terrorism (Di Salvatore et al. 2022), or help democratizing (Blair et al. 2023) – these are all outcomes other than the primary goal of peace and security in host countries.

The following article adds to this literature as I explore the relationship between UN peacekeeping and environmental quality, the latter broadly defined as the "condition of an environment relative to the requirements of one or more species and/or to any human need or purpose" (Johnson et al. 1997: 586). The exploitation or destruction of living natural resources thus decrease environmental quality (see Hardin 1962; Bernauer 2013). Conversely, improved environmental quality and "better" environmental protection refer to addressing and overcoming such issues by, e.g., lowering pollution in air, soil, or water – that is, environmental degradation is

reduced (Jahn 1998). Having been confronted with environmental challenges and becoming more aware of their own ecological footprint (see Krampe 2017; Krampe and Gignoux 2018; Ide 2020), UN PKOs now seek to "environmentalize" their practices, thereby making their own interventions "greener" (Maertens 2019; Maertens and Shoshan 2018; Leloup and Maertens 2023). However, the impact of PKOs on the environment seems to go beyond the footprint of individual interventions: they can shape environment quality of the host country at large. Maertens and Shoshan (2018) describe how UN peace operations began to comprise overall and more generally defined environmental elements as well as goals at least since the early 2000s (see also Leloup and Maertens 2023). Moreover, UN institutions such as the UN Environment Program (UNEP) increasingly seek to link environmental aspects with peacekeeping activities (see Jensen and Lonergan 2012). And, most recently, after the 2016 Environment Strategy of the UN Department of Field Support, the UN passed the "Declaration of Shared Commitments on UN Peacekeeping Operations" in 2018, which "support[s] environmentally-responsible solutions to [our] operations and mandate delivery." Bakaki and Böhmelt (2021) were among the first to provide robust empirical evidence for the peacekeeping—environmental protection relationship: they identify a synergistic association between UN PKOs and environmental quality of the country at large as captured by improved access to safe drinking water.

While our understanding of the peacekeeping—environment nexus improves more and more because of these and related studies, there are some limitations in the literature and crucial questions remain unanswered. First, the mechanisms linking peacekeepers to environmental quality are not always fully spelled out or tested. Existing empirical work demonstrates that there probably is a general effect of peacekeepers on environmental quality, but how this is done and via what channels remains ambiguous. Bakaki and Böhmelt (2021) operationalize PKOs

dichotomously, treating interventions as a "black box." The nature of peacekeeping interventions and their activities are more complex, though, and there are potentially very different – direct and indirect – mechanisms at work that link UN PKOs to environmental protection. Second, existing research has spatio-temporal constraints, which poses limitations on a comprehensive understanding of peacekeepers' impact on the environment. That is, the focus of previous work is either on the ecological footprint of individual missions (spatial constraint, see Leloup and Maertens 2023) or data are limited to peacekeepers' interventions until about the early 2010s (temporal limitation, see Bakaki and Böhmelt 2021). Having said that, a significant number of operations only began including environmental elements in the more recent past, and the influence stemming from PKOs likely goes beyond their own ecological footprint.

I seek to address these points by disaggregating UN PKOs in order to shed light on the actual mechanisms, which influence environmental quality, and empirically test these using quantitative data on African (post-) conflict environments in the post-Cold War era. Theoretically, I focus on peacekeeping missions' orientation, i.e., whether their mandates (direct and indirect ones) or direct activities on the ground comprise environmental elements. I also explore the composition of personnel, distinguishing between uniformed troops and civilian staff. The development of the corresponding arguments combines claims from the research on externalities and indirect PKO consequences (e.g., Di Salvatore 2019; Belgioioso et al. 2021; Gizelis and Cao 2021; Bakaki and Böhmelt 2021; Bove et al. 2022; Di Salvatore et al. 2022; Blair et al. 2023) with studies on environmental quality (e.g., Caviglia-Harris et al. 2009; Farzin and Bond 2006; Ward 2008; Bernauer and Koubi 2009; Jahn 1998, 2016; Bernauer 2013; Böhmelt et al. 2018). On one hand, I contend that PKOs need to commit to actually address an environmental problem. If peacekeeping operations have a "green" orientation through environmental elements in their mandates or

activities on the ground, such commitment is more strongly and credibly given. On the other hand, I argue that state capacity is necessary for the host government to implement and monitor changes in humans' environmental behavior, to enforce environmental regulations, and to compensate losers of "greener" policies. UN interventions can contribute to building this capacity, though their personnel composition matters: PKOs with larger numbers of civilian personnel likely build state capacity more effectively than missions with more uniformed personnel.

The empirical analysis of these mechanisms is based on data capturing environmental quality on the ground, i.e., improved access to drinking water and sanitation, which I bring together with information on operations' orientation (UNEP 2012; Maertens and Shoshan 2018) and peacekeepers' composition (see Blair 2020, 2021; Blair et al. 2023; Di Salvatore et al. 2022). I use two-way fixed-effects models and matching. These different specifications essentially compare countries being exposed to UN peacekeeping with conflict states that have not experienced the same event (e.g., Fowler and Hall 2015: 45), and also account for the fact that peacekeeping missions are not randomly assigned to conflicts and post-conflict societies. Instead, UN PKOs tend to select themselves to the more difficult cases and ignoring this process may bias estimates of their influence (see Fortna 2004; Gilligan and Sergenti 2008; Hultman et al. 2013, 2014; Meiske and Ruggeri 2017; Bove and Ruggeri 2019).

The existing literature suggests that PKOs matter for environmental quality (Bakaki and Böhmelt 2021; Leloup and Maertens 2023), but it is not known how this is done. Similarly, previous works highlight that PKOs' commitment and composition are important (e.g., Bove et al. 2020; Blair 2020, 2021; Blair et al. 2023), but thus far we do not know how these are related to environmental outcomes on the ground. Hence, while earlier research has made several important contributions, it does not shed light on why and how PKOs are likely conducive to environmental

quality on the ground. I provide the first study that explicitly targets the mechanisms underlying the peacekeeping—environment nexus, hypothesizes that mission orientation and composition are core channels of influence here, and then tests that expectation.

I further contribute to the literature on the less direct consequences of peacekeeping and PKO externalities (e.g., Di Salvatore 2019; Belgioioso et al. 2021; Gizelis and Cao 2021; Bakaki and Böhmelt 2021; Bove et al. 2022; Di Salvatore et al. 2022; Blair et al. 2023). Exploring the impact of PKOs besides their association with peace and security has only recently emerged, and particularly the work on the environmental influence of peacekeepers is less developed. However, environmental issues including climate change belong to the most pressing policy problems of our time. By focusing on the actual avenues that peacekeepers can take to shape environmental quality and showing that UN missions are able to contribute to addressing key ecological problems, even if this is not the main goal in the first place, I advance the research on the PKO—environment nexus significantly. En route, I extend the literature on "green peacekeepers" (e.g., Maertens and Shoshan 2018; Maertens 2019; Leloup and Maertens 2023) by demonstrating that missions can help improving the environmental performance of their host countries at large, not only the own ecological footprint of a deployment.

I also seek to further the literature on environmental politics and outcomes (e.g., Bernauer and Koubi 2009; Jahn 2016; Guy et al. 2023). PKOs in general, and their mission orientation or personnel composition in particular, are not normally considered as factors in addressing environmental problems. Of course, this is due to the original scope and aim of PKOs, i.e., peace and security in conflict contexts. I address this by analyzing the relationship between PKOs and environmental quality in depth, specifically paying attention to the actual mechanisms that can turn peacekeepers into promoters of environmental protection.

Finally, and derived from the previous points, we know that cooperation over environmental projects can lower political violence and the risk of armed conflict (see, e.g., Ide and Detges 2018; Ide 2019; Ide and Tubi 2020; Ide et al. 2021, 2023). The findings presented here, namely that PKOs' mission orientation and their personnel composition can help improving environmental quality, then further add to the debate on PKOs' effectiveness in their core areas of interest: UN missions not only directly shape peace and security, but also indirectly one via their association with environmental cooperation and protection.

How Peacekeepers Can Improve Environmental Quality: Orientation and Composition

When ecological resources are over-exploited or destroyed, an environmental problem emerges (see Hardin 1962; Johnson et al. 1997; Bernauer 2013). Yet, such environmental issues can be addressed and solved if two conditions are met (see Bernauer 2013; Jahn 2016). First, actors that can and are willing to deal with an environmental problem (even if only partly) must be committed to do so. Without commitment, any long-term engagement is less likely to be given, and notably environmental problems require solutions beyond the short-term focus. Second, actors that can and are willing to deal with an environmental problem (even if only partly) must also have sufficient capacity at their disposal to implement and enforce behavioral changes. In the following, I develop the argument that peacekeepers can, depending on their mission orientation and personnel composition, influence and contribute to both aspects, i.e., commitment and capacity (building).

Commitment via Missions' Environmental Orientation

In 2009, the UN Department of Field Support adopted the Environmental Policy for peacekeeping operations. This was further supported in 2016, when the UN Environment Assembly implemented a resolution to recognize "the role of healthy ecosystems and sustainably managed resources in reducing the risk of armed conflict." This was echoed by the UN Secretary-General, António Guterres, in the 2016 Environment Report where he emphasized that "protecting our environment is critical to the founding goals of the United Nations to prevent war and sustain peace." Hence, the UN acknowledges environmental problems, the need to address them, and intends to commit itself to this, also with a view toward peace and security as the core goals of UN PKOs. However, even in light of the most recent (2018) "Declaration of Shared Commitments on UN Peacekeeping Operations," there is no automatic mechanism that translates these general policies into actual commitment and missions' work in host countries. However, operation mandates and direct activities on the ground can be of use here.

First, mandates are the legal framework of PKOs and specify "what peacebuilders are supposed and allowed to do during a mission" (Steinert and Grimm 2015: 519). PKO mandates legitimize peacekeepers' activities on the ground and provide them with a series of goals that should be achieved. What peacekeepers do and, potentially, how they implement this can, thus, strongly be driven by their mandates (Bakaki and Böhmelt 2021). But although PKOs are now more multidimensional (Fortna and Howard 2008: 285) that seek to bring about changes on several outcomes not linked to the traditional peace–security focus (Barnett et al. 2014), environmental quality is not always considered as a goal or explicitly mentioned as an important element of activities to take into account – even if the UN as the umbrella organization does recognize the need for environmental protection.

Still, UN mission mandates can and, in fact, frequently do include environmental elements or specify goals pertaining to environmental quality aiming at improving the host country's environment at large. For example, the mandate of the United Nations Mission in Liberia (UNMIL, 2003-2018) specified explicitly that peacekeepers would have the direct mandate to "assist the government in restoring proper administration of natural resources." And the peacekeepers of UNMIS (Sudan, 2005-2011) had an indirect mandate to promote environmental protection including the provision of water due to their direct mandate to "support the implementation of the Comprehensive Peace Agreement." As Di Salvatore et al. (2022), among others, discuss, such mandates are not "cheap talk." Hence, if mandates specify environmental goals, it can be assumed that pursuing them is meant to be an integral part of the mission and peacekeepers' performance will be assessed based on whether these goals have been achieved or not (see also Heldt 2011). If PKO mandates do not comprise environmental elements, missions rather focus on meeting the goals that are indeed laid out by the mandate, especially as resources available for an intervention to achieve its goals are often limited.

Di Salvatore et al. (2022; see also Blair et al. 2023) argue and show, however, that mandates are not self-enforcing either and that UN missions can often deviate from mandate goals. Another aspect to consider for mission orientation, therefore, is peacekeepers' direct activity on the ground. Some deployments do not refer to environmental issues in their mandate directly or indirectly, but nevertheless comprise units or officers entirely dedicated to environmental issues based on, e.g., the 2009 UN Department of Field Support's Environmental Policy. Hence, the overall orientation of a mission may comprise actual activities (via officers or units) on the ground, not just some loose commitments on paper. For instance, the Multidimensional Integrated Stabilization Mission in Mali (MINUSMA) incorporates an environmental action plan "to observe the management of

solid and dangerous waste, energy, water, wastewater, flora and fauna." Other examples of direct environmental activities on the ground (Bruch et al. 2016; Maertens and Shoshan 2018) pertain to, e.g., the MINUSCA mission in the Central African Republic (entire unit for "environment and occupational health and safety"), the UN Organization Stabilization Mission in the DR Congo (MONUSCO; entire unit dedicated to "environmental protection"), the operation in Somalia (UNSOS; entire unit dedicated to "environment and occupational health and safety"), the various missions in (South) Sudan (UNAMID, UNISFA, UNMISS; entire units dedicated to "environmental compliance"), or the UN Mission for the Referendum in Western Sahara (MINURSO, an officer dedicated to environmental issues).

Against this background, if the mission orientation of a UN PKO includes "green" components due to its mandate or activities on the ground in the form of units/officers dedicated to the environment, it more strongly and credibly commits peacekeepers to fulfilling these (North 1993: 13; see also Shepsle 1991). Explicitly formulating and including environmental elements in missions' orientation not only signals that PKOs recognize environmental quality and protection as something that needs to be dealt with, but also fosters peacekeepers' commitment to allocate sufficient resources necessary to effectively help improving environmental quality (see Di Salvatore et al. 2022). To this end, a "green orientation" makes it more difficult for PKOs to withdraw their commitment from dealing with environmental issues. Considering this discussion, I formulate the first hypothesis:

Environmental Orientation Hypothesis: PKOs with an environmental orientation are positively related to better environmental quality.

Capacity Building via Peacekeeping Personnel

Negative externalities stemming from an environmental issue are more severe and the ability to deal with them less strongly pronounced in countries with low levels of state capacity (see Povitkina 2018). This is especially problematic in Africa, the empirical focus of my study, where many states lack governance and regulatory control means (see Ward and Dorussen 2015) and, hence, are poorly suited to manage environmental pressures or the rising public demand for environmental public goods. Adamson (2006: 176) echoes this when emphasizing that states "with high levels of institutional capacity are in a much better position to adapt […] than are weak or failing states."

There are different ways to define state capacity (Hendrix 2010; Hanson and Sigman 2021). However, what matters most for environmental quality and protection likely pertains to "material resources and organizational competencies internal to the state that exist independently of political decisions about how to deploy these capabilities" (Hanson and Sigman 2021: 1496). This mirrors Kaufmann and Kraay (2008: 6) who define state capacity as "the capacity of the government to effectively formulate and implement sound policies" (see also Cingolani 2013; Centeno et al. 2017; Böhmelt et al. 2019: 77). Against this background, for addressing environmental problems effectively, the government must have the capacity to actually draft and implement legislation (see Bättig and Bernauer 2009). That is, the executive has to pass and implement new, more ambitious environmental policy, backed up by professionalism of the state apparatus (Böhmelt et al. 2019: 78) and effective enforcement (see Hanson and Sigman 2021). Countries with high state capacity are more likely to be able to deliver on these accounts.

State capacity in some African countries, especially those plagued by conflict in the past, is less developed (see Ward and Dorussen 2015), but peacekeeping interventions can help governments

building it. I argue that this depends on PKOs' composition, though. Missions vary in the way they combine uniformed and civilian personnel, and either type has different strengths and weaknesses on the ground that are relevant for assisting host nations in capacity building. On one hand, (larger numbers of) uniformed personnel are better equipped to address security issues, to reduce violence, to neutralize threats from armed conflict, and to provide stability on the ground (Di Salvatore and Ruggeri 2017; Fjelde and Smidt 2022; Blair et al. 2023). As Blair et al. (2023: 5) conclude, "uniformed personnel can provide security while host state capacity is being built." Hence, uniformed troops do not directly build state capacity, but they probably contribute to providing for a safe context in which the host nation can do this itself.

On the other hand, civilian personnel do not deliver security or address threats from armed conflict directly. But this is not their purpose in the first place (High-Level Independent Panel on United Nations Peace Operations 2015). Instead, civilian personnel directly aim at the capacity building of host nations (Blair 2020, 2021). According to Blair et al. (2023: 5), "civilian personnel are especially important for capacity building, broadly defined" as civilian personnel can help building state capacity by educating citizens (see also Blair 2020, 2021), e.g., on the safe use of water and sanitation. They can also train governmental agencies, provide technical assistance, and offer professional development to improve professionalism of the state apparatus. Thus, the argument establishing a strong link between civilian personnel and state-capacity building developed in Blair (2020, 2021) and Blair et al. (2023) likely also applies to environmental quality. I contend that via that route, more civilian personnel are likely more crucial for improving environmental quality than uniformed personnel.

Personnel Composition Hypothesis: PKOs with more civilian personnel are more strongly related to better environmental quality.

To summarize the theoretical arguments, I focus on two factors, i.e., mission orientation and personnel composition, which I hypothesize to help improving environmental protection. This occurs either more directly (via "green" mission orientation through mandates and activities on the ground) or more indirectly (via the capacity building of host nations). Considering the formulation of the hypotheses (Table 1), the influences of these two factors should materialize independently of each other (see also Blair et al. 2023). I thus include mission orientation and personnel additively in the empirical models.

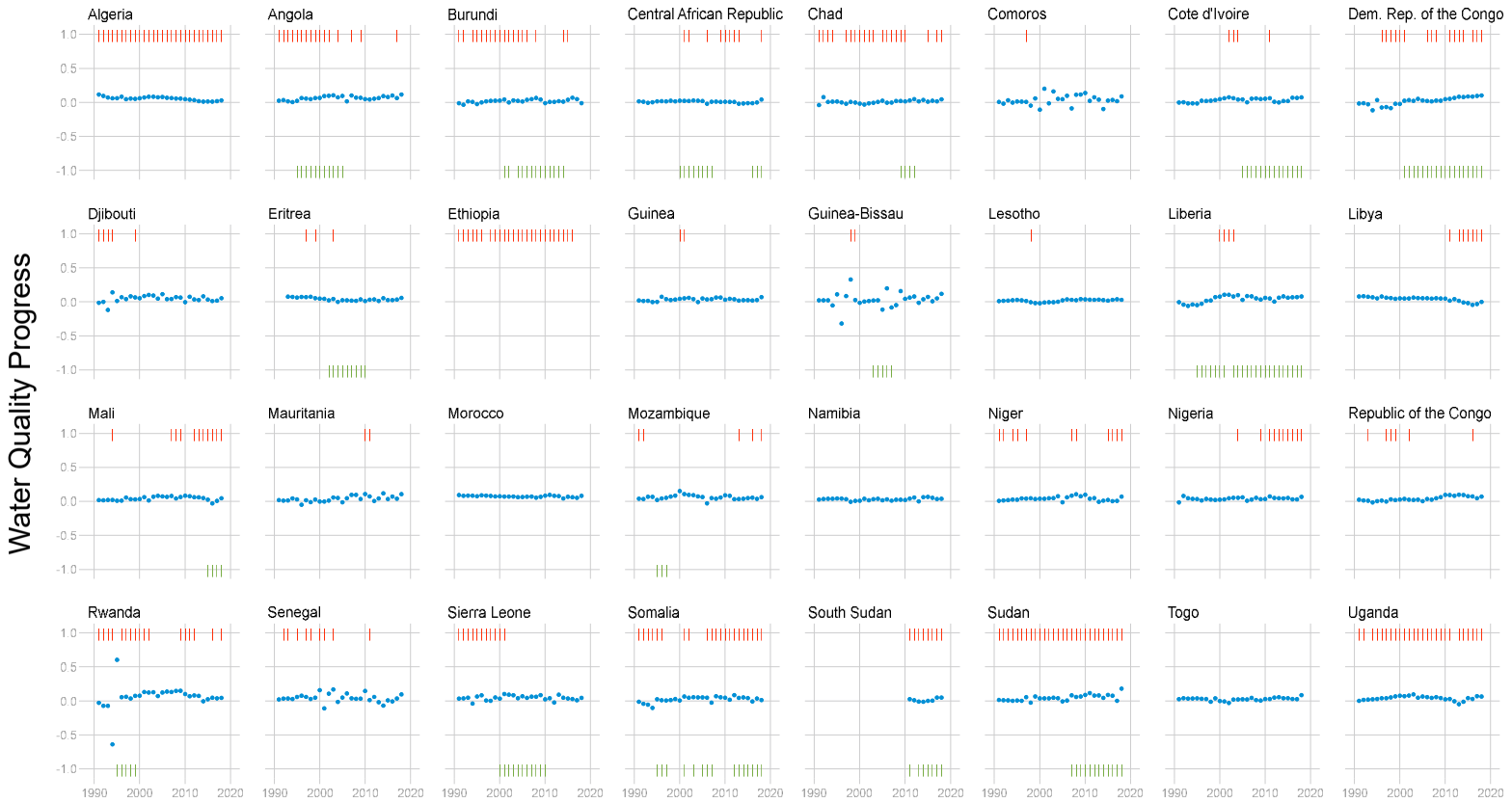
Table 1. Summary of Factors, Mechanisms, and Hypotheses

Relevant Factors	Mechanism	Hypothesis
Commitment to solving environmental problem	Mission orientation comprising environmental elements (via mandate or activities) signals stronger and more credible commitment to environmental protection	Environmental Orientation Hypothesis
Building of state capacity	Civilian personnel directly focus on capacity building and provide technical/material assistance or citizen education	Personnel Composition Hypothesis

Sample, Data, and Main Variables

The empirical analysis is based on data covering all sub-Saharan African conflict and post-conflict countries between 1995 and 2018. Conflicts and interventions before the end of the Cold War are thus not included in my analysis. Contemporary types of PKOs emerged more frequently with the end of the Cold War and environmental concerns have rarely been considered for mission orientations before the 1990s. The African focus is due to the fact that this continent remains the spatial emphasis of peacekeeping worldwide. The list of conflicts and post-conflict years I use for my data is derived from Blair et al. (2023).

Figure 1. Water Quality Progress – Environmental Quality



Notes. Progress in water quality is denoted by blue dots. Top vertical bars denote conflict incidence, while bottom vertical bars denote peacekeeping presence in a country.

The country-year is the unit of analysis in this time-series cross-sectional data set, which comprises information on environmental quality, data on the uniformed as well as civilian personnel, and the details of UN peacekeepers' "green" mission orientations. The models below are estimated for samples of all country-years (conflict and post-conflict years) and conflict-years only. The theoretical rationale behind the focus on conflict-years is because the relationship between my core variables of interest and the outcome could be weakened in times of active fighting. Under those circumstances, as argued in, e.g., Blair et al. (2023), peacekeepers may find it more difficult to deliver on mission goals other than security and peace – usually their main focus. At the same time, capacity-building could also be more challenging. What is more, we know that conflict can negatively affect domestic-level cooperation over water; to this end, if conflict worsens water cooperation and, hence quality, peace should improve it (see Böhmelt et al. 2014). Only once fighting has ceased will PKOs be in a better position to effectively address environmental problems. On one hand, the situation on the ground allows for focusing on elements besides the core goals of peace and security. On the other hand, and derived from this shift in focus, resources can be moved toward achieving these other goals as they are no longer (fully) needed to provide security alone. As a result, the impact of environmental orientation and deployments' composition could change as the conditions in a host nation become more violent.

For environmental quality as my dependent variable, I use an item on the number of age-standardized disability-adjusted life-years lost per 100,000 persons (DALY rate) due to unsafe water sources and sanitation from the 2019 Global Burden of Disease study by Kyu et al. (2018).[1] The dependent variable in Bakaki and Böhmelt (2021) is the inverse of the subtracted logarithm of DALY rates in the current and the previous calendar year due to unsafe water and sanitation,

[1] Available online at: https://ghdx.healthdata.org/gbd-results-tool.

and I follow this operationalization. It ranges between −0.637 and 0.605, with higher values standing for more water-quality progress. Negative values of the dependent variable pertain to more life-years lost, while positive values are related to fewer life-years lost. Figure 1 outlines the development of the dependent variable for all countries in the observation period.

The literature offers and discusses several options to operationalize environmental quality (e.g., Ward 2006; Bernauer and Koubi 2009; Caviglia-Harris et al. 2009; Bernauer and Böhmelt 2013; Cao and Ward 2015). While "no single measure is ideal for all purposes" (Böhmelt et al. 2018: 483), there are essential criteria for any environmental-quality indicator (Jahn 2016: 91ff): the variable is at the outcome level, human activity and political action can influence it, it refers to an obvious problem and can be subject to government regulations, there are available abatement technologies for implementation of the regulations, and data are available for a large set of countries and comparable over time. My operationalization of the dependent variable meets these criteria as I focus on an environmental aspect that PKOs, at least in principle, can shape directly: drinking water and sanitation, and the improvement of the corresponding infrastructure (Bruch et al. 2016). The specification of my dependent variable also mirrors Jahn (2016: 93) who argues that any environmental-quality measure should focus on changes in environmental aspects. And Johnson et al. (1997) stress that water pollution is a core component of any understanding of environmental quality.

Coming to the core explanatory variables, I first create a binary variable coding PKOs in conflict and post-conflict-years using the International Peace Institute's Providing for Peacekeeping (P4P) data[2] and Blair's (2020, 2021) data on civilian personnel deployed in UN missions. The final dichotomous variable combines both sources and receives a value of 1 if any

[2] Available online at: https://www.providingforpeacekeeping.org/.

peacekeeping force has been deployed to a country (0 otherwise). The item is lagged by two time periods to avoid problems with reverse causality (see also Blair et al. 2023). The composition of a mission or its orientation is of no importance for this variable. Out of 728 observations in my data, 165 (22.66 percent) are coded as 1. Second, I then disaggregate this variable into two count variables capturing the composition of deployments: one variable on the number of uniformed personnel (in 1,000s) as defined by the P4P data, the other item is on the number of civilian personnel (in 1,000s) as defined by Blair (2020, 2021). The two count variables are also lagged by two time periods. According to P4P, uniformed personnel comprise military troops, police forces, and military observers. Civilian personnel include international staff, national staff, government-provided personnel, and UN volunteers (Blair 2020, 2021).

For the last of the core explanatory variables, I draw on information from a UNEP (2012: 10) report and Maertens and Shoshan (2018: 12) to code missions with an explicit environmental orientation. A deployment's "green orientation" is coded based on missions' actual mandate texts, but also on indirect mandates of a mission and direct mission activities on the ground. As indicated above, the mandate of the UNMIL mission specified explicitly that peacekeepers would have the direct mandate to "assist the government in restoring proper administration of natural resources." Moreover, some deployments do not refer to environmental issues in their mandate directly or indirectly, but comprise units or officers entirely dedicated to environmental issues due to, e.g., the UN Department of Field Support's 2009 Environmental Policy or the 2016 Environment Strategy. The orientation of such missions, e.g., MONUSCO (Democratic Republic of the Congo) with their "Environmental Protection" unit, are also coded as "green." Hence, environmental orientation frequently comprises actual activities (via officers or units) on the ground, not just some loose commitments on paper. Ultimately, given these coding instructions, missions that have

an environmental or "green" orientation are Angola UNAVEM (I, II, III) / MONUA 1989-1999, Côte d'Ivoire UNOCI 2004-2017, DRC MONUC / MONUSCO 1999- (ongoing), Liberia UNMIL 2003-2018, Sierra Leone UNAMSIL 1999-2005, Sudan UNMIS 2005-2011, Sudan Darfur UNAMID 2007-2020, and South Sudan UNISFA / UNMISS 2011- (ongoing). For related mission-years and mandates after the publication of the UN report (2012) or Maertens and Shoshan (2018), I assume that existing environmental references have been carried forward to the most recent year. If a mission is not listed by the reports, I assume that an environmental orientation did not exist. I use this information to code missions' orientations as "green" and create a binary indicator on whether a PKO mission is based on an environmental orientation (1) or not (0). Note that this variable is coded at the mission level, not the country level. This last explanatory variable has a few more missing values than the other core explanatory items (see Tables A1-A2 and A12 in the Supporting Information, SI). Note, however, that the results remain unchanged when using the same sample across the three items' estimations (Table A12 in the SI).

Estimation and Identification

The main empirical models I present are two-way fixed effects OLS regressions. The fixed effects are based on countries and years and, thus, control for unobserved time-invariant unit-level influences and common temporal shocks, respectively. I also include a lagged dependent variable in all estimations to address unit-specific temporal path dependencies in water-quality progress.

Two issues merit discussion here. First, there is the challenge of Nickell (1981) bias when including a lagged dependent variable in two-way fixed effects OLS regressions. The bias diminishes as time increases, but only a few years in combination with several countries does not fully eliminate the issue. To this end, Table A9 in the SI presents the core models (see below)

without a lagged dependent variable. The results are qualitatively like what is discussed in the next section. Second, while the approach of a two-way fixed effects setup has many advantages, the literature also questions the use of fixed effects altogether (see, e.g., Imai and Kim 2021). I thus examine the robustness of my findings by considering random effects and by excluding unit-level fixed effects from the estimation. The results of these analyses are presented in Table A10 and Table A11 of the SI.

In most model estimations, I include control variables for population, income and income squared, fuel exports, and regime type. These items are lagged by three time periods to avoid issues stemming from post-treatment bias and address concerns over alternative influences of environmental quality. Their operationalization as well as data sources are presented in the first section of the SI.

Selection bias is prominent in the study of peacekeeping (Doyle and Sambanis 2006; Gilligan and Stedman 2003; Fortna 2008; Blair et al. 2023): PKOs are not randomly assigned to host nations, but deployments follow very strategic patterns and considerations.[3] The fixed-effects models control for selection effects based on observables, but I consider another approach to

[3] Peacekeepers may be deployed either to the "easier" or the more difficult cases (Fortna and Howard 2008: 290). Assigning peacekeepers to the former type of (post-) conflicts makes it more likely to be effective (Carter 2007; Gilligan and Stedman 2003). That said, interventions are not needed here, but in the more challenging, harder cases where antagonists may find it difficult to settle a dispute on their own (Fortna 2004; Dorussen 2023). With preliminary data analysis, I explored whether a similar rationale applies to the consideration of environmental aspects in peacekeeping missions' orientations: environmentally more vulnerable states could be more likely to attract PKOs with a "green" orientation; at the same time, it may be equally plausible that PKOs have an environmental orientation when deployed to environmentally less vulnerable countries, although these tend to be better able to adapt to and mitigate environmental problems themselves. Consistent with the rationale that interventions strategically select into the more difficult cases, I find some evidence for a relationship between host countries' exposure to climate change (climate-change related disasters from the Emergency Events Database (EM-DAT) and significant temperature deviations from a long-term average from the National Aeronautics and Space Administration Goddard Institute for Space Studies) and PKOs with an environmental orientation.

address this problem as I employ Coarsened Exact Matching (CEM; Blackwell et al. 2009; Iacus et al. 2012) to pre-process the data: this allows us to identify the association between UN interventions and environmental quality with more precision, since the analysis is based on a sample that is virtually identical in the control variables. Country-years only differ in whether they have seen the deployment of peacekeepers or not. The combination of the two estimation strategies, i.e., two-way fixed effects and matching, is important as, on their own, each approach has certain drawbacks and cannot fully address, e.g., concerns over selection bias. However, considered together, the two-way fixed effects regression and CEM help support a more accurate interpretation of the findings (see Blair et al. 2023).

Empirical Results

Table 2 presents the results pertaining to the binary peacekeeping variable.[4] According to Models 1-3, *UN Peacekeeping* is positively and statistically significantly associated with the water-quality outcome variable. This correlation is robust to changing the sample (all country-years vs. conflict years only) and the inclusion of controls (Models 2-3). Peacekeeping, therefore, is indeed linked to lowering the DALY rate due to unsafe water and sanitation and, hence, improving environmental quality on the ground beyond the ecological footprint of a mission as such. For the first model, for example, we obtain a coefficient estimate of 0.010, which translates into an improvement of 1.010 life-years per 100,000 persons for any UN mission intervening, all else equal.

[4] Thus, Table 1 implements the basic specifications of Bakaki and Böhmelt (2021).

Table 2. Environmental Quality and UN Peacekeeping

	Model 1	Model 2	Model 3
UN Peacekeeping	0.010*	0.011*	0.018**
	(0.005)	(0.006)	(0.007)
Observations	702	691	241
Controls	No	Yes	Yes
Lagged Dependent Variable	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Active Conflict	No	No	Yes

Notes: Table entries are two-way fixed effects OLS coefficients. The standard errors are in parentheses. Model 1 is the full sample without controls, Model 2 is the full sample with controls, and Model 3 is the active-conflict sample (no peace years) with controls. In the models with controls (Model 2 and Model 3), I include variables for population, income and income squared, fuel exports, and regime type. Tables with all variables and variable operationalizations can be found in the SI.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Having said that, the theoretical argument advanced in this study focuses on the mission orientation and personnel composition of UN PKOs. The theory suggests that environmental mission orientation should be positively linked to the water-quality progress measure (*Environmental Orientation Hypothesis*), and that civilian personnel should be more strongly associated with environmental quality (*Personnel Composition Hypothesis*). Table 3 focuses on the environmental orientation of UN PKOs. Models 4-5 test the *Environmental Orientation Hypothesis* directly, while Model 6 is for conflict-cases only. The explanatory variable, *Green Orientation*, is positively signed and statistically significant in all Models 4-6. Hence, adding or omitting the control variables and focusing on a conflict-only sample does not alter the substance of the finding. Also note that the coefficient estimate is stronger than in Table 2, which suggests that missions with an environmental orientation outperform "regular" UN deployments that do not explicitly deal with environmental issues. For Model 5, for instance, we obtain a coefficient estimate of 0.034, which translates into an improvement of 1.034 life-years per 100,000 persons

for any UN mission with a green orientation intervening, all else equal. This association is also graphically displayed in the left panel of Figure 2. These findings support the *Environmental Orientation Hypothesis*.

Table 3. Environmental Quality and UN PKO Orientation

	Model 4	Model 5	Model 6
Green Orientation	0.029***	0.034***	0.063***
	(0.009)	(0.008)	(0.012)
Observations	686	675	237
Controls	No	Yes	Yes
Lagged Dependent Variable	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Active Conflict	No	No	Yes

Notes: Table entries are two-way fixed effects OLS coefficients. The standard errors are in parentheses. Model 4 is the full sample without controls, Model 5 is the full sample with controls, and Model 6 is the active-conflict sample (no peace years) with controls. In the models with controls (Model 5 and Model 6), I include variables for population, income and income squared, fuel exports, and regime type. Tables with all variables and variable operationalizations can be found in the SI.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4. Environmental Quality and Uniformed Personnel

	Model 7	Model 8	Model 9
Uniformed Personnel	0.002***	0.002***	0.003***
	(0.000)	(0.001)	(0.001)
Observations	702	691	241
Controls	No	Yes	Yes
Lagged Dependent Variable	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Active Conflict	No	No	Yes

Notes: Table entries are two-way fixed effects OLS coefficients. The standard errors are in parentheses. Model 7 is the full sample without controls, Model 8 is the full sample with controls, and Model 9 is the active-conflict sample (no peace years) with controls. In the models with controls (Model 8 and Model 9), I include variables for population, income and income squared, fuel exports, and regime type. Tables with all variables and variable operationalizations can be found in the SI.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5. Environmental Quality and Civilian Personnel

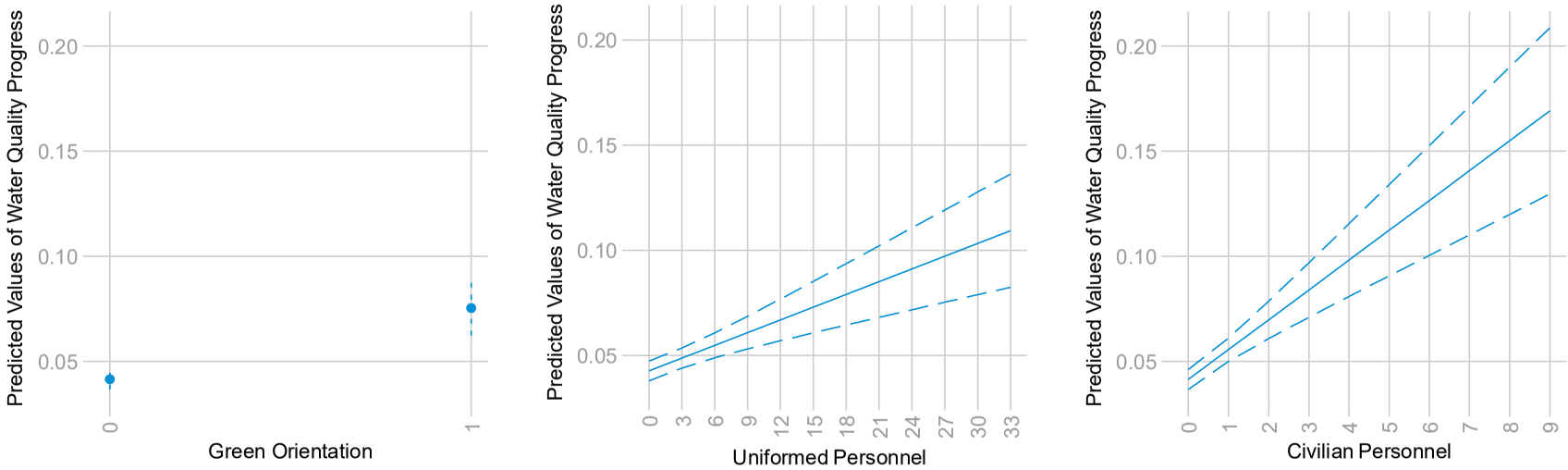
	Model 10	Model 11	Model 12
Civilian Personnel	0.014***	0.014***	0.018***
	(0.003)	(0.003)	(0.003)
Observations	702	691	241
Controls	No	Yes	Yes
Lagged Dependent Variable	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Active Conflict	No	No	Yes

Notes: Table entries are two-way fixed effects OLS coefficients. The standard errors are in parentheses. Model 10 is the full sample without controls, Model 11 is the full sample with controls, and Model 12 is the active-conflict sample (no peace years) with controls. In the models with controls (Model 11 and Model 12), I include variables for population, income and income squared, fuel exports, and regime type. Tables with all variables and variable operationalizations can be found in the SI.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4 presents the correlations of uniformed personnel with environmental quality, while Table 5 focuses on the association between civilian staff and the water-quality progress item. The correlation estimated in Table 4 mirrors the findings from Tables 2-3 in that I obtain evidence for a positive and significant influence on water-quality progress. Yet, the coefficients across Models 7-9 as well as Models 10-12 (Table 5) offer a more detailed understanding of how UN PKOs affect environmental quality as deployments are now disaggregated by type. To this end, for example, the coefficient estimate of *Uniformed Personnel* in Table 4 ranges between 0.002 and 0.003, which may translate into an improvement of about 1.003 life-years per 100,000 persons for any 1,000 uniformed personnel deployed in a mission. This substantive association is graphically displayed in the center panel of Figure 2. The estimated correlation in Table 5, which is based on civilian personnel, ranges between an improvement of 1.014 and 1.018 life-years per 100,000 persons for any 1,000 civilian personnel deployed per PKO. The right panel in Figure 2 summarizes the corresponding substantive quantity of interest.

Figure 2. Predicted Values of *Water Quality Progress*



Notes: The dashed lines are 90 percent confidence intervals. The left panel is based on Table 3, Model 5. The center panel is based on Table 4, Model 8. The right panel is based on Table 5, Model 11.

Table 6. Exploring Environmental Quality Using Coarsened Exact Matching

	Model 13	Model 14	Model 15
Green Orientation	0.035**		
	(0.016)		
Uniformed Personnel		0.001	
		(0.001)	
Civilian Personnel			0.008*
			(0.004)
Observations	113	119	119
Controls	Yes	Yes	Yes
Lagged Dependent Variable	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Active Conflict	No	No	No

Notes: Table entries are two-way fixed effects OLS coefficients after employing Coarsened Exact Matching. The standard errors are in parentheses. Model 13 focuses on *Green Orientation*, Model 14 focuses on *Uniformed Personnel*, and Model 15 focuses on *Civilian Personnel*. In all models, I control for population, income and income squared, fuel exports, and regime type. Tables with all variables and variable operationalizations can be found in the SI.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The models in Table 6 are based on Models 5, 8, and 11, respectively, but the data have been pre-processed by CEM (Blackwell et al. 2009; Iacus et al. 2012). Hence, the samples analyzed in Models 13-15 are virtually identical in the control variables' values and distributions, but data points differ in whether they received the treatment, i.e., the deployment of peacekeepers (binary variable as used in Table 2), or not. As described by Di Salvatore (2019: 849), this matching procedure "coarsens the sample on a set of variables; once observations are divided into strata, weights balance the number of treated (with peacekeeping) and untreated (without peacekeeping) observations in each stratum. This alleviates selection bias and model dependence." I employ matching based on all control variables, as this significantly increases the balance in the post-matched sample between treated and control cases. Examining the results in Table 6 and comparing these with the earlier findings, we see that *Green Orientation* remains to be strongly and positively associated with local water quality as I obtain a coefficient of 0.035. *Civilian*

Personnel is also positively signed and significant at conventional levels, but weaker in terms of substance. The variable on uniformed personnel is not statistically significant. In sum, the two-way fixed effects models and the matching analysis support the *Environmental Orientation Hypothesis* and the *Personnel Composition Hypothesis*. In other words, a green orientation of UN PKOs as well as personnel composition matter, and although I find evidence for a positive association of either uniformed personnel or civilian personnel with environmental quality in Tables 4-5, I have more certainty about the influence of civilian personnel than the association of uniformed troops with environmental quality on the ground.

In the SI, I present a large number of additional analyses that further support the arguments introduced above. First, I consider the three main explanatory variables simultaneously (Table A6) and employ panel-corrected standard errors (Table A7). I also cluster the standard errors by country (Table A8) and omit the lagged dependent variable from the models (Table A9). In Table A10, I replace the fixed effects by random effects, before dropping random/fixed effects altogether in Table A11. In Table A12, I summarize models based on identical samples, while Tables A13-A14 consider alternative dependent variables: renewable energy consumption and renewable energy output. I also examine the robustness of the findings when using a binary water-quality progress variable (Table A15). As a last alternative for the dependent variable, I consider CO_2 emissions per capita as a general proxy for environmental quality in Table A16. Finally, Table A17 is based on an instrumental-variable approach. All these robustness check provide strong support for my hypotheses and the empirical findings discussed in the main text.

Conclusion

There is increasing evidence that UN PKOs are related to outcomes besides peace and security (e.g., Di Salvatore 2019; Belgioioso et al. 2021; Gizelis and Cao 2021; Bakaki and Böhmelt 2021; Bove et al. 2022; Di Salvatore et al. 2022; Blair et al. 2023). These influences may sometimes be more indirect than direct and more unintentional than purposefully planned, but they are nonetheless important as they pertain to core aspects of national and international policy agendas. Environmental politics is such a factor (e.g., Caviglia-Harris et al. 2009; Farzin and Bond 2006; Ward 2008; Bernauer and Koubi 2009; Jahn 1998, 2016; Bernauer 2013; Böhmelt et al. 2018): although the UN has recognized environmental and climate change as policy priorities, also in their mission to provide peace and security, it has only more recently emerged that mission orientations specify environmental elements or goals. On top of that, although existing research provides us with robust evidence that peacekeepers can shape environmental outcomes on the ground, also beyond the ecological footprint of their mission (Maertens and Shoshan 2018; Bakaki and Böhmelt 2021; Leloup and Maertens 2023), we thus far lacked a clear understanding of the precise mechanisms linking PKO activities with environmental quality.

This article has sought to help addressing this gap. Concentrating on missions' orientation and their composition, I advanced theoretical arguments on environmental elements in interventions' mandates and activities on the ground, missions' uniformed personnel, and the share of civilian personnel in deployments. That is, first, "green" mission orientations commit PKOs more strongly and credibly to solving environmental problems on the ground. Second, PKOs usually comprise a mix of uniformed and civilian personnel, which have different strengths and weaknesses. These translate into the expectation that civilian staff should be more strongly associated with better environmental quality due to a direct impact on state-capacity building.

The empirical analysis is based on data on UN PKOs' mission orientation (UNEP 2012; Maertens and Shoshan 2018) and troop composition (see Blair 2020, 2021; Blair et al. 2023; Di Salvatore et al. 2022) as well as environmental quality as captured by improved access to safe drinking water and sanitation (Kyu et al. 2018) in African post-conflict and conflict societies since the end of the Cold War. I use two-way fixed effects regression models and matching. The corresponding findings from these models, presented in the main text as well as the SI, provide strong and robust support for my hypotheses.

This research adds in several ways to the literature on peacekeeping, its indirect consequences and positive spillovers (e.g., Di Salvatore 2019; Belgioioso et al. 2021; Gizelis and Cao 2021; Bakaki and Böhmelt 2021; Bove et al. 2022; Di Salvatore et al. 2022; Blair et al. 2023), as well as environmental politics (e.g., Bernauer and Koubi 2009; Jahn 2016; Guy et al. 2023). Most importantly, the analyses demonstrate when and how UN PKOs can add to environmental protection in their host countries: especially "green" mission orientations are positively related to environmental protection, but also more civilian personnel matters. These are the factors that need to be focused on and extended if the UN intends to effectively implement its environmental commitment via peacekeepers. And several interesting avenues for future research do exist.

On one hand, while environmental elements in PKO orientations are crucial, it may be an effort worth making to analyze the factors that lead to the inclusion of these green aspects in the first place. The preliminary analysis I conducted using data on host countries' exposure to climate change (climate-change related disasters from the Emergency Events Database (EM-DAT) and significant temperature deviations from a long-term average from the National Aeronautics and Space Administration Goddard Institute for Space Studies) and PKOs with an environmental orientation suggests preliminarily that there is a relationship, but more systematic work is

necessary. Similarly, how and under what circumstances mission orientations draw upon the assistance of other UN bodies, especially UNEP, are worth exploring. On the other hand, it will be interesting to find ways that would allow strengthening the pursuit of an environmental agenda even if fighting among warring groups exist, also in light of the finding that cooperation over environmental projects can lower political violence (see, e.g., Ide and Detges 2018; Ide 2019; Ide and Tubi 2020; Ide et al. 2021, 2023). Finally, qualitative work may want to explore how green orientations translate into local individuals working on environmental improvements and shed more light on the actual PKO activities on the ground. Relatedly, some environmental impacts are more localized than at the mission level, which suggests that analyzing the micro-level relationship between PKOs and environmental quality using geo-coded data might be another avenue for future research.

References

Adamson, Fiona B. 2006. Crossing borders: International migration and national security. *International Security* 31(1): 165-199.

Autesserre, Séverine. 2014. Peaceland: *Conflict Resolution and the Everyday Politics of International Intervention*. Cambridge: Cambridge University Press.

Bakaki, Zorzeta, and Tobias Böhmelt. 2021. Can UN peacekeeping promote environmental quality? *International Studies Quarterly* 65(4): 881-890.

Barnett, Michael, Songying Fang, and Christoph Zürcher. 2014. Compromised peacebuilding. *International Studies Quarterly* 58(3): 608-620.

Bättig, Michèle B., and Thomas Bernauer. 2009. National institutions and global public goods: Are democracies more cooperative in climate change policy? *International Organization* 63(2): 281-308.

Belgioioso, Margherita, Jessica Di Salvatore, and Jonathan Pinckney. 2021. Tangled up in blue: The effect of UN peacekeeping on nonviolent protests in post–civil war countries. *International Studies Quarterly* 65(1): 1-15.

Bernauer, Thomas. 2013. Climate change politics. *Annual Review of Political Science* 16(1): 421-448.

Bernauer, Thomas, and Vally Koubi. 2009. Political determinants of environmental quality. *Ecological Economics* 68(5): 1355-1365.

Blackwell, Matthew, Stefano Iacus, Gary King, and Giuseppe Porro. 2009. CEM: Coarsened exact matching in Stata. *Stata Journal* 9(4): 524-546.

Blair, Robert A. 2020. *Peacekeeping, Policing, and the Rule of Law after Civil War*. Cambridge: Cambridge University Press.

Blair, Robert A. 2021. UN Peacekeeping and the Rule of Law. *American Political Science Review* 115(1): 51–68.

Blair, Robert A., Jessica Di Salvatore, and Hannah M. Smidt. 2023. UN Peacekeeping and Democratization in Conflict-Affected Countries. *American Political Science Review*: Forthcoming.

Böhmelt, Tobias, Thomas Bernauer, Halvard Buhaug, Nils Petter Gleditsch, Theresa Tribaldos, and Gerdis Wischnath. 2014. Demand, Supply, and Restraint: Determinants of Domestic Water Conflict and Cooperation. *Global Environmental Change* 29(1): 337-348.

Böhmelt, Tobias, Vincenzo Bove, and Kristian Skrede Gleditsch. 2019. Blame the victims? Refugees, state capacity, and non-state actor violence. *Journal of Peace Research* 56(1): 73-87.

Böhmelt, Tobias, Farzad Vaziri, and Hugh Ward. 2018. Does green taxation drive countries towards the carbon efficiency frontier? *Journal of Public Policy* 38(4): 481-509.

Bove, Vincenzo, Jessica Di Salvatore, and Leandro Elia. 2022. UN Peacekeeping and Households' Well-Being in Civil Wars. *American Journal of Political Science* 66(2): 402-417.

Bove, Vincenzo, Chiara Ruffa, and Andrea Ruggeri. 2020. *Composing Peace: Mission Composition in UN Peacekeeping*. Oxford: Oxford University Press.

Bove, Vincenzo, and Andrea Ruggeri. 2019. Peacekeeping effectiveness and blue helmets' distance from locals. *Journal of Conflict Resolution* 63(7): 1630-1655.

Bruch, Carl, Carroll Muffett, and Sandra S. Nichols. 2016. Natural Resources and Post-Conflict Governance: Building a Sustainable Peace. In *Governance, Natural Resources and Post-Conflict Peacebuilding*, 1–32. London: Routledge.

Cao, Xun, and Hugh Ward. 2015. Winning coalition size, state capacity, and time horizons: An application of modified selectorate theory to environmental public goods provision. *International Studies Quarterly* 59(2): 264-279.

Caviglia-Harris, Jill L., Dustin Chambers, and James R. Kahn. 2009. Taking the "U" out of Kuznets: A comprehensive analysis of the EKC and environmental degradation. *Ecological Economics* 68(4): 1149-1159.

Centeno, Miguel A., Atul Kohli, Deborah J. Yashar, and DinshaMistree. 2017. *States in the Developing World*. Cambridge: Cambridge University Press.

Cingolani, Luciana. 2013. *The State of State Capacity: A Review of Concepts, Evidence and Measures*. UNU-MERIT Working Paper Series on Institutions and Economic Growth. Available online at: https://www.merit.unu.edu/publications/wppdf/2013/wp2013-053.pdf.

Da Costa, Diana Felix. 2012. Contextualising liberal peacebuilding for local circumstances: UNMISS and local peacebuilding in South Sudan. *Journal of Peacebuilding & Development* 7(2): 53-66.

Di Salvatore, Jessica. 2019. Peacekeepers against criminal violence—unintended effects of peacekeeping operations? *American Journal of Political Science* 63(4): 840-858.

Di Salvatore, Jessica, and Andrea Ruggeri. 2020. The withdrawal of UN peace operations and state capacity: Descriptive trends and research challenges. *International Peacekeeping* 27(1): 12-21.

Di Salvatore, Jessica, Sara Polo, and Andrea Ruggeri. 2022. Do UN peace operations lead to more terrorism? Repertoires of rebel violence and third-party interventions. *European Journal of International Relations* 28(2): 361-385.

Doyle, Michael W., and Nicholas Sambanis. 2000. International peacebuilding: A theoretical and quantitative analysis. *American Political Science Review* 94(4): 779-801

Doyle, Michael W., and Nicholas Sambanis. 2006. *Making war and building peace: United Nations peace operations*. Princeton, NJ: Princeton University Press.

Farzin, Y. Hossein, and Craig A. Bond. 2006. Democracy and environmental quality. *Journal of Development Economics* 81(1): 213-235.

Fjelde, Hanne, and Hannah M. Smidt. 2022. Protecting the vote? Peacekeeping presence and the risk of electoral violence. *British Journal of Political Science* 52(3): 1113-1132.

Fjelde, Hanne, Lisa Hultman, and Desirée Nilsson. 2019. Protection through presence: UN peacekeeping and the costs of targeting civilians. *International Organization* 73(1): 103-131.

Fortna, Virginia Page. 2004. Does peacekeeping keep peace? International intervention and the duration of peace after civil war. *International Studies Quarterly* 48(2): 269-292.

Fortna, Virginia Page. 2008. *Does peacekeeping work?* Princeton, NJ: Princeton University Press.

Fortna, Virginia Page, and Lise Morjé Howard. 2008. Pitfalls and prospects in the peacekeeping literature. *Annual Review of Political Science* 11(1): 283-301.

Fowler, Anthony, and Andrew B. Hall. 2015. Congressional seniority and pork: A pig fat myth? *European Journal of Political Economy* 40(1): 42-56.

Gilligan, Michael J., and Ernest J. Sergenti. 2008. Do UN interventions cause peace? Using matching to improve causal inference. *Quarterly Journal of Political Science* 3(2): 89-122.

Gilligan, Michael, and Stephen John Stedman. 2003. Where do the peacekeepers go? *International Studies Re*view 5(4): 37-54.

Gizelis, Theodora-Ismene, and Xun Cao. 2021. A security dividend: Peacekeeping and maternal health outcomes and access. *Journal of Peace Research* 58(2): 263-278.

Guy, Johnathan, Esther Shears, and Jonas Meckling. 2023. National models of climate governance among major emitters. *Nature Climate Change* 13(1): 189-195.

Hanson, Jonathan K., and Rachel Sigman. 2021. Leviathan's latent dimensions: Measuring state capacity for comparative political research. *Journal of Politics* 83(4): 1495-1510.

Hardin, Garrett. 1962. The Tragedy of the Commons. *Nature* 162(3859): 1243-1248.

Heldt, Birger. 2011. Peacekeeping and Transitions to Democracy. *Building Peace, Creating Conflict? Conflictual Dimensions of Local and International Peacebuilding*. Edited by Hanne Fjelde and Kristine Höglund. Lund, Sweden: Nordic Academic Press, pp. 47–71.

Hendrix, Cullen S. 2010. Measuring state capacity: Theoretical and empirical implications for the study of civil conflict. *Journal of Peace Research* 47(3): 273-285.

High-Level Independent Panel on United Nations Peace Operations. 2015. *Uniting Our Strength for Peace: Politics, Partnership and People (HIPPO Report*). New York: United Nations.

Hultman, Lisa, Jacob Kathman, and Megan Shannon. 2013. United Nations peacekeeping and civilian protection in civil war. *American Journal of Political Science* 57(4): 875-891.

Hultman, Lisa, Jacob Kathman, and Megan Shannon. 2014. Beyond keeping peace: United Nations effectiveness in the midst of fighting. *American Political Science Review* 108(4): 737-753.

Iacus, Stefano M., Gary King, and Giuseppe Porro. 2012. Causal Inference Without Balance Checking: Coarsened Exact Matching. *Political Analysis* 20(1): 1-24.

Ide, Tobias. 2019. The Impact of Environmental Cooperation on Peacemaking: Definitions, Mechanisms, and Empirical Evidence. *International Studies Review* 21(3): 327-346.

Ide, Tobias. 2020. The Dark Side of Environmental Peacebuilding. *World Development* 127(1): 104777.

Ide, Tobias, and Adrien Detges. 2018. International Water Cooperation and Environmental Peacemaking. *Global Environmental Politics* 18(4): 63-84.

Ide, Tobias, and Amit Tubi. 2020. Education and Environmental Peacebuilding: Insights from Three Projects in Israel and Palestine. *Annals of the American Association of Geographers* 110(1): 1-17.

Ide, Tobias, Carl Bruch, Alexander Carius, Ken Conca, Geoffrey D. Dabelko, Richard Matthew, and Erika Weinthal. 2021. The Past and Future(s) of Environmental Peacebuilding. *International Affairs* 97(1): 1-16.

Ide, Tobias, McKenzie F. Johnson, Jon Barnett, Florian Krampe, Philippe Le Billon, Lucile Maertens, Nina Von Uexkull, and Irene Vélez-Torres. 2023. The Future of Environmental Peace and Conflict Research. *Environmental Politics* 32(6): 1077-1103.

Imai, Kosuke, and In Song Kim. 2021. On the Use of Two-Way Fixed Effects Regression Models for Causal Inference with Panel Data. *Political Analysis* 29(3): 405-415.

Jahn, Detlef. 1998. Environmental performance and policy regimes: Explaining variations in 18 OECD-countries. *Policy Sciences* 31(2): 107-131.

Jahn, Detlef. 2016. *The politics of environmental performance*. Cambridge: Cambridge University Press.

Jensen, David, and Steve. Lonergan. 2012. *Assessing and Restoring Natural Resources in Post-Conflict Peacebuilding*. New York: Earthscan

Johnson, Donald L., Stanley H. Ambrose, Thomas J. Bassett, Merle L. Bowen, Donald E. Crummey, Jeffry S. Isaacson, Daniel N. Johnson, Peter Lamb, Mahir Saul, and Alex E. Winter-Nelson. 1997. Meanings of Environmental Terms. *Journal of Environmental Quality* 26(3): 581-589.

Kathman, Jacob D., and Reed M. Wood. 2011. Managing Threat, Cost, and Incentive to Kill: The Short-and Long-Term Effects of Intervention in Mass Killings. *Journal of Conflict Resolution* 55(5): 735-760.

Kaufmann, Daniel, and Aart Kraay. 2008. Governance Indicators: Where Are We, Where Should We Be Going? *World Bank Research Observer* 23(1): 1-30.

Krampe, Florian. 2017. Toward Sustainable Peace: A New Research Agenda for Post-Conflict Natural Resource Management. *Global Environmental Politics* 17(4): 1-8.

Krampe, Florian, and Suzanne Gignoux. 2018. Water Service Provision and Peacebuilding in East Timor: Exploring the Socioecological Determinants for Sustaining Peace. *Journal of Intervention and Statebuilding* 12(2): 185–207.

Kyu, Hmwe Hmwe, Degu Abate, Kalkidan Hassen Abate, Solomon M. Abay, Cristiana Abbafati, Nooshin Abbasi, Hedayat Abbastabar, Foad Abdallah,Jemal Abdela, Ahmed Abdelalim, Ibrahim Abdollahpour, Rizwan Suliankatchi Abdulkader, Molla Abebe, Zegeye Abebe, Olifan Zewdie Abil, Victor Aboyans, Aklilu Roba Abrham, Laith Jamal Abu-Raddad, Niveen M. E. Abu-Rmeileh, Manfred Mario Kokou Accrombessi, Dilaram Acharya, Pawan Acharya, Ilana N. Ackerman, Abdu A. Adamu, Oladimeji M. Adebayo, Victor Adekanmbi, Zanfina Ademi, Olatunji O. Adetokunboh, Mina G. Adib, Jose C. Adsuar, Kossivi Agbelenko Afanvi, Mohsen Afarideh, Ashkan Afshin, Gina Agarwal, Kareha M. Agesa, Rakesh Aggarwal, Sargis Aghasi Aghayan, Anurag Agrawal, Alireza Ahmadi, Mehdi Ahmadi, Hamid Ahmadieh, Muktar Beshir Ahmed, Sayem Ahmed, Hans W. Hoek, Zahra Jorjoran Shushtari, Muhammad Shahzeb Khan, Youngeun Kim, James Leigh, and Maarten J. Postma. 2018. Global, Regional, and National Disability-Adjusted Life-Years (DALYs) for 359 Diseases and Injuries and Healthy Life Expectancy (HALE) for 195 Countries and Territories, 1990–2017: A Systematic Analysis for the Global Burden of Disease Study 2017. *The Lancet* 392(10159): 1859-922.

Leloup, Mathilde, and Lucile Maertens. 2023. The material impact of peace operations on the environment and cultural heritage. In *Handbook on Peacekeeping and International Relations*, pp. 270-285. London: Edward Elgar Publishing.

Maertens, Lucile. 2019. From Blue to Green? Environmentalization and Securitization in UN Peacekeeping Practices. *International Peacekeeping* 26(3): 302-326.

Maertens, Lucile, and Malkit Shoshan 2018. *Greening Peacekeeping: The Environmental Impact of UN Peace Operations*. New York: International Peace Institute.

Meiske, Maline, and Andrea. Ruggeri. 2017. Peacekeeping as a Tool of Foreign Policy. In *Oxford Research Encyclopedia of Politics*. Oxford: Oxford University Press.

North, Douglass C. 1993. Institutions and credible commitment. *Journal of Institutional and Theoretical Economics* 149(1): 11-23.

Povitkina, Marina. 2018. The limits of democracy in tackling climate change. *Environmental Politics* 27(3): 411-432.

Shepsle, Kenneth A. 1991. Discretion, Institutions and the Problem of Government Commitment. In: Pierre Bourdrieu and James Coleman (eds.), *Social Theory for Changing Society*. Boulder: Western Press.

Steinert, Janina Isabel, and Sonja Grimm. 2015. Too good to be true? United Nations peacebuilding and the democratization of war-torn states. *Conflict Management and Peace Science* 32(5): 513-535.

UNEP. 2012. *Greening the Blue Helmets Environment, Natural Resources, and UN Peacekeeping Operations*. New York: United Nations.

Ward, Hugh, 2008. Liberal democracy and sustainability. *Environmental Politics* 17(3): 386-409.

Ward, Hugh, and Han Dorussen. 2015. Public information and performance: The role of spatial dependence in the worldwide governance indicators among African countries. *World Development* 74(1): 253-263.