Special Issue

The Role of Land and Natural Resources in Negotiating Peace Agreements

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Drawing on the growing genre of literature on "environmental peacebuilding," this article develops a qualitative model of how land and natural resources (including minerals, water, forests, and agricultural products) contribute to the framing of conflicts and how they might contribute to their resolution. We considered twelve cases of peace processes in which land and resources played a role and developed a causal link typology of the nexus between natural resources and conflict. Based on extensive archival research and interviews, we then developed a series of causal variables and pathways that were synthesized into our qualitative model—the Peace and Natural

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Resource Nexus (PNRN) Model. Our analysis suggests that there are opportunities for making peace through a nexus with natural resources and for making peace agreements more robust with greater attention to natural resource linkages even if they might not be the dominant cause of conflict. Attention to the role of natural resources in conflicts and the inclusion of environmental and natural resource factors in the negotiation of peace agreements are thus likely to be advantageous across a wide spectrum of conflicts.

Keywords: conflict resolution, peace agreements, natural resources, environmental diplomacy, minerals, land rights

Introduction

This article investigates the nexus between land, natural resources, conflict, and peacemaking through analyses of twelve cases of protracted, ethnonational, asymmetric conflict.[1] Cases were selected in which contested ownership or use of land, dispossession from land, adversarial use of natural resources, or inequitable benefit from natural resources were among the major causes of the conflict. In some cases, these resources also served as weapons of war or funded the conflict. In most of the conflicts, the need to resolve disputes about the use of natural resources led the parties to make peace, and in all of the cases, provisions regarding the allocation of natural resources were essential to the peace accord. Therefore, a model of peacemaking and peacebuilding that prioritizes attention to the roles of land and natural resources in conflicts is a potential contribution to a greater understanding of conflicts and paths to peace. This article substantiates the concept in the fast-developing field of environmental peacebuilding that access to raw materials and environmental resources is frequently an impetus to making peace (Conca and Dabelko 2002) and describes how creating relational spaces for the resolution of conflicts around land and natural resources was critical to the peace accords in the analyzed cases.

Literature on Causes of Conflict and Economic Contributions to Peace

Research on environmental stress and conflict began in the late 1980s when more than 100 researchers from a range of backgrounds studied sixteen cases to explore how environmental scarcity (scarcity of

renewable resources) can lead to violent conflict (Homer-Dixon 1999). Having observed that "causal processes are exceedingly complex, involving multiple physical and social variables, feedback loops, interactive effects and non-linear responses" (Homer-Dixon 1999: 9), the researchers focused on developing a theory consisting of plausible, generalizable causal mechanisms and not simple specific predictions. They also postulated, and diagnosed, key intervention points rather than prescriptive or precise policies. The conclusions of the Homer-Dixon study presage the work of John Paul Lederach, who observed that one of the essential features of successful peace accords is the development of a process that builds trust so that former adversaries can inhabit relational spaces in which inevitable future conflicts can be resolved without resort to armed conflict (Lederach 2005).

Our model follows in this tradition by looking at the role of land and natural resources in causing conflict and shows how parties intent on peacemaking used those contributions to violence as entry points to make peace. For example, boycotts, divestment, and sanctions were key to motivating the parties pursuing peace in South Africa, and boycotts of conflict diamonds arguably contributed to the battlefield death of Jonas Savimbi in the Angolan civil war. In the case of natural resources, there can be stigmatization of supply chains through certification systems for certain commodities. For example, the Kimberley Process was established to ensure that only diamonds that had no linkage to the financing of conflicts could be certified for import to, and sale in, participating countries.

Following the work of Homer-Dixon and colleagues, several international organizations began to take a keen interest in resource availability and conflict as well as the larger question of resource availability and development. Indeed, subsequent cross-national statistical analysis of civil wars in Sub-Saharan Africa (Collier and Hoeffler 2002) and a large-N study of developing countries (de Soysa 2002) found that ecological abundance in a particular sector (such as a particular mineral) was the environmental cause of civil war and violence rather than environmental scarcity. The analysis often rejects more intuitive causes such as corruption, instead focusing on the ease with which a resource can be stolen or misused, as the main causal variable (Ross 2001). Several environmental and human rights groups have supported this analysis (Renner 2002), and it has gained currency to some degree in policy circles as well, as exemplified by the United Nations Security Council's special panels on conflicts in Liberia, Sierra Leone, and the Democratic Republic of Congo. In these narratives, security is often synonymous with a reduction in armed conflict.

There are, however, more recent macro- and micro-economic studies that show that government policies and regulations and good governance and institutions can reduce not only conflict occurrence and feasibility but also hinder the potential for rent-seeking and grievances, and even create economic benefits (e.g., Mehlum et al. 2006; Aragon and Rud 2013; Cotet and Tsui 2013b; Buonanno et al. 2015; Loayza and Rigolini 2016; Berman et al. 2017; Mundaca 2023, 2024).

Some studies miss the multiple causality involved in broad explanatory variables such as conflict or development. Hence such analyses can only show that resource abundance is not a sufficient condition for security and development. Resource availability, abundance, and extraction still might be necessary conditions for development and security, alongside other variables in some cases, and certainly would not preclude security and development.

The relevant literature has not yet derived a conclusive answer to this problem. For instance, Cotet and Tsui (2013a) find that oil rich countries do not necessarily face economic curse, but rather benefit more in health improvements. Cotet and Tsui (2013b) did not find evidence that oil fuels domestic conflict but it increases defense spending in nondemocratic countries. Loayza and Rigolini (2016) have found that the Peruvian mining activities may have had positive economic effects such as increases in consumption and reductions in poverty. But they report that mining activities have led to greater inequality between the minerals-producing and non-producing Peruvian districts. Aragon and Rud (2013) examined the local economic impact of a large gold mine in Northern Peru and found that the mine's demand for local inputs has increased the real income of the local population but only in the surrounding areas, and has caused an increase in the local price of nontradable goods. Mundaca (2023, 2024) has found that multinationals that are mining in Cuzco, Peru need to make more substantial contributions that can directly improve the social and economic standards of the people that live close to the mining sites and do more to protect the environment upon which they depend.

These diverse findings at the macro- and micro-levels should not lead us to conclude that extraction of natural resources should be halted; rather they should be used to provide advice and recommendations to multinationals and governments. Such recommendations include refraining from natural resource extraction that decreases the welfare of the local population, and designing schemes for both distributing rents from resource extraction and compensating local populations for the possible consequences of such extraction. The goal should always be the implementation of socially responsible practices to discourage conflicts.

The debate between environmental abundance and scarcity arguments goes in different directions because there are clear differences in philosophy of knowledge and research style between the proponents of both sides. Abundance researchers primarily come from a post-positivist hypothetico-deductive tradition and correspondingly value experiments (even if they are natural rather than controlled) and large-N statistical studies, whereas scarcity researchers are implicitly closer to constructivist philosophical assumptions and primarily utilize a comparative case-study strategy. More recent criticism has come from the field of political ecology (Peluso and Watts 2002), which argues that a more dialectical approach to understanding why certain environmental conditions breed violence is needed rather than focusing on the linear causality assumed by conventional analyses of scarcity and abundance.

Methodology for Developing Our Model

The qualitative model presented here shows how land and natural resources contribute to the onset and perpetuation of armed conflict and how in select cases of protracted, ethnonational, asymmetric conflict, attention to resolving these areas of contention was essential to reaching a peace accord that lasted more than five years.

As noted above, land, water, and extractable minerals were causes of armed conflict for the following reasons:

1) perceived (gross) inequities in sharing of rents,
2) forced displacements in order to extract raw materials, build hydroelectric power facilities, consolidate agricultural land for industrialized methods of crop production, or settle populations from a dominant power,
3) environmental pollution and/or destruction of land by neighboring extractive mineral sites or chemically dependent agriculture, and
4) deforestation by logging or cattle agribusiness.

Furthermore, in certain cases—especially Colombia and Angola—land, water, extractive minerals, and timber provided sources of funding for one or several sides of the conflict. Confiscation of land, deprivation of water, kidnappings of international businesspeople, and disruptions in the transport of natural resources were also weapons in the armed conflicts we studied.

Land, water, and natural resources also became potential mechanisms for cooperation and/or a reason to make peace. Analysis must then look at the results of the peace accord and whether it was implemented to the satisfaction of all the parties with respect to land and resources issues.

In this study we examined twelve cases (shown in Table 1), nine in which a peace accord was reached and three contemporary cases in which the parties failed to make peace. For the cases in which an agreement was not reached, we speculated about the reason for the parties' failure to make peace. These twelve case studies are situated in the vast and emerging field of environmental peacebuilding (see Dresse 2019; Ide 2020; Johnson et al. 2021). They follow a mixed-methods approach, involving geospatial analysis coupled with process-tracing and qualitative insights from interviews and primary source readings to elucidate the role of land and resources in the peace process. Following literature on conflicts in which cases are analyzed according to resource abundance and resource scarcity, we identified the natural resources in each case and categorized the conflict as one involving *distributive justice*, *self-government*, and/or *identity*. We define these terms as follows:

> ***Distributive justice***: conflict over perceived inequities in distribution of revenues from extractable resources, or conflict over possession of land used for survival, or response to dispossession either from land usurpation due to the value of the land itself (ecologically) or other reasons such as the development of hydroelectric power infrastructure/dam, or environmental degradation due to mining activities or other natural exploitation
> ***Self-government***: conflict over land to be accessed for self-government, or conflict over land for total ownership of revenues from mineral extraction, or over land that was originally used for agricultural activities by original local owners
> ***Identity***: conflict over land as a component of cultural or national identity

This categorization is followed because the causes of conflicts determine the issues that must be resolved in the peace processes, and it elucidates the likely mindsets of the parties in conflict as they engage in resolution of grievances.

The twelve cases were selected as follows. Six were identified as meeting all three criteria upon which our study focuses—they were ethnonational, asymmetric, and protracted (lasting more than twenty years). Three cases were added to our analysis because they shared one or more of the core characteristics and were of special interest, while three additional unresolved cases were added for current interest: the Cenepa River, the North Crimea Canal, and the Kabul River. These unresolved cases allow us to isolate the variables—such as sufficient mutual trust, a willingness to resolve the conflict, and peacemaking roles of international actors—that were missing according to our model, leading us to predict that the conflicts would continue until such factors emerged. Next, we examined the relevant contextual variables, such as

history of the conflict, governance structures, politics and evolving political systems, the role of international community and nongovernmental organizations, the role of women and ethnic minorities, and the role of technology (Le Billon 2009).

We did a focused analysis of water-related conflicts and how opportunities for peace may arise from this resource, access to which is increasingly considered a fundamental human right. Water sustains all life, our socio-ecological functions and services, and Earth systems. It is a primary ingredient for industrial and energy production, as well as critical to the development of other resources. And, unlike other resources—such as some forests that can be renewed, and minerals such as bauxite and copper that may be replenished but not in our lifetime—the Earth's supply of water is regarded as fixed (de Silva 2022). Our case analyses thus cover the full spectrum of renewable and nonrenewable resources and contribute to the literature by providing a systems-level analysis that has been missing in earlier studies.

Developing a theoretical basis for teasing out when and why natural resources might trigger conflict and when they could catalyze cooperation requires us first to consider their role in social mechanisms. We did this by developing a typology for the various roles that natural resources can play in human conflictual behavior. Below are the key delineations of this typology:

- *Natural resources may be causes of conflict for one or more reasons*:
  - illegal appropriation of land from owners who were minorities or lacked power at the national or international level
  - unequal distribution of natural resources
  - monetary trade value of natural resources
  - deprivation or degradation of resources crucial to sustain life or quality of life
  - the role of the resources in ethnic or national identity, and/or their role in cultural practices
- *Natural resources may be used as instruments during ongoing conflict*:
  - used as weapons of war, when withholding the resource can be used to stymie the enemy similar to scorched earth campaigns
  - providing funding for conflicts through resource rents and shadow economies of looted resources, as was the case with minerals in many African conflicts
- *Natural resources may be precipitators of peace*:
  - reasons to make peace among parties directly involved, due to a realization of mutual need and the benefit of sharing, e.g., in preserving water quality for shared use in lacustrine regions

- reasons for the international community to work to end the conflict to enable safer access to resources, though often this can lead to "enforced peace" through military intervention rather than a peace process

- *Natural resources may be a factor in peace negotiations:*
  - contested during a peace process, and brought up as a derivative issue that must be considered in the agreement
  - important parts of the negotiations to end the conflict and create a peace accord
  - a feature of the peace accord because of a need for conservation or access for scientific research due to the unique features of the shared resource
  - a feature for which compliance must be monitored to ensure that the conflict does not resume or re-emerge with different hostile parties

The conflicts' parties and their timelines are as follows: Algeria's war for independence from France (1945–1962), Guatemalan government v. URNG (1960–1996), Cordillera del Condor /Ecuador–Peru (ongoing), Kabul River (between Afghanistan and Pakistan, ongoing), Chittagong Hill Tracts of Bangladesh (CHT)—Indigenous people fighting for their rights (1962–1997), Colombian government v. FARC (1964–2016), Northern Ireland v. PIRA (1960s to 1998), Philippines v. MNLF (1972–1996), African National Congress v. apartheid regime (1974–1993), Angola (UNITA v. MPLA, 1975–2002), South Sudan v. SPLA (1983–2005), and Crimea (between Ukraine and Russia, ongoing).

These variables of social, economic, and political context indicate past trajectories that must be overcome, redirected, or modified, or that can be capitalized on in determining common values and a path to peace. The path to peace that emerged from the contextual variables is examined next, and the factors leading to a written, lasting peace accord are explained ("Why It Worked"). In this analysis of the role of land and natural resources and their relationship to conflict and peacemaking, we include an examination of the role of women and other marginalized groups because they frequently have a special relationship to the land. We examine the role of technology, especially in ending the conflict and monitoring the peace accords, where accords were reached, and where significant use was made of advanced technology. We then examine whether the peace accord was implemented to the satisfaction of the signers of the accord and their constituencies. Finally, we set forth lessons learned that may be transferable or adaptable to other conflict situations and desired peace processes. Our data is collected through bibliographic research, primary sources, map datasets, and interviews.

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Table 1
Case Comparisons[2]

Algeria	Guatemala	Ecuador-Peru	Kabul River	CHT	Colombia	N. Ireland	Philippines	South Africa	Angola	South Sudan	Crimea
TYPE OF CONFLICT:											
DISTRIBUTIVE JUSTICE											
	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
SELF-GOVERNMENT											
✓						✓	✓	✓		✓	
IDENTITY											
✓	✓				✓		✓	✓		✓	✓
ROLE OF LAND AND RESOURCES:											
CAUSE OF CONFLICT											
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WEAPONS OF WAR											
✓	✓	✓		✓	✓	✓					✓
FUNDING CONFLICT											
					✓			✓	✓	✓	
REASON TO MAKE PEACE FOR INTERNATIONAL COMMUNITY											
	✓			✓	✓		✓	✓	✓	✓	
REASON TO MAKE PEACE AMONG PARTNERS TO CONFLICT											
✓	✓	✓		✓	✓	✓	✓	✓		✓	
TRIGGERS FOR PEACE:											
WEARINESS WITH WAR											
✓				✓	✓	✓	✓	✓			
WITHDRAWAL OF SUPPORT BY INTERESTED ACTORS, BOYCOTTS, ETC.											
				✓			✓	✓	✓		
FACILITATION BY OUTSIDE ENTITIES											
	✓				✓			✓	✓	✓	

Peace and Natural Resource Nexus (PNRN) Model

Our case analysis has led to the development of what we are calling "the Peace and Natural Resource Nexus (PNRN) Model." Land and water are of course key features within the natural resource nexus and highlighted where appropriate but the model name is meant to be systems-oriented and emphasize the inherent linkages between terrestrial and aqueous environments. We have kept "peace" at the forefront of the model caption as that is the ultimate goal, although conflict and cooperation dialectics will be part of the anatomy of the model itself. This model is contesting *unequal distribution of land and natural resources, misappropriation of peoples' or countries' land, misuse of the natural environment and its services* (forestry, fishing, hunting, mining, etc.), *territorial or border demarcation,* and *marginalization based on political status or identity issues,* as illustrated in Figure 1. Our work in this study is to examine these variables, focusing on the role of land and natural resources in these contexts and the choices that local, national, and international parties make to work for peace or prolong conflict, observing that parties have agency and can choose to work for peace. While our model is holistic, our focus in this article is on characteristics, histories, and qualities that are closely tied to land and resources issues.

Our model suggests that peace is possible if triggers for peace occur and there is sufficient support in the international community for peace, as well as sufficient goodwill, mutual respect enabling the parties to listen to and address the concerns of others, and incentives for sharing land and resources. Incremental action through a purposeful sequencing of trust-building measures may be needed. Third parties may be needed to facilitate and support the peace process, and for compliance assurance and monitoring where there is a trust deficit or where the conflict is in a remote area that requires technological tools to keep track of activities.

This model explains how the initiation, development, endurance, expansion, peace negotiations, and final resolution of a conflict related to land and resources are unavoidably determined by the type of interaction and the decision-making of the parties involved in the conflict. The arrows pointing to "parties' interactions and decisions" from the contextual variables in the model are intended to indicate the characteristics of the contextualization through which the choices between conflict or cooperation develop. The arrows between the boxes leading to conflict or cooperation indicate an additive feature, which does not imply sequencing or directionality. Such interactions and decisions will influence one another's welfare. The model also shows that the type of interaction and decision-making is determined by human attributes: interests, attitudes, beliefs, values, and goals of the parties in conflict.

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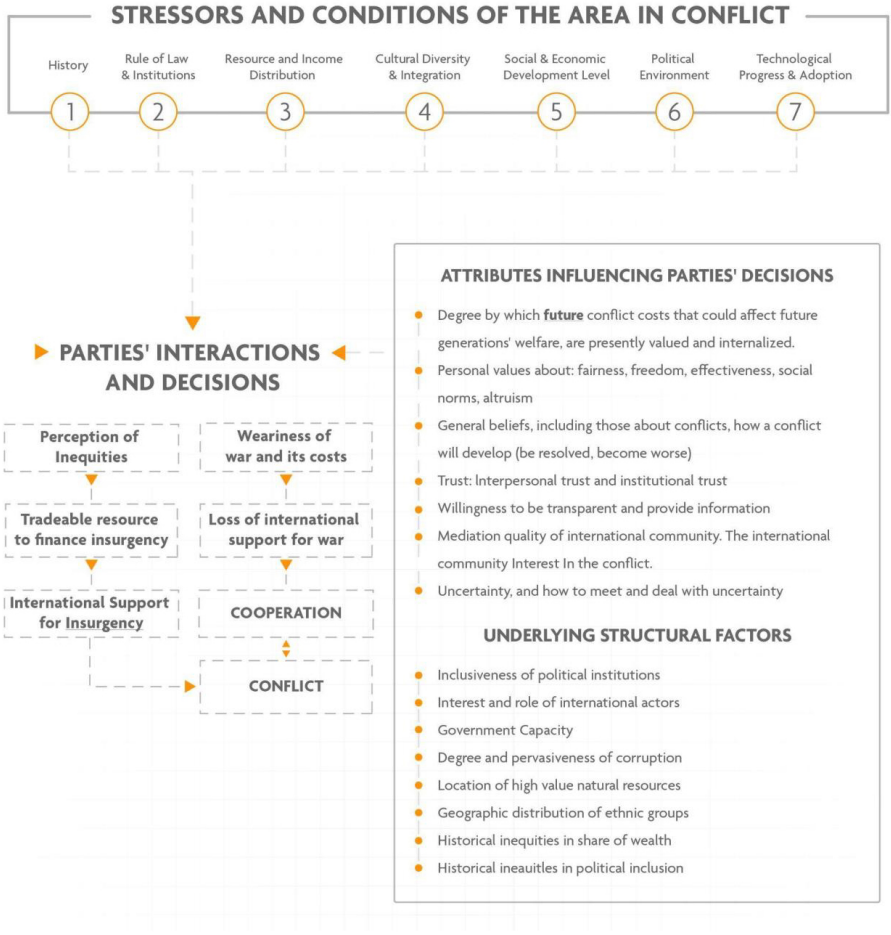
Figure 1
The Peace and Natural Resource Nexus (PNRN) Model
Graphic design credit: Galina Hasanova



Some people, for example, may behave quite differently toward those with whom they expect to have a long-term relationship than toward those with whom they expect no future interaction.

The model also recognizes that the evolution and resolution of a conflict related to land and resources requires the parties in conflict to be knowledgeable of and acknowledge the conditions and settings in the area in conflict. These conditions set the stage for conflict or cooperation pathways and influence the type of interaction between and decisions made by two or more parties.

To launch a process for peace, precipitating conditions were first necessary, either a trigger for peace or a threshold level of weariness with war to incentivize convening for peace negotiations. In some cases, one or the other or both parties in conflict eventually found the conflict to be too costly (e.g., Chittagong Hill Tracts, Algeria, and Philippines) and opted to seek peace. In other cases, the international community wanted an end to war in order to have access to raw materials or agricultural products and consequently incentivized, coerced, or facilitated peace or defunded conflict (CHT, Colombia, Guatemala, Angola, and Philippines). In some cases, anti-government militaries became tired of war and personal insecurity (CHT, Colombia, and Guatemala) and declared unilateral ceasefires until conflict resolution could be achieved.

In some cases, the international community was repulsed by the human rights abuses of one or both parties and used nonviolent means to incentivize or promote peace, such as boycotts, divestment, or sanctions (South Africa). In most cases the international community was crucial and played multiple roles, such as ending their provision of a safe haven for insurgents or minorities seeking rights (Philippines and CHT), providing a locale for peace talks (South Sudan and Colombia), or providing facilitators and structures for peace negotiations (Colombia, Guatemala, and South Sudan). The international community also provided monitors for the faithful implementation of the peace accords (Colombia and Ecuador–Peru).

Natural Resources Facilitating Conditions in Path to Peace

Peace agreements are most beneficial when they create platforms and structures capable not only of addressing current causes of conflict but also of evolving to resolve future conflicts. Rather than aiming to work out a definitive resolution of all current issues, peace processes benefit when they develop new ways of thinking that build relationships, recognize grievances, and create social spaces in which future conflicts can be resolved in nonviolent ways. This is an alternative view of peace agreements that contrasts with a focus on the resolution of specific current causes of conflict (Lederach 2005).

With respect to land and resources issues, our research indicates that parties to the accords negotiated multiple, alternative ways to resolve grievances, create platforms for future dialogue, and reach a signed, lasting peace accord. Land redistribution issues were consigned to the political arena for future resolution, and platforms were created to address those issues in the political arena, with guaranteed representation of dissident groups. Some accords included a mandate for economic

development plans, and some provided for the development of court systems to resolve land disputes (Northern Ireland, Colombia, and CHT).

The Evian Accords, which addressed the economic security needs of the more powerful partner in the peace agreement and the development needs of the less powerful partner, are an example of the willingness of a former colonial power to assist in the economic and financial aspects of transition (Bellisant 2017). In those accords and follow-up agreements, France assisted Algeria's financial security and economic development by making purchase agreements for agricultural products and oil and providing direct financial aid (Horne 1977; Kettle 1993; Evans 2012). The agreement of the Algerian National Liberation Front (FLN) to sell petroleum to France enabled France to surmount a vital sticking point after seemingly intractable hurdles, leading to the signing of the accords, which launched the new nation of Algeria (Bellisari 2017). South Sudan had crucial trading partners for its oil before and after the peace accord. However, corruption and secrecy remained the norm, resulting in continued armed conflict even after independence was achieved through a referendum agreed to in the peace accord (Boswell 2022).

In addition, economic development opportunities incentivize adherence to peace accords. Such opportunities are only possible when there is peace between former adversaries, which guarantees the stability and security so important to international business partners.

Cases for Which Distribution of Land and/or Benefits from Natural Resources were not the Core Issues

In Algeria, decolonization and political and human rights were the core issues. The trigger for the peacemaking process was that the pain of the conflict became too great for the French people, both physically and morally (Evans 2012). Over time, the cost of the conflict became too great to bear, as conditions in Algeria became known, then changed, and the French government attempted to hold onto its colony. As to fear of complete depletion and reaching a tipping point, the French government was concerned about maintaining its supply of Algerian oil, wine, and other agricultural products. It guaranteed markets and financial aid for the fledgling Algerian nation.

In the case of Angola, the fight was also over equal political rights for contending eco-ethnic groups (an urban–rural divide and different tribes). Angola's path to peace resulted from one party's loss of conflict funding after the international community agreed to the Kimberley Process to certify that diamonds received in the supply chain were conflict-free. Savimbi, leader of the National Union for the Total Liberation of Angola (UNITA), was killed on the battlefield, and subsequent UNITA

leaders were forced into cooperation with the ruling government party, the People's Movement for the Liberation of Angola (MPLA).

In the Angolan struggle for control of the government, the natural resources of oil and diamonds provided separate streams of funding for the parties. The international community worked to dry up diamonds as a source of funding for conflicts, and thereby depleted the capacity of Savimbi/UNITA to wage effective warfare.

Although Angola continues to remain deeply divided politically and the distribution of "rents" and equal opportunities for the formerly contending ethnic groups is contested, statistics show that Angola experienced remarkable development and prosperity following the peace accord.

Empirics Related to the Model

Land, Water, and Natural Resources as Causes of Conflict

In Northern Ireland, Guatemala, and Colombia, land was contested as a matter of distributive justice, where historic inequities needed to be overcome. The historic inequities in Northern Ireland were based on religious affiliation, with underserved Catholics protesting inequitable rule by minority Protestants who had been incentivized through centuries of historic inequities to settle in Northern Ireland from Great Britain and Scotland.

In Guatemala, landed elites controlled a vast percentage of the land, and the perceived injustices were a major cause of the formation of militant political parties to work for more equitable distribution of the nation's resources.

In Colombia, historic inequities in land distribution and the highly skewed economic inequities that resulted were also a major cause of the conflict, as was forced displacement from land due to hydroelectric power development and an economic development plan that displaced ethnic minority Mayans.

In Algeria and South Sudan, ownership and control of land were contested to achieve self- governance for an ethnic group. As a result of the peace accords, new countries were formed. In Algeria, a colonial power (France) was ejected and replaced by a government of Algerians in a newly independent country. However, as noted, France provided financial support for the new government and secured its continued supply of oil from Algeria. It also negotiated quotas from Algeria of wine and dairy products.

As a result of the conflict in South Sudan, Nilotic, Christian-majority South Sudan became an independent country from predominantly Muslim, Arab Sudan to the north. South Sudan maintained its pre-independence trading partners for its oil, on which the financing of the

country depended heavily. Government officials, reportedly, continued to be very corrupt, and much of the nation's wealth disappeared while the vast majority of the country remained at a subsistence level, with little access to sanitation or fresh water. South Sudan ranks lowest in the world on the Human Development Index.

In South Africa, the major issue contested and resolved was self-governance; a government by a repressive, minority, apartheid regime of European descent was replaced by a more democratic, integrated government and majority rule of ethnic South Africans. Yet ownership of South Africa's world-renowned mineral wealth was not liberalized and remained in the hands of pre-peace accord owners, nor was there land redistribution as a result of the peace accords.

In the Philippines, likewise, the conflict had numerous causes including land degradation due to mining and distribution of revenues from vast mineral wealth. However, a primary goal was self-governance for Muslims, who were represented by the Muslim National Liberation Front (MNLF). A Muslim majority remained in a concentrated locale in a predominantly Christian nation that had for decades incentivized Christian settlement into Muslim areas, then discriminated against the Muslims, resulting in disparities in economic development and quality of life.

The conflict in the Chittagong Hill Tracts of Bangladesh was arguably a case of land distribution, yet heavily based on ethnic and religious identity. Indigenous Jumma people fought to keep the land they used for subsistence agriculture from being taken over and used for population resettlement and industrial agriculture by the Muslim government of Bangladesh, which was given jurisdiction over the land when the colonial power of Great Britain withdrew. Industrial agriculture then provided a rich tax base for the Bangladeshi government.

In Angola's civil war, ethnic groups contested control of the government and the vast mineral wealth of the country. Rural populations recruited by Savimbi were financed by trade in diamonds, while more urban populations backing the central government were financed by oil revenue from Angola's offshore drilling on its northwestern coast.

These differing causes of conflicts and other contextual factors, such as the interest and role of international governments and business interests, and the ability to achieve mutual respect in the peace process, led to differing paths to peace as elaborated further below.

Land, Water, and Natural Resources as Weapons of War

Blowing up oil pipelines was a significant weapon of war used by the FARC in Colombia, incentivizing the national government and international business partners to seek peace. However, some analysts assert

that this tactic backfired during the peacemaking process, because the damage done to the land undercut the credibility of the FARC as acting in the interests of the people. On the other side, the Colombian government, in its Accelerated Development Plan of the 1960s, was accused of targeting key strategic locations to displace people and plunder land (Gómez Isa 2010).

Land could arguably be said to be a weapon of war wherever attacks against civilians make their lives insecure. Notably, the less powerful parties targeted civilians in Algeria, Guatemala, Colombia, the CHT, and Northern Ireland. Likewise, the French colonial power in Algeria used destruction of civilian habitation as a weapon of war and suppression, as did the Unionists of Northern Ireland. The French human rights violations resulted in moral outrage among French citizens and intellectuals, such as Albert Camus, and prompted protests to end the war. Paramilitaries and government forces engaged in notorious massacres of civilian populations in Guatemala and Colombia, with uncertain effect, except to incentivize and mobilize opposition and prompt international involvement to end the wars.

Ukraine used water as a weapon of war as it sought to retaliate and punish Russia for invading and absorbing Crimea. After Russia's invasion in 2014, Ukraine built a dam on the North Crimean Canal to block the flow of water into parched Crimea. When Russia invaded the rest of Ukraine in 2022, it immediately blew up the dam that Ukraine had constructed.

Somewhat in parallel, protests were staged in South Sudan to prevent the construction of a dam that would benefit Egypt downstream while diverting the flow of water from South Sudanese agricultural marshlands. The prospects for this dam were put on hold until after the end of the war for independence. In another case involving a dam, South Africa supported UNITA in its contest for power with the ruling government of Angola in order to protect its interest in a dam there.

Natural Resources as a Source of Funding for Conflicts

Revenues from legal and illegal trade in minerals, agricultural products, and timber provided funding for the conflicts in Colombia (emeralds, illegal drugs, gold, etc.), Angola (diamonds and oil), and South Sudan (oil). Governments seeking to gain sovereignty complained that the conflicts were prolonged because of trade partners willing to buy the conflict minerals, timber, and agricultural products, including those used to make illegal drugs.

As noted above, oil and diamonds played a role in the Angolan conflict. The international community prioritized the oil sold by the Angolan government over the diamonds produced by Savimbi to fund

UNITA. The United Nations imposed sanctions on blood diamonds in 1998, which led to the launch of the Kimberley Process in 2003.

Land, Water, and Natural Resources as Reasons to Make Peace

Triggers that focus on the role of land and natural resources to incentivize successful peacemaking included the following:

1) the desire for personal security on the land (CHT, Colombia, Northern Ireland, Philippines, and Algeria),
2) the withdrawal of support for insurgents in order for international actors to have safe access to natural resources (CHT–India and Angola–UN sanctions leading to the Kimberley Process), and
3) the facilitation of the peace process by foreign governments who want to increase access to raw materials and security for international business ventures (Guatemala, Colombia, and Northern Ireland).

In these cases of asymmetric conflict, weariness of war sometimes affected the dominant combatant (e.g., France under Charles DeGaulle to end the war in Algeria and electoral promises by Philippine President Fidel Ramos to end the conflict with MNLF). In some cases, the underdog grew weary of war and announced a unilateral ceasefire (e.g., CHT and Colombia). In other cases, weariness with war was prevalent on both sides; however, international actors were crucial to facilitate and support the peace process (Northern Ireland, Colombia, Guatemala, and South Sudan).

In contrast, in the two cases we studied on shared water resources (Kabul River between Afghanistan and Pakistan, and North Crimea Canal flowing through Ukraine to supply water to Crimea, annexed by Russia), agreements on sharing the water have proved to be illusive. In general, water scarcity can lead to conflict in riparian systems, whereas issues of water quality in shared lake basins can be a source of cooperation. In cases where there are agreements to share water, such as the Indus Waters Treaty, the arrangement is distributive and often not predicated on environmental values of conservation. In that case, the World Bank divided up the six tributaries of the Indus River between India and Pakistan rather than considering the value of the environmental management of the full water basin.

Land, Water, and Natural Resources as Reasons for the International Community to Work to End the Conflict

The international community's role in incentivizing, coercing, and/or facilitating peace was crucial in seven of the cases (Guatemala, Colombia, Northern Ireland, South Africa, the Cordillera del Condor border dispute between Ecuador and Peru, Angola, and South Sudan), while the international community funded or provided safe havens for at least one of the

factions in at least four of the cases (Chittagong Hill Tracts, Philippines, Crimea, and Angola). Other conflicts were a war for independence from a colonial power (Algeria) or between two countries (Ecuador and Peru; Afghanistan and Pakistan over the Kabul River). Angola was a proxy war during the Cold War era and then one of the conflicts targeted by the Kimberley Process to end trade in conflict diamonds.

Along the Peru–Ecuador border, which had been disputed for more than 150 years, the land dispute was resolved—with much pressure and facilitation by other countries and international not-for-profit organizations—through the creation of two peace parks, one on each side of the border, with extensive collaboration and sharing of information to effectively manage the renowned hotspot of biodiversity known as the Cordillera del Condor. In this case, environmental issues were instrumentally used to resolve a conflict that had no natural resource nexus. In other words, natural resource protection created a "superordinate goal" that brought parties together and created a new avenue for peacebuilding. This was facilitated by external mediation by the United States and Brazil and through a public–private partnership with the International Tropical Timber Organization (ITTO) (Ali, S. H. 2019).

In some cases, the coercive power of international actors precipitated peacemaking. For example, in addition to the imposition of sanctions against conflict diamonds from Angola, the case of South Africa is illustrative. To work for an end to apartheid, countries in the international community enacted trade sanctions against apartheid South Africa including, for a significant number of countries, a ban on trade in South African gold *Krugerrands*. After the South African economy weakened from lack of foreign investment, President de Klerk released renowned African National Congress leader Nelson Mandela from prison.

In the CHT conflict, some analysts have observed that India wanted a treaty with Bangladesh over the Ganges River and consequently withdrew support for Jumma combatants fighting the Bangladeshi government forces, incentivizing peace accords to end that conflict. In the Philippines and Colombia, notorious kidnap-for-ransom of businesspeople incentivized the international business community to work for peace. In virtually all cases, an end to conflict opens the land to business development that is risky while the conflict is ongoing.

Land and Natural Resources as Important Issues Addressed in the Peace Accords

Land and natural resources were addressed in virtually all the peace accords. However, demands by the less powerful party were typically met only to a limited extent, while difficult issues such as land redistribution were left to the post-accord political process, as occurred in

Colombia. Special courts and administrative jurisdictions were established to adjudicate land claims in the CHT and Colombia.

In the Philippines, revenues from taxation were shared, with 75% going to the Philippine government and 25% to the Bangsamoro region, an autonomous region created by the peace accord. Moreover, the Philippine government agreed that taxes on revenues from mining in the Bangsamoro Autonomous Region would be significantly higher than in the rest of the Philippines.

In Northern Ireland, the Good Friday agreement called for the drafting of a regional economic development plan with all deliberate speed, while land distribution and ownership remained the same. In Algeria, by the terms of the Evian Accords, France was guaranteed a sufficient supply of oil from Algeria and remained Algeria's primary trading partner. In South Africa, ownership of the mineral resources did not change after the peace accords.

It should be noted that in these asymmetric conflicts, the demands of the less powerful contestant were less frequently met through the peace accord than those of the more powerful one. The notable exceptions include the following:

- the FLN in Algeria, which achieved statehood and self-governance with extensive financial assistance from France, its occupying colonial power;
- the ANC in South Africa, which won subsequent elections and achieved a peaceful transition to power, although foreign companies maintained control of major mining sites, and impoverishment and unequal distribution of resources continued as a challenge to governance and development; and
- the PIRA in Northern Ireland, where peace was negotiated on much more equal terms.

Use of Technology in Compliance Monitoring (Data Sharing and Transparency)

In a first, a university center was engaged to monitor compliance with the elements of a peace accord when the Kroc Institute for International Peace Studies at Notre Dame's Keough School of Public Affairs was tasked by the Colombian government with monitoring and documenting instances of noncompliance. Governmental organizations in the Philippines also used technology to gather and analyze data to monitor conflicts after the peace accord was signed. Geographic Information Systems (GIS) and remote sensing technologies were used to monitor

compliance with the peace accords between Ecuador and Peru; the process was facilitated by the two mediators—the USA and Brazil.

Conclusion

The twelve case studies analyzed here provide us with a rich tapestry of material with which to investigate the nexus between natural resources and conflict, and how such resources can be used in peacebuilding. Even when natural resources are not a core issue in a conflict, they can play an important role in the development of a novel pathway to peace, highlighting the salience of environmental factors as a "superordinate goal" for adversaries. This superordinate goal is grounded in the realization that natural resources are both essential for the survival of local parties and important to the international community, helping stakeholders to consider the full context of a conflict and incentivizing parties to find new structures and ways of thinking to make peace now and resolve conflicts peacefully in the future.

Notes

1. The appendix to the introduction to this special issue, available at https://doi.org/10.1162/ngtn_e_00022, includes conflict summaries based on reports from various universities conducted as part of the original research project, "Why It Worked: A Research-Driven Model for Conflict Resolution." Comprehensive cases will be published for classroom use by the Negotiation and Conflict Resolution Collaboratory at the Center for Public Leadership at Harvard Kennedy School.
2. Conflict summaries may be found at https://doi.org/10.1162/ngtn_e_00022. See note 1.

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