

Natural Resources as Instruments for Social Cohesion and Peace Building

Oluseyi Adeyemi AFOLABI¹ and Felix Kwabena DONKOR²

¹Faculty School of Physics, Engineering and Computer Science,
University of Hertfordshire, Hatfield, United Kingdom

² Department of Geography Education, University of Education,
Winneba, Ghana

Email: fkdonkor@uew.edu.gh

Abstract

Environmental challenges are amongst the most urgent topics on the international development agenda. The issue of natural resource-induced conflicts is not unique to Africa but rather a global challenge. Natural resources by themselves are inherently neutral and apolitical. However, the management systems and associated competing interests amongst core stakeholders determine the role of natural resources as triggers of conflict or instruments of peace building. It is thus imperative that stakeholders can access adequate technical information and training to enable them take informed decisions on the sustainable usage of natural resources. This study employed the review of literature to investigate the role of natural resources as instruments of peace building and social cohesion. The study findings indicate the sidelining of core actors in the development of natural resources, causing them to resort to violence. One viable approach is to mix indigenous knowledge and customs with workable exogenous frameworks to facilitate effective management of natural resources conflict. Natural resource-based conflicts can also be mitigated by promoting and adhering to the principles of good governance, especially regarding participation, non-discrimination, transparency, accountability, legitimacy and legality. By embracing approaches towards equitable and efficient natural resource management, conflict-stricken communities can attain long-term peace and economic stability. In a majority of

cases, conflicts regarding natural resources begin at the local level and need to be addressed at this level by engaging relevant actors in the conflict management process. In this regard, traditional community-based processes are seen as ideal to local contexts and are hence more readily embraced by communities.

Keywords: Sustainable development, Natural resources, Conflict management, Peacebuilding, climate change

Introduction

Contemporary Society and Wicked Problems

Environmental challenges are amongst the most urgent topics on the international development agenda (Donkor et al., 2019; Tantoh et al., 2019). Factors relating to escalating populations, poor land management practices and other socio-economic issues, amongst others, degrade the ecology. *Wicked* problems are intricate challenges that do not respond to simple measures (Balint et al., 2011). They are further complicated by the interacting forces of scientific uncertainty and varying cultural values leading to disputes between scientists' and local citizens' opinions on resource usage, preservation and maintaining harmony between human needs and ecosystem health (Balint et al., 2011). This creates very complex policy dilemmas owing to the numerous aggregate risks and uncertainties which, combined with opposing popular opinions, cause hostility in addressing such problems (Balint et al., 2011). Climate change for example is often denoted as a "*super wicked problem*," as the more it is prolonged, the more difficult it is to address (Levin et al., 2012). Individuals, households and communities with climate-sensitive livelihoods are disproportionately prone to climate change impact, because of their natural resource-dependence. Natural resources represent an essential resource that supports vulnerable communities. Furthermore, the ecosystem services they provide are essential for climate adaptation (Smith et al., 2020), and critical to the successful thriving of industries and communities significantly dependent on such resources and related livelihoods like agriculture (Toro & Andrade, 2020). The challenge of climate change has hence evolved into a core urgent challenge in recent times with conflicts over natural resources being one consequence.

Conflicts over natural resources

Conflicts over natural resources have been part of human history since time immemorial. This reached a crescendo in the twentieth century with empires and nation-states battling for control over scarce natural resources (Spoden, 2015); water is an example. Although the earth is enveloped in water, only a minute 0.03 per cent of it is wholesome for consumption, making 99.7 per cent unfit for direct use. Moreover, with over 1 billion people lacking access to potable water, water is seen as a flashpoint for conflict. Although the outbreak of conflicts is largely attributed to political causes (Spoden, 2015), the recent palpable effects of climate change has given conflicts on natural resources an additional climate dimension (UNEP, 2015). Land, marine life, livestock, water and forests are examples of natural resources that sustain the livelihood of many people, as well as contribute to the national GDP of many developing nations. In general, natural resources are regarded as common goods because they are used by many people. The management of natural resources therefore requires cooperation as it involves diverse – frequently competing – interests (UNEP, 2012).

The analysis of conflicts over natural resources shows some denominators that are worth considering (Spoden, 2015):

- Diversity of users, but no clear legal management guidelines. This creates a rife atmosphere for conflicts, highlighting power imbalances.
- Population escalation coupled with depletion of natural resources aggravates contestation over resources and consequently the likelihood of conflicts. This is further animated in the presence of other conflict variables such as politicized ethnicity or social inequities.
- Climate variability exacerbates the competition over scarce natural resources, hence creating fresh or aggravating existing conflicts.
- Significant endowments in natural resources can worsen corruption and the phenomenon of the *resource curse*. This manifests in conflicts whereby government officials or extractive firms are pitted against the rural population.

- State regulations concerning natural resource management contrast with traditional indigenous user rights and customs, hence leading to tension between government officials and local users.

Due to the importance of natural resources, several approaches have been experimented with for their management (UNEP, 2009; UN, 2019). For example, Musavengane and Simatele (2016) observed that community-based natural resource management (CBNRM) is vital for promoting environmental and ecological sustainability. It also comes with benefits for enhancing communal access to eco-system services.

Addressing background and cross-cutting issues in the nexus of natural resources and conflicts

In general, Africa is a massive and topographically diverse land mass, endowed with a rich diversity of natural resources, with immense capacity for mineral beneficiation. The causal interaction between natural resource endowments and the outbreak of violence such as conflicts is complicated (Nwankwo, 2021). This is more so as it is a confluence, as it is argued, of several factors – political, socio-economic and ecosystem. Even though environmental resources have contributed significantly to the outbreak of several conflicts, their nature is largely rooted in comprehending the grievance narrative existing in a context of socio-economic and political influences. It is rare to find natural resources as the only trigger of conflicts. In instances whereby, natural resources have been implicated as the core agent of social violence, they have to be considered as vital aspects of conflict prevention that can unlock the economic potential of nurturing peace in fragile societies (Maphosa, 2012).

According to reports from the United Nations, challenges related to the prevention, management and resolution of natural resource-induced conflicts could well come to define global peace and security in the 21st century (UN, 2019). Worldwide patterns including demographic changes, escalation in consumption, natural resource depletion and climate change, are putting immense and potentially unsustainable pressure on the accessibility and use of natural resources like land, water and ecosystems (Reed et al., 2013). This has led to increased calls for global partnerships to address these challenges and risks, by building sound mechanisms for land and natural resources management and

conflict prevention. Such a partnership can be developed and implemented as a strategic cross-sectoral measure that builds the capacity of national stakeholders, to avoid land and natural resources serving as triggers of conflict (Ross, 2015). The fragility of social systems that result from conflicts affects the functioning of critical institutions (Pereira et al., 2017). This includes the capacity of local institutions to function across four vital imperatives: nurturing an enabling environment with sustainable and equitable socio-economic growth; creating and sustaining legitimate, transparent, and accountable political institutional mechanisms; safeguarding the populace from violent conflicts and securing their communities; and satisfying the fundamental human needs of their populace (Maphosa, 2012). In general, a decrease in the availability and/or quality of a resource limits the resource, even as population escalation divides the resources into smaller amounts amongst more and more individuals. Moreover, inequitable resource distribution translates into some groups getting disproportionately greater allotments of the resource (Boisvenue & Running, 2013). Hence aggravated, natural resource scarcity leads to numerous impacts, which in turn may produce conflict. Resultant effects are inclusive of limited economic activities and agricultural productivity, amongst others. Moreover, the interrelationship between natural resource scarcity and conflict is a complicated one. Natural resource contestations can interact with existing socio-economic, cultural and political factors, including the legitimacy of the local leadership and the character of the socio-economy. This makes it necessary to support countries in improving natural resource management for conflict prevention and peace building.

Sustainable development and conflicts over natural resources

Sustainable development refers to the concept of development which seeks to facilitate global development within environmental and conservation whims (Mensah, 2019). A number of policy measures have been introduced to facilitate the global sustainable development agenda. The 17 SDGs underlying the sustainable development goals (SDGs) are mutually reinforcing as success in one area comes with co-benefits in other aspects (Montanari et al., 2021). It is noteworthy that although the drive towards sustainable development is one whose importance cannot be overemphasized, no meaningful development can be attained without peace (UN, 2019). Thus, social harmony and peaceful co-existence is a pre-requisite for accelerated development. This is

more so for developing nations that are introducing measures to leapfrog their development. Furthermore, natural resource conflicts and their impacts have cross-cutting implications on all aspects of development in general, and sustainable development in particular. SDG 16 therefore aims to “Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels” (UN, 2020). It is noteworthy that the 6th of November is designated by the UN as the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict. The UN and the Secretary-General have identified the essence of integrating issues of natural resource allocation, ownership and access into peace building measures in the immediate aftermath of conflicts (UN, 2020). Addressing conflicts in all its manifestations, such as that over natural resources, is the foundation of sustainable cities and communities (SDG11) and ultimately enhanced life on land (SDG15) inter alia (Donkor, 2020). Unlike the erstwhile Millennium Development Goals (MDGs), a hallmark of the SDGs is the goal, *Leave No One Behind*. This refers to the pledge by the United Nations’ member states to improve the wellbeing and development of people who are socially marginalized and thus left farthest behind (Sarrasanti et al., 2020). Conflicts over natural resources exacerbate such a challenge as those marginalized in the society are denied critical social amenities and services that facilitate their human development. This aggravates social inequities at the national and global level, which compromises the ideals of sustainable development.

The issue of equity also has an intergenerational context. Thus, another distinguishing characteristic of sustainable development is the notion of intra and inter-generational equity. This posits that current development should be inclusive and not compromise the ability of future generations to attain sustainable development. Issues of inter-generational equity are a very common thread in the dynamics of conflicts over natural resources. Furthermore, the SDGs are lauded for seeking to tackle urgent problems affecting the global community in a holistic manner (UN, 2020). Conflicts in all forms, including those over natural resources, compromise measures aimed at attaining intra and inter-generational equity. These conflicts also make it practically impossible to address the SDGs in a holistic manner. Whilst the influence of natural resources on the incidence of conflicts has received substantial research focus, the role of natural resources in social cohesion and peace

building has rather received a dearth of attention. This study flips the conversation and addresses this gap by exploring the role of natural resources as a vehicle for social cohesion and peace building. Moreover, it uniquely situates this discussion in the context of the sustainable development goals (SDGs) and the African Union's Vision 2063 (The Africa We Want).

Methodology

This study is premised on an extensive review of literature. A systematic review on the impact of land conflicts on the management of communal natural resources was performed, forming the premise of an in-depth meta-analysis of prevailing literature. Employing meta-analysis, it was vital to systematically assess the literature to investigate factors and processes that can affect effective management of common pool resources or compromise their management. In essence, the meta-analysis of literature for this study enabled the understanding of how diverse issues like geography, socio-political frameworks and community collaboration in communal natural resource management affect robust management. An internet search was performed using different academic search engines such as *ScienceDirect*. Key words like 'natural resources management', 'conflicts' and 'sustainable development' were introduced with approximately 80 peer-reviewed articles identified. A swift scanning of these articles was performed. This produced a pre-selection of 35 articles. A further in-depth review of these articles resulted in the selection of 25 articles, which focused on a number of issues such as participation and environmental management. Finally, 12 articles that focused on environmental governance in sub-Saharan Africa were identified and reviewed using different perspectives, which included a meta-analysis of selected case studies. A thematic content analysis was done to analyse and interpret the data. This is the process whereby the core repetitive themes relating to the dynamics of conflicts over natural resources and its implications for sustainable development were integrated using the *meaning condensation* technique (Kyngäs, 2020).

Results and Discussions

Managing conflicts of natural resources

A viable approach for mitigating natural resource-based conflicts is by promoting and adhering to the principles of good governance,

especially regarding: participation, non-discrimination, transparency, accountability, legitimacy and legality. In the majority of cases, conflicts regarding natural resources begin at the local level and need to be addressed at this level, by engaging relevant actors in the process (Olaopa & Ojakorutu, 2016). In this regard, traditional community-based processes are seen as ideal to local contexts and are hence more readily embraced by the communities. It has also been observed that local conflicts can escalate into sub-national and often national levels. This necessitates advocacy measures and dialogue. Bruch, Muffett and Nichols (2016) observed that long after the guns are silent, those who have endured conflicts require food, water, shelter, opportunities to make a living, guarantee of peace and safety, and a restoration of civil order.

Satisfying such requirements while maintaining peace demands more than merely creating governmental structures; it demands good governance. Thus, natural resources are vital to the sustenance of people and peace in post-conflict situations, however governance challenges largely compromise these measures (Bruch et al., 2016). There is hence a dynamic interrelationship between natural resource management and good governance. Moreover, natural resource management is vital to improving governance and the rule of law, fighting corruption, enhancing transparency and accountability, involving marginalized populations, and building confidence in the aftermath of conflicts (Hove et al., 2013). Furthermore, good governance is vital in guaranteeing that natural resource management can address the immediate requirements of post-conflict stability and development, whilst at the same time building the basis for sustainable peace. Bruch et al. (2016) thus emphasized the need to draw on the dynamic interaction between governance and natural resource management.

There are vital lessons from history that can inform post-conflict rebuilding measures. Such lessons can also be useful as guidance in formulating and implementing more robust governance initiatives, providing a practical framework for action. This includes the increasing influence of environmental factors in the dynamics of natural resource conflicts.

Addressing underlying environmental factors in natural resources conflicts

Environmental factors do not act alone in causing violent conflict. The abuse of natural resources combined with environmental pressures can significantly facilitate violence. There has been an uptick in such incidences in recent times. Records from the United Nations Environment Programme (UNEP) indicate that over the past 60 years, 40 per cent of total intrastate conflicts are associated with natural resources, and this connection increases the threat of a conflict relapse in the first five years (UNEP, 2015). Thus, climate change is not directly implicated in the incidence of conflicts, but is rather considered as a threat multiplier that aggravates resource shortages and prevailing vulnerabilities.

This is animated in the context of conflicts between farming communities and livestock herders, which are fuelled by contestations over natural resources amongst others. It is argued that the livelihood of farmers and livestock growers tend to complement one another (Obi, 2010). Moreover, there had been enduring arrangements in place, which enabled peaceful co-existence between these core actors in the period of transhumance. Nevertheless, evidence suggests that in recent times, such mediating pacts or policies have been subjected to immense pressure owing to a multitude of stressors (Donkor & Mearns, 2020). Such factors are inclusive of contestations over increasingly limited natural resources, negative impacts of climate change and changing socio-economic factors.

The incidence of climate-induced conflicts has aggravated hostilities and disputes, which have caused the loss of several lives and livelihood between pastoralists and farming communities. This situation points to the need to enhance natural resource management measures so as to limit possible contestations over scarce resources and the possibility of conflict outbreaks. It is noteworthy that ecosystem services supply is in tandem with natural resource productivity and is indispensable to the sustenance and wellbeing of communities and humankind in general (Boisvenue & Running, 2013). This suggests that protecting the biological integrity of natural resources by law and supporting it with the requisite enforcement regimes will safeguard ecosystem services (Tantoh et al., 2019).

Furthermore, as the world approaches the SDGs final decade of action; facilitating the *Leave No One Behind* Agenda through holistic and more comprehensive approaches will become robust when backed with the requisite law enforcement instruments as natural resources depletion and poverty phenomenon are mutually interactive. Moreover, law can enhance ecosystem-based adaptation to climate change so as to avert future global ecological crises and reinforce resilience to climate change in vulnerable communities. The “*Ecosystem-based Adaptation*” (EbA) approach denotes a way of managing the impacts of climate change and environmental degradation by using biodiversity and ecosystem services as components of a general adaptation strategy to enable people and communities cope with the associated negative impacts from the micro to the macro scale (UNEP, 2012).

Ultimately, a common denominator in the debate on law and sustainable natural resources management is that effective management is knowledge and law-enforcement intensive, thus necessitating ready access to useful knowledge and law enforcement support to sustain new initiatives, which are more effective and targeted. Global policy imperatives can inform natural resources management strategies and requisite enforcement regimes. This will contribute to helping to address the challenge of natural resource conflicts.

Situating natural resources conflicts in the context of the SDGs

The earth’s natural resources underpin the core aspects of development and are acknowledged as crucial in the framework of the SDGs (UNEP, 2020). However, sustainable development becomes practically impossible in an atmosphere of conflict. This makes it necessary to address the issue of land conflict and natural resources-related activities such as tourism as a matter of urgency. The global observation of the International Day for Preventing the Exploitation of the Environment in War and Armed Conflict every 6th November highlights the importance of addressing natural resources conflicts. It also points to the essence of integrating issues of natural resource allocation, ownership and access to peace building measures. This is more so as social cohesion and peaceful co-existence have implications for key policy imperatives across the local, national, regional and global scales (Nwankwo, 2021).

The African Union's Agenda 2063 (The Africa We Want) represents a common strategic framework for inclusive growth and sustainable development. It also aims to catalyse Africa's political, social, economic and technological development whilst sustaining the Pan African drive for self-determination, freedom, progress and collective prosperity. Agenda 2063 is premised on the AU vision and aims amongst others to attain: a prosperous Africa built on inclusive growth and sustainable development; and a peaceful and secure Africa (African Union Commission, 2015). The conflict over natural resources that has characterized many places in Africa is thus a direct threat to the AU's vision.

Obi (2010) observed the dispossession of local people, which triggered violent resistance in Nigeria's oil-rich but poor Niger Delta. The core contention is that oil extraction and the lack of fair sharing of its benefits drive disillusionment and conflict between the Niger Delta people, and groups considered as the exploiters and beneficiaries of the oil resources in the region. The farmer-pastoralist conflict (FPC) in Nigeria has worsened in contemporary times, particularly with regard to access to land and damage to crops. It generated intense debate between 2015 and 2018 because of the aggravation of the conflict and the increased fatalities associated with it (Nwankwo, 2021). Fleshman (2001) also argued that diamonds and other natural resources sustained armed conflicts in Angola and the Mano River Union States of Liberia, Sierra Leone and Guinea, notwithstanding enhanced enforcement and monitoring of UN arms and diamond sanctions. The Democratic Republic of Congo (DRC) is often considered as a textbook case for natural resource-induced conflicts across the micro and macro scales (Burnley, 2011). State and non-state interests have been implicated in the development of natural resources such that actors who are sidelined from the process often resort to violence (Olaopa & Ojkorutu, 2016).

It is plausible to deploy and utilize indigenous knowledge and customs with modern frameworks in resolving conflict and in the management of natural resources. Nevertheless, reinforcing the management of core natural resources (such as mining, oil, and forestry resources) is crucial to future economic progress. Furthermore, natural resource management is complicated and problematic owing to differentiated political, social, economic, and environmental imperatives even in peaceful societies. Communities vulnerable to conflict in Africa

often offer more complicated scenarios owing to background political and historical influences for the conflicts (Olaopa & Ojakorutu, 2016). Notwithstanding such challenges, sound governance practices, including the participation of stakeholders and financing schemes, could both avert and settle conflicts. By embracing approaches that promote equitable and efficient natural resource management, the conflict-stricken communities in the DRC and other places can attain long-term peace and economic stability.

It is noteworthy that the issue of natural resource-induced conflicts is not unique to Africa, but is a global challenge. Ross (2015) posits that such issues are equally prevalent in the Latin American and Caribbean (LAC) region. Thus, lessons about conflict management in other jurisdictions nurtured at the international level are equally valid for the LAC region. These instances highlight the need to integrate natural resource and environmental factors into integrated peace-building measures. Moreover, there is the urgent need to harness and capitalize on the capacity of environmental cooperation to promote peace building. In this regard, critical natural resources, including forests, water bodies, arable lands, energy and biodiversity need to be protected (UNEP, 2015). An environmental imperative such as natural resources management can therefore act as effective platform or catalyst for promoting dialogue, building consensus, exploring common interests and widening cooperation between opposing groups (Donkor et al., 2017).

Addressing natural resource conflicts is a core peace and security issue in the 21st century. In most instances, elite groups dominate resource channels, increasing their personal wealth to the detriment of local citizens (UNEP, 2015). Furthermore, many communities have become hostile to resource investments and sometimes withdraw companies' social licenses to operate. Such incidences are pronounced in instances where benefits and burdens are not fairly allocated, human rights are not respected, environmental degradation is rampant, and lofty promises are not fulfilled. A number of environmental resources are subject to these dynamics (UNEP, 2015). Moreover, in conflict-stricken communities, natural resources often provide the initial opportunities to help stabilize, re-build and stimulate livelihood and other economic activities. In cases whereby environment and associated resources are well managed and integrated across a variety of peace-building

measures, natural resources can create a sustainable pathway to lasting peace, and poverty reduction. Nevertheless, it is argued that at the turn of the millennium, the UN's budding peace building architecture failed to highlight the influence of natural resources within the peace and security continuum. This led to a situation where the UN was inadequately positioned to facilitate lasting resolutions to resource conflicts or harness the peace building capacity of natural resources and the environment (UNEP, 2015). In the final decade of action to deliver the SDGs, addressing the danger of natural resource conflicts is an urgent issue given its cross-cutting position. This can compromise the attainment of the SDGs. For example, whilst SDG 1 aims to eradicate poverty in all its forms, natural resource conflicts alone can exacerbate poverty in affected communities. Moreover, core human development indicators such as nutrition, good health and wellbeing, as well as quality education are aggravated due to such conflicts. Ultimately, due to the mutually-reinforcing nature of the SDGs, the deleterious cross-cutting impact of natural resource conflicts deserves urgent attention.

Natural resources endowments: A double-edged sword

Natural resources by themselves are inherently neutral and apolitical. However, the management systems and associated competing interests amongst core stakeholders determine their role as triggers of conflict or instruments of peace building. It is hence imperative that stakeholders are provided with adequate technical information and training to enable them take informed decisions on the sustainable usage of natural resources. Moreover, peace-building measures have to be combined with interventions toward improving natural resource and environmental governance (Olaopa & Ojakorutu, 2016). Failing to address the environmental and natural resource challenges of the populace can aggravate measures aimed at nurturing peace and may well trigger further conflicts. The exploitation of natural resources and associated environmental challenges are implicated in all stages of the conflict cycle; from facilitating the outbreak and perpetuating violence to compromising possibilities for peace (Samset, 2011).

Moreover, the environment itself can also be a casualty of conflict. This is because direct and indirect environmental abuse, together with the breakdown of institutions, can result in environmental perils that threaten people's health, livelihood and

security. Ultimately, the manner in which natural resources and the environment are managed can be a causal factor in the dynamics of peace and security. This can also lead to conflict if not effectively addressed in post-conflict situations. Studies indicate that natural resource conflicts have a double likelihood of relapsing into conflict in the first five years (UNEP, 2015).

However, it was observed that a few peace negotiations seeking to end conflicts related to natural resources have dealt with the underlying resource management dynamics. Moreover, the acknowledgement of environmental factors as contributory agents to incidences of violent conflict highlights their potential role as vehicles for cooperation, transformation and the promotion of peace (Fletcher et al., 2020). Natural resources and the environment can help facilitate social cohesion and peace building through economic development and the creation of opportunities for employment.

In addition, collaboration in the management of common pool natural resources provides additional opportunities for peace building (Reed et al., 2013). These issues need to be given serious recognition in the conflict management cycle right from the initial phase. However, it has often been observed that delayed measures or counter-productive options, which were introduced at the initial stages, become entrenched, leading to unsustainable pathways of recovery that can compromise the fragile foundations of peace. Coupling environment and natural resources into peace building measures cannot be considered a mere alternative or choice, but a critical security imperative (UNEP, 2009). As the world commences the final decade of action to deliver the SDGs, this is a unique opportunity to address environmental challenges and explore potential avenues in a more consistent and coherent manner.

UNEP thus argues for integrating environment and natural resource factors into peace-building measures and conflict prevention. To achieve this aim, it is important to reinforce early warning and early action capabilities in vulnerable areas. In addition, improving the effectiveness of natural resource governance and the environment has to be considered a critical investment in conflict prevention (UNEP, 2009). In addition, it is essential to enhance the management mechanisms deployed towards natural resources. This will help to limit

the possibilities of the vital natural resources financing conflicts. This also requires introducing effective laws to preserve natural resources and ecosystem services during violent conflicts.

Conclusion

The triggers and factors driving natural resource conflicts are varied, intricate and largely intertwined. The interacting factors include worldwide economic growth, escalating consumption, poor governance, poverty, inequitable access to resources and power imbalances. In order to limit the risk of future conflicts, it is imperative to encourage approaches that promote and improve cooperation amongst core stakeholders. Moreover, conflicts over natural resources are not an entirely novel phenomenon. Several issues have been observed to often trigger or significantly aggravate conflicts over natural resources. These include local/traditional mechanisms failing to tackle or resolve conflicts and mediate conflicting interests. In order to avoid violent conflicts, evaluate risks and facilitate adaptation and innovation, it is important to enhance the analysis of interests and the needs of core actors. It is also vital to consider underlying power relations and rights that affect resource management in diverse contexts. It is posited that robust analysis and relevant interventions enhance the contributions of natural resource management projects to conflict prevention.

References

- African Union Commission. (2015). *Agenda 2063: The Africa we want. Framework Document*. ISBN: 978-92-95104-23-5.
- Balint, P.J., Stewart, R.E., Desai, A., and Walters L.C. (2011). *Wicked environmental problems: Managing uncertainty and conflict*. Washington: Island Press.
- Boisvenue C., & Running, S.W. (2013). Controls on provisioning services and forest productivity: Responses and risk under changing environmental conditions. In: Timothy R.S., & Pielke, R.A. (Eds). *Climate Vulnerability* (pp. 129–149). Amsterdam: Elsevier Inc.
- Bruch, C., Muffett, C., & Nichols, S.S. (2016). Natural resources and post-conflict governance: Building a sustainable peace. In: Carl Bruch, Carroll Muffett and Sandra S. Nichols, eds. *Governance, natural*

resources, and post-conflict peacebuilding. Abingdon: Routledge, 2016), pp. 1-31.

- Burnley, C. (2011). Natural resources conflict in the Democratic Republic of the Congo: A question of governance? *Sustainable Development Law & Policy*, 12(5):1-8.
- Donkor, F.K. (2020). Recovery following economic and social chaos: Challenges and opportunities for building resilient communities. (2020). *Encyclopedia of the SDGs*. Major reference works (or MRWs). Cham-Switzerland: Springer Nature.
- Donkor, F.K., Howarth, C., Ebhuoma, E., Daly, M., Vaughan, C., Pretorius, L., Mambo, J., MacLeod, D., Kythreotis, A., Jones, L., Grainger, S., Golding, N., & Anderson, J.A. (2019). Climate services for development: The role of early career researchers in advancing the debate. *Environmental Communication*, 13(5): 561-566. <https://doi.org/10.1080/17524032.2019.1596145>.
- Donkor, F.K., & Mearns, K. (2020). The nexus of climate change impacts on urban tourism industry: A case study on managing drought. *Exploratory Environmental Science Research*, 1(1): 78-86.
- Donkor, F.K., Tantoh, H., & Ebhuoma, E. (2017). Social learning as a vehicle for catalysing youth involvement in sustainable environmental management. *CODESRIA Bulletin Number 3*, 2017 [ISSN 0850 – 8712]: Ecologies, economies and societies in Africa.
- Fleshman, M. (2001). Conflict diamonds evade UN sanctions. <https://www.un.org/africarenewal/magazine/december-2001/conflict-diamonds-evade-un-sanctions>.
- Fletcher, R., Massarella, K., Büscher, B., and Koot, S. (2020). Ecotourism and conservation under COVID-19 and beyond. *Atlas Tourism and Leisure Review*, 2020(2), ISSN 2468 – 6719.
- Hove, M., Ngwerume, E., & Muchemwa, C. (2013). The urban crisis in sub-Saharan Africa: A threat to human security and sustainable development. *International Journal of Security and Development*, 2(1), 7-18.
- Kyngäs H. (2020) Qualitative research and content analysis. In: Kyngäs H., Mikkonen K., Kääriäinen M. (eds). *The Application of content analysis in Nursing Science research*. Springer, Cham. https://doi.org/10.1007/978-3-030-30199-6_1.

- Levin, K., Cashore, B., Bernstein, S. & Auld, G. (2012). Overcoming the tragedy of super wicked problems: Constraining our future selves to ameliorate global climate change. *Policy Science*, 45, 123–152.
- Maphosa, S.B. (2012). Natural resources and conflict: Unlocking the economic dimension of peace-building in Africa. <https://media.africaportal.org/documents/No.-74.-Natural-Resources-and-Conflict..pdf>.
- Mensah, J. (2019). Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review. *Cogent Social Sciences*, 5(1), 1-22. <https://doi.org/10.1080/23311886.2019.1653531>.
- Montanari, C., Jacobs, L., Haklay, M.C., Donkor, F.K., Mondardini, M.R.S. (2021). Agenda 2030's, "Leave no one behind", in citizen science? *Journal of Science Communication*, 20(06)A07. <https://doi.org/10.22323/2.20060207>.
- Musavengane, R., & Simatele, D.M. (2016). Community-based natural resource management: The role of social capital in collaborative environmental management of tribal resources in KwaZulu-Natal, South Africa. *Development Southern Africa*, 33(6), 806-821, DOI: 10.1080/0376835X.2016.1231054.
- Nwankwo, C.F. (2021). Discursive construction of the farmer-pastoralist conflict in Nigeria. *Open Political Science*, 4: 136–146. <https://doi.org/10.1515/2021-0014>.
- Obi, C.I. (2010). Oil extraction, dispossession, resistance, and conflict in Nigeria's oil-rich Niger Delta. *Canadian Journal of Development Studies*, 30, (1-2), 219–236.
- Olaopa, R.O., & Ojakorutu, V. (2016). Conflict about natural resources and the prospect of development in the Democratic Republic of Congo (DRC). *Journal of Social Sciences* 49(3-1): 244-256. <https://doi.org/10.1080/09718923.2016.11893618>.
- Pereira, T., Shackleton, S., and Donkor, F.K. (2017). Integrating Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) for greater local level resilience: Lessons from a multi-stakeholder think-tank *POLICY BRIEF Number 16 2017* Department of Environmental Science, Rhodes University Number 16 2017.

http://vital.seals.ac.za:8080/vital/access/manager/Repository/vital:28097?site_name=GlobalView.

- Reed, M.G., Henderson, A.E., & Mendis-Millard, S. (2013). Shaping local context and outcomes: The role of governing agencies in collaborative natural resource management. *Human Dimensions of Wildlife: An International Journal* 18(4), 292–306. doi:10.1080/10871209.2013.801003.
- Ross, M. (2015). Conflict and natural resources: Is the Latin American and Caribbean Region different from the rest of the world? <https://www.sscnet.ucla.edu/polisci/faculty/ross/papers/chapters/Ross-Conflict%20and%20Natural%20Resources%20in%20LA%202014.pdf>.
- Samset, I. (2011). Building a repressive peace: The case of post-genocide Rwanda. *Journal of Intervention and Statebuilding*, 5(3), 265-283.
- Sarrasanti, N., Donkor, F.K., Santos, C., Tsagkari, M., & Wannous, C. (2020). It's about time we care about an equitable world: Women's unpaid care work and COVID-19. *IEEE Engineering Management Review*, doi: 10.1109/EMR.2020.3031313.
- Smith, R., Cannizzo, Z.J., Belle, E. and Wenzel, L. (2020). Role of protected areas in climate change mitigation, adaptation, and disaster risk reduction. W. Leal Filho et al. (eds.). *Life on Land, Encyclopedia of the UN Sustainable Development Goals*. Switzerland: Springer Nature. https://doi.org/10.1007/978-3-319-71065-5_122-1.
- Spoden, J. (2015). The environment in an age of intense globalization: Conflict over natural resources. <https://www.khanacademy.org/humanities/whp-1750/xcabef9ed3fc7da7b:unit-9-globalization#xcabef9ed3fc7da7b:9-5-the-environment-in-an-age-of-intense-globalization>.
- Tantoh, H.B., Simatele, D.M., Ebhuoma, E., Donkor, F.K., & McKay, T.J. M. (2019). Towards a pro-community-based water resource management system in Northwest Cameroon: Practical evidence and lessons of best practices. *GeoJournal*. doi: <https://doi.org/10.1007/s10708-019-10085-3>.
- Toro, M., and Andrade, G. (2020). Arbuscular mycorrhizae, beneficial microorganisms for sustainable agriculture. W. Leal Filho et al.

(eds.), *Life on Land, Encyclopedia of the UN Sustainable Development Goals*, https://doi.org/10.1007/978-3-319-71065-5_122-1. Springer Nature Switzerland AG 2020: Cham.

- UN. (2019). The EU-UN Partnership on land, natural resources and conflict prevention. <https://www.un.org/en/land-natural-resources-conflict/>.
- UN. (2020). The 17 goals. <https://sdgs.un.org/goals>
- UNEP. (2009). *From conflict to peacebuilding: The role of natural resources and the environment*. Nairobi: UNEP.
- UNEP. (2012). *Ecosystem-based adaptation guidance: Moving from principles to practice*. Nairobi: UNEP.
- UNEP. (2015). *Addressing the role of natural resources in conflict and peacebuilding: A summary of progress from UNEP's environmental cooperation for peacebuilding programme 2008-2015*. Nairobi: UNEP.
- UNEP. (2020). A decade of action on the sustainable development goals is underway. <https://www.unep.org/news-and-stories/story/decade-action-sustainable-development-goals-under-way>.