Towards Tangible Environmental Rights: Incorporating Disaster Risk Reduction into Sustainable Development

---

Kariuki Muigua

Table of Contents

Towards Tangible Environmental Rights: Incorporating Disaster Risk Reduction into Sustainable Development
<u>**Kariuki Muigua**</u>*

Abstract

This paper examines how environmental rights can be fostered by incorporating Disaster Risk Reduction (DRR) into the Sustainable Development agenda. The paper discusses the concept of DRR. It argues that DRR is a fundamental idea in light of the mounting impact of disasters on environmental rights. The paper examines how disasters undermine the attainment of environmental rights. In light of this concern, the paper notes that fostering DRR is vital towards protecting environmental rights for people and planet. It discusses how DRR can be effectively incorporated into Sustainable Development towards tangible environmental rights.

---

* PhD in Law (Nrb),SC, FCIArb (Chartered Arbitrator),OGW, LL. B (Hons) Nrb, LL.M (Environmental Law) Nrb; Dip. In Law (KSL); FCPS (K); Dip. in Arbitration (UK); MKIM; Mediator; Consultant: Lead expert EIA/EA NEMA; BSI ISO/IEC 27001:2005 ISMS Lead Auditor/ Implementer; ESG Consultant; Advocate of the High Court of Kenya; Professor of Environmental Law and Conflict Management at the University of Nairobi, Faculty of Law; Member of the Permanent Court of Arbitration (PCA) [January, 2026].

1.0 Introduction

Environmental rights are at the heart of Sustainable Development. Environmental rights have been defined as a set of principles and regulations designed to ensure environmental protection while safeguarding the well-being of individuals and communities that depend on the environment and its natural resources[1]. It has been argued that environmental rights aim to achieve the right to a clean, healthy and sustainable environment including through the protection of natural resources and ensuring equitable access to resources and ecosystem services[2]. They include substantive rights such as the right to clean air, access to safe water, adequate sanitation, and clean, safe, healthy, and sustainable environment[3]. They also include procedural rights such as the right to information, participation in and access to justice, and nondiscrimination in environmental matters and decision-making processes[4].

According to the United Nations Environment Programme (UNEP), the idea of environmental rights extends basic human rights to cover environmental protection and sustainability[5]. It has been correctly noted that human rights and the environment are intertwined[6]. On one hand, human rights including the right to food, water, shelter, energy, health and clean air cannot be enjoyed without a safe, clean, healthy and sustainable environment[7]. Further, it has been observed that sustainable environmental governance cannot exist without the establishment of and respect for fundamental human rights[8].

Human rights and the environment are therefore intrinsically linked since a clean, healthy and sustainable environment is a precondition for enjoyment of most

---

[1] Environmental Rights., Available at https://www.manglai.io/en/glossary/environmental-rights (Accessed on 10/01/2026)

[2] Environmental Rights., Available at https://pachamama.org/environmental-rights (Accessed on 10/01/2026)

[3] The Access Initiative., 'The Road to Realizing Environmental Rights in Africa: Moving from Principles to Practice' Available at https://accessinitiative.org/wp-content/uploads/2022/10/22.01_rep_access_initiative_v583-4.pdf (Accessed on 10/01/2026)

[4] Ibid

[5] United Nations Environment Programme., 'What are Environmental Rights?' Available at https://www.unep.org/explore-topics/environmental-rights-and-governance/what-we-do/advancing-environmental-rights/what (Accessed on 10/01/2026)

[6] Ibid

[7] Ibid

[8] Ibid

fundamental rights[9]. Fostering environmental rights is therefore key towards attaining a clean, safe, healthy and sustainable environment for people and planet[10]. For instance, it has been observed that when environmental rights are violated, people and planet suffer from the impacts of pollution, ecosystem degradation, biodiversity loss, climate change and natural disasters among other threats[11]. Strengthening environmental rights is therefore crucial towards protecting people and planet for Sustainable Development.

This paper examines how environmental rights can be fostered by incorporating Disaster Risk Reduction (DRR) into the Sustainable Development agenda. The paper discusses the concept of DRR. It argues that DRR is a fundamental idea in light of the mounting impact of disasters on environmental rights. The paper examines how disasters undermine the attainment of environmental rights. In light of this concern, the paper notes that fostering DRR is vital towards protecting environmental rights for people and planet. It discusses how DRR can be effectively incorporated into Sustainable Development towards tangible environmental rights.

2.0 Impact of Disasters on Environmental Rights

Disasters are natural or human-induced events which cause serious disruption to the functioning of a community, society or nation leading to widespread human, material, economic or environmental losses which exceed the ability of the affected community, society or nation to cope using their own resources[12]. Disasters occur due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts[13]. It has been pointed out that disasters can be due to human-induced or natural factors[14]. For example, human-made disasters result from human errors and include industrial explosions or structure failures[15]. In addition, natural disasters result from

---

[9]   Geneva Environment Network., 'Human Rights and the Environment' Available at https://www.genevaenvironmentnetwork.org/resources/updates/human-rights-and-the-environment/ (Accessed on 10/01/2026)

[10] United Nations Environment Programme., 'What are Environmental Rights?' Op Cit

[11] Geneva Environment Network., 'Human Rights and the Environment'

[12]   Republic   of   Kenya.,   'National   Disaster   Risk   Management   Policy'   Available   at https://repository.kippra.or.ke/xmlui/bitstream/handle/123456789/559/NATIONAL%20Disaster%20Risk%20Mannagement%20POLICY%20APPROVED.pdf?sequence=1&isAllowed=y   (Accessed   on 10/01/2026)

[13]   United   Nations   Office   for   Disaster   Risk   Reduction.,   'Definition: Disaster'   Available   at https://www.undrr.org/terminology/disaster#:~:text=Sendai%20Framework%20Terminology%20on%20Disaster,and%20immediately%20after%20the%20disaster. (Accessed on 10/01/2026)

[14] What Is Disaster Management? Understanding Emergencies from Prevention to Mitigation., Available at https://publichealth.tulane.edu/blog/what-is-disaster-management/ (Accessed on 10/01/2026)

[15] Ibid

physical phenomena and include earthquakes, floods, droughts, landslides, and forest fires[16].

It has been observed that countries all over the world are facing increasingly severe natural events, driven by extreme weather and risk-blind planning[17]. For example, environmental and human-induced factors including climate change, poor urban planning and lack of disaster preparedness, are increasingly driving and worsening natural disasters and hazards, such as earthquakes, floods, volcanic eruptions and tsunamis with severe consequences on both people and planet[18]. In particular, Africa is a continent that is highly vulnerable to disasters[19]. African Union's *Agenda 2063*[20] acknowledges that that due to its geographic location and low level of socio-economic and technological development, Africa remains highly vulnerable to disasters which occur in various forms including hydrometeorological hazards such as droughts, floods and windstorms[21].

The prevalence of disasters both globally and in Africa is a major threat to human and environmental rights. It has been pointed out that the impacts of disasters can be immediate and localized, but are often widespread and could last for a long period of time with severe consequences for people and planet[22]. According to the United Nations, the prevalence of disasters globally is a growing threat to economic prosperity and Sustainable Development, with costs underestimated and unsustainable[23]. The loss of life, livelihoods, infrastructure and social amenities due to disasters is pushing countries into increased levels of debt, lower incomes and severe humanitarian crises[24]. Further, it has been observed that disasters take a heavy toll on vulnerable population[25]. For

---

[16] Ibid

[17] United Nations., 'International Day for Disaster Risk Reduction' Available at https://www.un.org/en/observances/disaster-reduction-day (Accessed on 10/01/2026)

[18] United Nations Educational, Scientific and Cultural Organanization., 'Disaster Risk Reduction' Available at https://www.unesco.org/en/disaster-risk-reduction (Accessed on 10/01/2026)

[19] Africa Union., 'Africa Regional Strategy for Disaster Risk Reduction' Available at https://www.preventionweb.net/files/7603_AFRICAREGIONALDRRSTRATEGYfullPDF.pdf (Accessed on 10/01/2026)

[20] African Union., 'Agenda 2063: The Africa we Want.' Available at https://au.int/sites/default/files/documents/33126-doc-framework_document_book.pdf (Accessed on 10/01/2026)

[21] Ibid

[22] United Nations Office for Disaster Risk Reduction., 'Definition: Disaster' Op Cit

[23] United Nations., 'International Day for Disaster Risk Reduction' Op Cit

[24] Ibid

[25] United Nations Office for Disaster Risk Reduction., 'Building Disaster Resilience in Sub-Saharan Africa' Available at https://www.preventionweb.net/resilient-africa/home.html (Accessed on 10/01/2026)

example, loss of life and livelihoods in the face of already existing challenges sets vulnerable communities back many years leaving them at risk should another natural hazard occur[26]. Disasters leave vulnerable populations at the risk of famine, food insecurity and poverty therefore affecting Sustainable Development[27]. Environmental degradation due to disasters also lead to displacement of populations leading to humanitarian crises including increase in the number of refugees and internally displaced persons[28].

Disasters can therefore affect both human and environmental rights. For instance, disasters impact fundamental human rights including the right to life, food, water and housing[29]. Further, destruction of critical amenities, including schools, hospitals and energy systems, during disasters affect the right to education, health and energy[30]. In addition, disasters undermine environmental rights. For instance environmental destruction and degradation due to disasters affect the ability of nature to sustain and provide essential ecosystem processes and services[31]. Disasters fuel water and soil contamination, death of wildlife, destruction of forests, coastal erosion and biodiversity loss[32]. Further, disasters such as wildfires result in air pollution with severe consequences for human and ecosystem health[33]. According to UNEP, disasters including droughts, floods, aridification and wildfires take a huge toll on the environment leading to ecosystem degradation, biodiversity loss and pollution[34].

In light of the foregoing, it is imperative to incorporate DRR into Sustainable Development in order to protect human and environmental rights.

---

[26] Ibid

[27] Ibid

[28] East African Community., 'Disaster Risk Reduction and Management' Available at https://www.eac.int/gender/114-sector/environment-natural-resources-management/disaster-risk-reduction (Accessed on 10/01/2026)

[29] Ferris. E., 'Displacement, Natural Disasters, and Human Rights' Available at https://www.brookings.edu/articles/displacement-natural-disasters-and-human-rights/#:~:text=The%20problems%20that%20are%20often,durable%20solutions%20for%20their%20displacement. (Accessed on 10/01/2026)

[30] Ibid

[31] Environmental Degradation., Available at https://www.preventionweb.net/understanding-disaster-risk/risk-drivers/enviromental-degradation (Accessed on 10/01/2026)

[32] The Environmental Effects of Natural Disasters., Available at https://www.theenvironmentalblog.org/2020/07/the-environmental-effects-of-natural-disasters/ (Accessed on 10/01/2026)

[33] Ibid

[34] United Nations Environment Programme., 'Disasters and Climate Change' Available at https://www.unep.org/topics/fresh-water/disasters-and-climate-change (Accessed on 10/01/2026)

3.0 Incorporating Disaster Risk Reduction into Sustainable Development

The prevalence of disasters both globally and in Africa is a major threat to human and environmental rights. It is therefore imperative to strengthen the ability of all countries to anticipate, respond and recover from disasters towards upholding human and environmental rights. DRR provides a framework that can achieve these objectives. This concept involves reducing the risk of disasters through systematic efforts to analyze and manage the causal factors of disasters including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land, environment and natural resources and improved preparedness for adverse events[35]. It has been observed that DRR is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening the resilience of people and planet against disasters for Sustainable Development[36].

DRR therefore covers a set of approaches, techniques and policies that enable us to understand how and why disasters happen while also identifying preventive actions that can be implemented in order to reduce the vulnerability of both people and planet to disasters. Effective DRR approaches are therefore vital in protecting human beings and the environment from the negative impacts of disasters[37]. DRR has been identified as an integral part of socio-economic development and environmental sustainability and is vital if development is to be sustainable[38]. This concept has been embraced under the United Nation's *2030 Agenda for Sustainable Development[39]* which acknowledges that more frequent and intense natural disasters threaten to reverse much of the development progress made in recent decades. It urges all countries to strengthen DRR in order to enhance the resilience of both people and planet against mounting natural disasters[40]. The Agenda notes that appropriate DRR strategies are key in realizing most of the Sustainable Development Goals (SDGs) including combating poverty (SDG 1), achieving

---

[35] Republic of Kenya., 'National Disaster Risk Management Policy' Op Cit

[36] United Nations Office for Disaster Risk Reduction., 'Definition: Disaster Risk Reduction' Available at https://www.undrr.org/terminology/disaster-risk-reduction (Accessed on 11/01/2026)

[37] Disaster Risk Reduction., Available at https://practicalaction.org/learning/climate-change/disaster-risk-reduction/ (Accessed on 11/01/2026)

[38] United Nations., 'Disaster Risk Reduction' Available at https://sustainabledevelopment.un.org/topics/disasterriskreduction#:~:text=For%20example%2C%20by%20reducing%20exposure,risk%20reduction%20is%20not%20explicit. (Accessed on 11/01/2026)

[39] United Nations General Assembly., 'Transforming Our World: the 2030 Agenda for Sustainable Development.' 21 October 2015, A/RES/70/1., Available at https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf (Accessed on 11/01/2026)

[40] Ibid

food security (SDG 2), making cities and human settlements inclusive, safe, resilient, and sustainable (SDG 11), and combating climate change (SDG 11)[41].

The *Sendai Framework for Disaster Risk Reduction*[42] provides a global blueprint towards strengthening DRR for human and environmental rights. Under the Sendai Framework, states commit to foster DRR and the building of resilience to disasters with a renewed sense of urgency within the context of Sustainable Development and poverty eradication[43]. The Sendai Framework identifies four priority areas that can enable countries to strengthen DRR for people and planet. These are understanding disaster risk; strengthening disaster risk governance to manage disaster risk; investing in disaster risk reduction for resilience; and enhancing disaster preparedness for effective response, recovery, rehabilitation and reconstruction[44]. Implementing the Sendai Framework is therefore vital towards incorporating DRR into Sustainable Development.

At a continental level, the *Africa Regional Strategy for Disaster Risk Reduction*[45] aims to contribute to the attainment of Sustainable Development and poverty eradication by facilitating the integration of DRR into development programmes in the continent[46]. Further, at a national level, the *National Disaster Risk Management Policy*[47] of Kenya acknowledges that the country faces a wide range of natural and human-induced hazards, such as, droughts, floods, landslides, human and animal disease, pests, earthquakes, and urban and forest fires, that impacts on and reduces the full realization of Sustainable Development[48]. It seeks to establish robust DRR strategies in order to substantially reduce natural and human-induced disaster risk and associated losses in social, economic and environmental assets[49].

Incorporating DR into Sustainable Development is therefore a key goal at the global, regional and national levels. In order to actualise this dream, there is need to invest in early warning systems. It has been observed that early warning systems are vital towards incorporating DRR into Sustainable Development by providing timely and informed alerts on disasters enabling individuals, households, communities and nations to

---

[41] Ibid
[42] Sendai Framework for Disaster Risk Reduction 2015-2030., Available at https://www.undrr.org/media/16176/download?startDownload=20240430 (Accessed on 11/01/2026)
[43] Ibid
[44] Ibid
[45] Africa Regional Strategy for Disaster Risk Reduction., Op Cit
[46] iBID
[47] Republic of Kenya., 'National Disaster Risk Management Policy'., Op Cit
[48] Ibid
[49] Ibid

effectively anticipate, respond and recover from disasters therefore reducing the impact of disasters on human life, the environment and economic development[50]. Early warning systems can provide timely and actionable warnings of impending disasters such as cyclones, floods, droughts, heatwaves or wildfires[51]. Therefore, by investing in early warning systems, it is possible to safeguard human and environmental rights by reducing loss of life and injury, economic losses and environmental degradation[52].

In addition, it is imperative to harness the power of technology for effective DRR. It has been observed that modern technologies including Artificial Intelligence (AI) and machine learning have the power to strengthen the resilience to disasters through effective environmental monitoring and data collection which can inform sound responses to disasters[53]. Further, it has been pointed out that modern technology and digital tools such as remote sensing technologies and satellite imagery are becoming vital tools for disaster prediction and response[54]. Investing in technology is therefore key towards effectively incorporating DRR into Sustainable Development.

Further, there is need to harness indigenous knowledge systems in order to effectively safeguard human and environmental rights in the wake of mounting and worsening disasters[55]. It has been observed that indigenous peoples and local communities all over the world have developed unique and sustainable approaches that are enabling them to deal with the impact of disasters such as floods and droughts towards protecting their livelihoods, ecosystems and natural resources[56]. For example, sustainable practices such as growing drought-resistant and early-maturing indigenous crop varieties, gathering wild fruits and vegetables, wetlands cultivation and livestock diversifying are enabling indigenous peoples to survive and recover from disasters while also ensuring harmony

---

[50] International Labour Organization., 'The importance of early warning systems in disaster risk reduction' Available at https://www.ilo.org/resource/article/importance-early-warning-systems-disaster-risk-reduction (Accessed on 11/01/2026)

[51] United Nations Development Programme., 'What are early warning systems and why do they matter for climate action?' Available at https://climatepromise.undp.org/news-and-stories/what-are-early-warning-systems-and-why-do-they-matter-climate-action (Accessed on 11/01/2026)

[52] Ibid

[53] United Nations Office for Disaster Risk Reduction., 'Technology for Disaster Risk Reduction' Available at https://www.undrr.org/media/110436/download?startDownload=20260111 (Accessed on 11/01/2026)

[54] Ibid

[55] International Organization for Migration., 'Indigenous Knowledge for Disaster Risk Reduction' Available at https://environmentalmigration.iom.int/sites/g/files/tmzbdl1411/files/documents/png-indigenous-knowledge-report-print.pdf (Accessed on 11/01/2026)

[56] Ibid

with nature[57]. Harnessing and utilising indigenous knowledge is therefore necessary towards effectively incorporating DRR into Sustainable Development.

4.0 Conclusion

Disasters undermine the attainment of environmental rights. Therefore, effective DRR is vital in safeguarding both people and planet for Sustainable Development. It is necessary to incorporate DRR into Sustainable Development by investing in early warning systems, harnessing modern technology and digital tools and utilising indigenous knowledge for effective responses to disasters[58]. Incorporating DRR into Sustainable Development is paramount towards tangible environmental rights. There is need to actualise this dream globally for people and planet.

---

[57] United Nations Environment Programme., 'Indigenous Knowledge in Disaster Management in Africa' Available at https://www.humanitarianlibrary.org/sites/default/files/2013/07/Appendix9IndigenousBookletUNEP.pdf (Accessed on 11/01/2026)

[58] United Nations., 'Disaster Risk Reduction' Op Cit

References

Africa Union., 'Africa Regional Strategy for Disaster Risk Reduction' Available at https://www.preventionweb.net/files/7603_AFRICAREGIONALDRRSTRATEGYfull PDF.pdf

African Union., 'Agenda 2063: The Africa we Want.' Available at https://au.int/sites/default/files/documents/33126-doc-framework_document_book.pdf

Disaster Risk Reduction., Available at https://practicalaction.org/learning/climate-change/disaster-risk-reduction/

East African Community., 'Disaster Risk Reduction and Management' Available at https://www.eac.int/gender/114-sector/environment-natural-resources-management/disaster-risk-reduction

Environmental Degradation., Available at https://www.preventionweb.net/understanding-disaster-risk/risk-drivers/enviromental-degradation

Environmental Rights., Available at https://pachamama.org/environmental-rights

Environmental Rights., Available at https://www.manglai.io/en/glossary/environmental-rights

Ferris. E., 'Displacement, Natural Disasters, and Human Rights' Available at https://www.brookings.edu/articles/displacement-natural-disasters-and-human-rights/#:~:text=The%20problems%20that%20are%20often,durable%20solutions%20for %20their%20displacement

Geneva Environment Network., 'Human Rights and the Environment' Available at https://www.genevaenvironmentnetwork.org/resources/updates/human-rights-and-the-environment/

International Labour Organization., 'The importance of early warning systems in disaster risk reduction' Available at https://www.ilo.org/resource/article/importance-early-warning-systems-disaster-risk-reduction

International Organization for Migration., 'Indigenous Knowledge for Disaster Risk Reduction' Available at

https://environmentalmigration.iom.int/sites/g/files/tmzbdl1411/files/documents/png-indigenous-knowledge-report-print.pdf

Republic of Kenya., 'National Disaster Risk Management Policy' Available at https://repository.kippra.or.ke/xmlui/bitstream/handle/123456789/559/NATIONAL%20Disaster%20Risk%20Mannagement%20POLICY%20APPROVED.pdf?sequence=1&isAllowed=y

Sendai Framework for Disaster Risk Reduction 2015-2030., Available at https://www.undrr.org/media/16176/download?startDownload=20240430

The Access Initiative., 'The Road to Realizing Environmental Rights in Africa: Moving from Principles to Practice' Available at https://accessinitiative.org/wp-content/uploads/2022/10/22.01_rep_access_initiative_v583-4.pdf

The Environmental Effects of Natural Disasters., Available at https://www.theenvironmentalblog.org/2020/07/the-environmental-effects-of-natural-disasters/

United Nations Development Programme., 'What are early warning systems and why do they matter for climate action?' Available at https://climatepromise.undp.org/news-and-stories/what-are-early-warning-systems-and-why-do-they-matter-climate-action

United Nations Educational, Scientific and Cultural Organanization., 'Disaster Risk Reduction' Available at https://www.unesco.org/en/disaster-risk-reduction

United Nations Environment Programme., 'Disasters and Climate Change' Available at https://www.unep.org/topics/fresh-water/disasters-and-climate-change

United Nations Environment Programme., 'Indigenous Knowledge in Disaster Management in Africa' Available at https://www.humanitarianlibrary.org/sites/default/files/2013/07/Appendix9IndigenousBookletUNEP.pdf

United Nations Environment Programme., 'What are Environmental Rights?' Available at https://www.unep.org/explore-topics/environmental-rights-and-governance/what-we-do/advancing-environmental-rights/what

United Nations General Assembly., 'Transforming Our World: the 2030 Agenda for Sustainable Development.' 21 October 2015, A/RES/70/1., Available at

https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainabl e%20Development%20web.pdf

United Nations Office for Disaster Risk Reduction., 'Building Disaster Resilience in Sub-Saharan Africa' Available at https://www.preventionweb.net/resilient-africa/home.html

United Nations Office for Disaster Risk Reduction., 'Definition: Disaster' Available at https://www.undrr.org/terminology/disaster#:~:text=Sendai%20Framework%20Terminology%20on%20Disaster,and%20immediately%20after%20the%20disaster

United Nations Office for Disaster Risk Reduction., 'Definition: Disaster Risk Reduction' Available at https://www.undrr.org/terminology/disaster-risk-reduction

United Nations Office for Disaster Risk Reduction., 'Technology for Disaster Risk Reduction' Available at https://www.undrr.org/media/110436/download?startDownload=20260111

United Nations., 'Disaster Risk Reduction' Available at https://sustainabledevelopment.un.org/topics/disasterriskreduction#:~:text=For%20example%2C%20by%20reducing%20exposure,risk%20reduction%20is%20not%20explicit

United Nations., 'International Day for Disaster Risk Reduction' Available at https://www.un.org/en/observances/disaster-reduction-day

What Is Disaster Management? Understanding Emergencies from Prevention to Mitigation., Available at https://publichealth.tulane.edu/blog/what-is-disaster-management/