

# **Clean Air for One Health: Addressing Air Pollution through Technology and Environmental Rule of Law in Africa**

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**Kariuki Muigua**

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**Kariuki Muigua\***

### **Abstract**

*This paper discusses how air pollution can be effectively addressed in Africa. The paper observes that air pollution is a major environmental challenge in Africa with adverse impacts on human and environmental health. It examines the causes and effects of air pollution in Africa. In light of its negative impacts, the paper argues that tackling air pollution in Africa is key towards attaining the right to clean air for One Health. The paper explores how technology and environmental rule of law can be harnessed to address air pollution in Africa for clean air and One Health.*

### **1.0 Introduction**

Clean air is fundamental for human and environmental health. It has been observed that clean air brings significant benefits for human health, economies, biodiversity and the climate<sup>1</sup>. For example, improvement of air quality is associated with better health outcomes for human beings including through reducing premature deaths resulting from air pollution, improving food security by ensuring that plants, biodiversity and ecosystems thrive, and strengthening the resilience of health systems<sup>2</sup>. Further, clean air is vital for the environment and ecosystems by protecting plants and animals from the

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<sup>1</sup> United Nations Environment Programme., 'Air Quality' Available at <https://www.unep.org/topics/air#:~:text=Air%20quality,cooperation%20and%20global%20advocacy%20efforts.&text=Air%20pollution%20is%20the%20greatest,human%20health%20and%20the%20climate.&text=%2D%20Strengthening%20global%20and%20regional%20movements,air%20quality%20advocacy%20and%20networks.&text=What%20air%20are%20you%20breathing?> (Accessed on 08/01/2026)

<sup>2</sup> Importance of Clean Air., Available at <https://soe.epa.sa.gov.au/environmental-themes/air/importance-of-clean-air#:~:text=Clean%20air%20is%20essential%20for,impacting%20soil%20quality%20and%20waterbodies.> (Accessed on 08/01/2026)

harmful impacts of air pollutants and preventing disturbances to ecosystems<sup>3</sup>. In addition, it has been observed that improving air quality is vital towards confronting climate change<sup>4</sup>.

Clean air is therefore vital for people and planet. As a result, it has been pointed out that clean air is a fundamental human right<sup>5</sup>. The right to breathe clean air is a key substantive element under the right to a clean, healthy and sustainable environment<sup>6</sup>. It has been observed that the right to a clean, healthy and sustainable environment encompasses various elements including *clean air*, healthy and balanced ecosystems, rich biodiversity and a stable climate<sup>7</sup>. In addition, the United Nations General Assembly, through a *Resolution*<sup>8</sup>, has recognised the right to clean air as fundamental human right. The Resolution acknowledges that every person has a right to a clean, healthy and sustainable environment, including *clean air*, water, and a stable climate.

Achieving the human right to clean air is therefore vital for people and planet. However, it has been observed that air pollution is a mounting global environmental challenge that undermines the right to clean air with severe consequences for people and planet<sup>9</sup>. Tackling air pollution is therefore crucial towards attaining clean air for One Health.

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<sup>3</sup> Ibid

<sup>4</sup> Ibid

<sup>5</sup> United Nations Environment Programme., 'Human Rights and Clean Air' Available at <https://www.unep.org/news-and-stories/video/human-rights-and-clean-air#:~:text=The%20right%20to%20breathe%20clean,that%20they%20are%20being%20fulfilled>. (Accessed on 01/10/2025)

<sup>6</sup> Ibid

<sup>7</sup> Zimmer K, 'The Human Right That Benefits Nature' <https://www.bbc.com/future/article/20210316-how-the-human-right-to-a-healthy-environment-helps-nature> (Accessed on 08/01/2026)

<sup>8</sup> United Nations General Assembly., 'The Human Right to a Clean, Healthy and Sustainable Environment' A/76/L.75

<sup>9</sup> World Health Organization., 'Air Pollution' Available at [https://www.who.int/health-topics/air-pollution#tab=tab\\_1](https://www.who.int/health-topics/air-pollution#tab=tab_1) (Accessed on 08/01/2026)

This paper discusses how air pollution can be effectively addressed in Africa. The paper observes that air pollution is a major environmental challenge in Africa with adverse impacts on human and environmental health. It examines the causes and effects of air pollution in Africa. In light of its negative impacts, the paper argues that tackling air pollution in Africa is key towards attaining the right to clean air for One Health. The paper explores how technology and environmental rule of law can be harnessed to address air pollution in Africa for clean air and One Health.

## **2.0 Air Pollution in Africa: Causes and Effects**

Air pollution refers to the contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere<sup>10</sup>. Air pollution is caused by emissions from the burning of fossil fuels for energy and transport, and the burning of traditional fuels for household cooking, as well as agricultural and waste burning<sup>11</sup>. Further, it has been observed that household combustion devices, motor vehicles, industrial facilities and forest fires are some of the common sources of air pollution globally<sup>12</sup>.

It has been observed that air pollution is the greatest environmental threat to human health<sup>13</sup>. According to the World Health Organization (WHO), almost all of the global population breathe air that contains high levels of pollutants with developing countries suffering from the highest level of exposure to air pollution<sup>14</sup>. It is estimated that air

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<sup>10</sup> Ibid

<sup>11</sup> United Nations Environment Programme., 'Collective action needed to improve quality of the air we share' Available at <https://www.unep.org/news-and-stories/story/collective-action-needed-improve-quality-air-we-share#:~:text=Other%20ways%20to%20address%20air,reducing%20trash%20and%20crop%20burning> (Accessed on 08/01/2026)

<sup>12</sup> World Health Organization., 'Air Pollution' Op Cit

<sup>13</sup> United Nations Environment Programme., 'Collective action needed to improve quality of the air we share' Op Cit

<sup>14</sup> World Health Organization., 'Air Pollution' Op Cit

pollution is responsible for nearly 7 million deaths annually all over the world<sup>15</sup>. Further, it has been observed that air pollution contributes to non-infectious diseases like cancer and respiratory illnesses<sup>16</sup>. WHO notes that pollutants such as particulate matter, carbon monoxide, ozone, nitrogen dioxide and sulfur dioxide fuel major public health concerns since they cause respiratory and other diseases and are important sources of morbidity and mortality globally<sup>17</sup>.

In addition to impacts on human health, air pollution is also a major threat to environmental health. For example, air pollution causes acid rain which harms plants and animals especially aquatic life<sup>18</sup>. Further, air pollution is linked to climate change<sup>19</sup>. It has been pointed out that many of the drivers of air pollution (such as combustion of fossil fuels) are also sources of greenhouse gas emissions responsible for climate change<sup>20</sup>. It has been argued that air quality and climate are interconnected since the chemicals that lead to air pollution are normally co-emitted with greenhouse gases which cause climate change<sup>21</sup>. Therefore, changes in air quality will inevitably cause changes to the climate<sup>22</sup>. Due to this relationship, it has been argued that policies to reduce air pollution offer a win-win strategy for both climate and health, lowering the burden of disease attributable to air pollution, as well as contributing to the near- and long-term mitigation of climate change<sup>23</sup>.

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<sup>15</sup> United Nations Environment Programme., 'Pollution and Health' Available at <https://www.unep.org/topics/chemicals-and-pollution-action/chemicals-management/pollution-and-health> (Accessed on 08/01/2026)

<sup>16</sup> Ibid

<sup>17</sup> World Health Organization., 'Air Pollution' Op Cit

<sup>18</sup> Wu. T.L., '3 Major Effects of Air Pollution on the Environment' Available at <https://earth.org/effects-of-air-pollution-on-the-environment/#:~:text=Air%20pollutants%20are%20substances%20that,cooled%20for%20two%20consecutive%20years.> (Accessed on 08/01/2026)

<sup>19</sup> Ibid

<sup>20</sup> World Health Organization., 'Air Pollution' Op Cit

<sup>21</sup> United Nations Climate Change., 'Air Quality Sinks as Climate Change Accelerates' Available at <https://unfccc.int/news/air-quality-sinks-as-climate-change-accelerates> (Accessed on 08/01/2026)

<sup>22</sup> Ibid

<sup>23</sup> World Health Organization., 'Air Pollution' Op Cit

Air pollution is therefore a negative environmental phenomenon with negative consequences for people and planet. Africa is particularly vulnerable to air pollution. For example, it has been observed that air pollution kills more people in Africa when compared to diseases and illnesses such as HIV/AIDS and Malaria<sup>24</sup>. It is estimated that more than 1 million Africans die from diseases caused by indoor and outdoor sources of air pollution<sup>25</sup>. In light of the foregoing, it has been pointed out that Africa experiences some of the worst impacts of air pollution in the world<sup>26</sup>. Air pollution places a heavy burden on the lives, livelihoods and health of millions of people all over Africa<sup>27</sup>. The death rate linked to air pollution in Africa is almost double the global average demonstrating the adverse and disproportionate effects of air pollution in Africa<sup>28</sup>.

The heavy burden of air pollution in Africa has been linked to various factors. For example, rapid urbanization and industrialization in the continent has increased the use of fossil fuels in Africa thus worsening air pollution<sup>29</sup>. It has been observed that the problem of air pollution in Africa is worse in cities and urban areas where highly polluting activities and sectors including transport, industry and household energy use affect air quality while also emitting greenhouse gases responsible for climate change<sup>30</sup>. Further, indoor air pollution is prevalent in Africa especially in rural areas where a majority of the population uses polluting fuels<sup>31</sup>. It has been observed that a majority of

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<sup>24</sup> Clean Air Fund., 'From Pollution to Solution in Six African Cities' Available at <https://www.cleanairfund.org/wp-content/uploads/Clean-Air-Fund-From-pollution-to-solution-policy-brief-ENGLISH.pdf> (Accessed on 08/01/2026)

<sup>25</sup> Ibid

<sup>26</sup> Air Pollution and Health Impacts in Africa., Available at <https://www.stateofglobalair.org/resources/africa#:~:text=Africa%20experiences%20some%20of%20the%20more%20than%201.2%20billion%20people.> (Accessed on 08/01/2026)

<sup>27</sup> Ibid

<sup>28</sup> Ibid

<sup>29</sup> United Nations Environment Programme., 'Air Pollution and Development in Africa: Impacts on Health, the Economy and Human Capital' Available at <https://www.unep.org/resources/report/air-pollution-and-development-africa-impacts-health-economy-and-human-capital> (Accessed on 08/01/2026)

<sup>30</sup> Clean Air Fund., 'From Pollution to Solution in Six African Cities' Op Cit

<sup>31</sup> United Nations Environment Programme., 'Air Pollution and Development in Africa: Impacts on Health, the Economy and Human Capital' Op Cit

Africa's rural population relies on traditional biomass for preparing food<sup>32</sup>. These sources such as charcoal, wood fuel and dung are the most common source of energy for cooking in Africa especially among the rural population contributing to indoor air pollution<sup>33</sup>. In addition, it has been observed that in arid and semi-arid regions of Africa, dust and sand storms are a significant cause of air pollution<sup>34</sup>.

Air pollution is therefore prevalent in Africa. Air pollution in Africa places a disproportionate impact on vulnerable populations including the rural poor who are adversely impacted by indoor/household air pollution which contributes to death and adverse health impacts<sup>35</sup>. Further, newborns and young children are disproportionately impacted by air pollution which is the leading cause of premature deaths both globally and in Africa<sup>36</sup>. Air pollution also worsens the climate crisis in Africa with severe consequences for people and planet<sup>37</sup>.

In light of the foregoing, addressing air pollution in Africa is necessary for clean air and One Health for people and planet.

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<sup>32</sup> United Nations., 'Advancing SDG 7 in Africa.' Available at <https://sdgs.un.org/sites/default/files/2023-06/2023%20Advancing%20SDG7%20in%20the%20Africa-062923.pdf> (Accessed on 08/01/2026)

<sup>33</sup> Muchiri. L., 'Gender and Equity in Bioenergy Access and Delivery in Kenya' Practical Action East Africa, 2008, available at [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKewiy2P29z6PnAhUEiFwKHQlyCLOQFjAAegQIBRAB&url=http%3A%2F%2Fwww.cas.ed.ac.uk%2F\\_data%2Fassets%2Fword\\_doc%2F0007%2F24793%2FGender\\_and\\_Equity\\_in\\_Bio\\_energy\\_Access\\_and\\_Delivery\\_in\\_Kenya\\_final.doc&usg=AOvVaw2AKp1mvTSC9tafkIKJ-36](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKewiy2P29z6PnAhUEiFwKHQlyCLOQFjAAegQIBRAB&url=http%3A%2F%2Fwww.cas.ed.ac.uk%2F_data%2Fassets%2Fword_doc%2F0007%2F24793%2FGender_and_Equity_in_Bio_energy_Access_and_Delivery_in_Kenya_final.doc&usg=AOvVaw2AKp1mvTSC9tafkIKJ-36) (Accessed on 08/01/2026)

<sup>34</sup> Air Pollution and Health Impacts in Africa., Op Cit

<sup>35</sup> Ibid

<sup>36</sup> United Nations Environment Programme., 'Collective action needed to improve quality of the air we share' Op Cit

<sup>37</sup> Air Pollution and Health Impacts in Africa., Op Cit

### **3.0 Addressing Air Pollution through Technology and Environmental Rule of Law in Africa**

Air pollution is serious global environmental problem with negative consequences for people and planet. This problem is particularly prevalent in Africa which has the highest level of exposure to air pollution<sup>38</sup>. This contributes to premature deaths and respiratory and cardiovascular diseases with disproportionate impacts on vulnerable populations including children, the rural poor and the elderly<sup>39</sup>. Combating air pollution is therefore vital in fostering human health and well-being in Africa.

Technology is an effective solution towards addressing air pollution. For instance, it has been pointed out that renewable energy technologies including wind, solar, geothermal and hydropower energy can replace polluting fossil fuels towards eliminating air pollution while also confronting climate change<sup>40</sup>. Embracing renewable energy technologies is therefore crucial towards combating air pollution. This is especially important for Africa where it has been observed that energy poverty is the main cause of air pollution since it forces the poor and vulnerable populations to rely on polluting sources of energy<sup>41</sup>. Africa is endowed with renewable sources of energy including wind, solar, hydro, ocean tidal waves and geothermal among other renewables which are abundant throughout the continent<sup>42</sup>. Consequently, it has been observed that adopting

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<sup>38</sup> United Nations., 'Understanding Africa's Global Air Pollutant Emissions and Contributing Economic Sectors' Available at [https://www.un.org/osaa/sites/www.un.org.osaa/files/files/documents/2024/publications/23343\\_un\\_policypaper\\_understandingafrica\\_v06.pdf](https://www.un.org/osaa/sites/www.un.org.osaa/files/files/documents/2024/publications/23343_un_policypaper_understandingafrica_v06.pdf) (Accessed on 08/01/2026)

<sup>39</sup> Ibid

<sup>40</sup> Clean Air for a Healthier Future., Available at <https://www.green.earth/clean-air> (Accessed on 08/01/2026)

<sup>41</sup> United Nations., 'Understanding Africa's Global Air Pollutant Emissions and Contributing Economic Sectors' Op Cit

<sup>42</sup> African Union., 'Agenda 2063: The Africa we Want.' Available at [https://au.int/sites/default/files/documents/33126-doc-framework\\_document\\_book.pdf](https://au.int/sites/default/files/documents/33126-doc-framework_document_book.pdf) (Accessed on 08/01/2026)

renewable energy technologies in Africa provides a win-win outcome that strengthens climate action while also fostering clean air for human health and well-being<sup>43</sup>.

In addition to renewable energy technologies, it has been observed that clean transport technologies such as electric vehicles can replace polluting fossil fuels that reducing emissions from the transport sector<sup>44</sup>. In addition, modern technologies such as advanced air filtration technologies can also help reduce the number of pollutants in indoor environments thus strengthening efforts to combat air pollution<sup>45</sup>. Further, modern technologies including Artificial Intelligence (AI) can aid in monitoring and collecting data on air pollution<sup>46</sup>. Through this, it is possible to understand the causes of air pollution and how it impacts people, places and the planet thus enabling effective action in order to secure the right to clean air for One Health<sup>47</sup>.

Further, strengthening environmental rule of law is an effective approach towards addressing air pollution in Africa. It has been observed that environmental rule of law is attained when environmental laws and policies are widely understood, respected, and enforced and the benefits of environmental protection are enjoyed by people and planet<sup>48</sup>. This concept provides a framework for addressing the gap between environmental laws in text and in practice<sup>49</sup>. Environmental rule of law can therefore aid in addressing air pollution by translating laws, polices and regulations on air pollution into enforceable actions. Several laws, polices and regulations on air pollution have been adopted both

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<sup>43</sup> United Nations., 'Renewable Energy - Powering a Safer Future' Available at <https://www.un.org/en/climatechange/raising-ambition/renewable-energy> (Accessed on 08/01/2026)

<sup>44</sup> Clean Air for a Healthier Future., Op Cit

<sup>45</sup> Ibid

<sup>46</sup> United Nations Environment Programme., 'How is Air Quality Measured?' Available at <https://www.unep.org/news-and-stories/story/how-air-quality-measured#:~:text=Some%20use%20lasers%20to%20scan,nitrogen%20dioxide%20and%20sulfur%20dioxide> (Accessed on 08/01/2026)

<sup>47</sup> Ibid

<sup>48</sup> Environment Law Institute., 'Environmental Rule of Law' Available at <https://www.eli.org/environmental-rule-law> (Accessed on 08/01/2026)

<sup>49</sup> Ibid

globally and at national levels. For example, the *World Health Organization Global Air Quality Guidelines*<sup>50</sup> provide a comprehensive framework for assessing air quality and reducing levels of air pollutants in order to decrease the enormous health burden resulting from exposure to air pollution worldwide<sup>51</sup>. Further, at a national level, Kenya has adopted *Air Quality Regulations*<sup>52</sup> which provide for the prevention, control and abatement of air pollution in order to ensure clean and healthy ambient air. Strengthening environmental rule of law including through enhanced enforcement of such laws and policies is therefore key towards addressing air pollution both globally and in Africa<sup>53</sup>. Governments have been urged to foster this ideal including through investing in institutional, human and technical capacity in order to effectively implement and enforce air quality laws and regulations<sup>54</sup>. Further, it has been observed that courts can provide a platform to strengthen environmental rule of law including through upholding the right to a clean, healthy, and sustainable environment and its elements such as clean air<sup>55</sup>. Utilising court processes among other appropriate channels of accessing justice is therefore key towards strengthening environmental rule of law for clean air and One Health.

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<sup>50</sup> World Health Organization., 'Global Air Quality Guidelines' Available at <https://iris.who.int/bitstream/handle/10665/345329/9789240034228-eng.pdf?sequence=1> (Accessed on 08/01/2026)

<sup>51</sup> Ibid

<sup>52</sup> Environmental Management and Co-ordination Act., The Environmental Management and Coordination (Air Quality) Regulations, 2014, Legal Notice No. 34

<sup>53</sup> Clean Air for a Healthier Future., Op Cit

<sup>54</sup> Muigua. K., 'Safeguarding the Environment through Effective Pollution Control in Kenya' Available at <https://kmco.co.ke/wp-content/uploads/2019/09/Safeguarding-the-Environment-through-Effective-Pollution-Control-in-Kenya-Kariuki-Muigua-28th-SEPT-2019.pdf> (Accessed on 08/01/2026)

<sup>55</sup> Muigua. K., 'The Role of Courts in Safeguarding Environmental Rights in Kenya: A Critical Appraisal.' Available at <http://kmco.co.ke/wp-content/uploads/2019/01/The-Role-of-Courts-in-Safeguarding-Environmental-Rights-in-Kenya-A-Critical-Appraisal-Kariuki-Muigua-17th-January-2019-1.pdf> (Accessed on 08/01/2026)

#### **4.0 Conclusion**

Air pollution is a major threat for people and planet in Africa. It is therefore vital to address air pollution towards achieving clean air for One Health in Africa. This ideal can be realised through embracing technologies including renewable energy, sustainable transport technologies such as electric vehicles, advanced air filtration technologies and air monitoring and data collection technologies<sup>56</sup>. Further, strengthening environmental rule of law through implementation and enforcement of air quality laws and regulations and enhancing access to justice in pollution cases is vital towards securing clean air for One Health<sup>57</sup>. Technology and environmental rule of law are effective solutions that should be embraced in order to effectively address air pollution in Africa towards attaining the human right to clean air for One Health.

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<sup>56</sup> Clean Air for a Healthier Future., Op Cit

<sup>57</sup> Muigua. K., 'The Role of Courts in Safeguarding Environmental Rights in Kenya: A Critical Appraisal.' Op Cit

## References

African Union., 'Agenda 2063: The Africa we Want.' Available at [https://au.int/sites/default/files/documents/33126-doc-framework\\_document\\_book.pdf](https://au.int/sites/default/files/documents/33126-doc-framework_document_book.pdf)

Air Pollution and Health Impacts in Africa., Available at <https://www.stateofglobalair.org/resources/africa#:~:text=Africa%20experiences%20some%20of%20the,more%20than%201.2%20billion%20people>

Clean Air for a Healthier Future., Available at <https://www.green.earth/clean-air>

Clean Air Fund., 'From Pollution to Solution in Six African Cities' Available at <https://www.cleanairfund.org/wp-content/uploads/Clean-Air-Fund-From-pollution-to-solution-policy-brief-ENGLISH.pdf>

Environment Law Institute., 'Environmental Rule of Law' Available at <https://www.eli.org/environmental-rule-law>

Environmental Management and Co-ordination Act., The Environmental Management and Coordination (Air Quality) Regulations, 2014, Legal Notice No. 34

Importance of Clean Air., Available at <https://soe.epa.sa.gov.au/environmental-themes/air/importance-of-clean-air#:~:text=Clean%20air%20is%20essential%20for,impacting%20soil%20quality%20and%20waterbodies>

Muchiri. L., 'Gender and Equity in Bioenergy Access and Delivery in Kenya' Practical Action East Africa, 2008, available at [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwiy2P29z6PnAhUEiFwKHQlyCLOQFjAAegQIBRAB&url=http%3A%2F%2Fwww.cas.ed.ac.uk%2F\\_d ata%2Fassets%2Fword\\_doc%2F0007%2F24793%2FGender\\_and\\_Equity\\_in\\_Bio\\_energy\\_Access\\_and\\_Delivery\\_in\\_Kenya\\_final.doc&usg=AOvVaw2AKp1mvTSC9tafkIKJ-36](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwiy2P29z6PnAhUEiFwKHQlyCLOQFjAAegQIBRAB&url=http%3A%2F%2Fwww.cas.ed.ac.uk%2F_d ata%2Fassets%2Fword_doc%2F0007%2F24793%2FGender_and_Equity_in_Bio_energy_Access_and_Delivery_in_Kenya_final.doc&usg=AOvVaw2AKp1mvTSC9tafkIKJ-36)

Muigua. K., 'Safeguarding the Environment through Effective Pollution Control in Kenya' Available at <https://kmco.co.ke/wp-content/uploads/2019/09/Safeguarding-the-Environment-through-Effective-Pollution-Control-in-Kenya-Kariuki-Muigua-28th-SEPT-2019.pdf>

Muigua. K., 'The Role of Courts in Safeguarding Environmental Rights in Kenya: A Critical Appraisal.' Available at <http://kmco.co.ke/wp-content/uploads/2019/01/The->

[Role-of-Courts-in-Safeguarding-Environmental-Rights-in-Kenya-A-Critical-Appraisal-Kariuki-Muigua-17th-January-2019-1.pdf](#)

United Nations Climate Change., 'Air Quality Sinks as Climate Change Accelerates' Available at <https://unfccc.int/news/air-quality-sinks-as-climate-change-accelerates>

United Nations Environment Programme., 'Air Pollution and Development in Africa: Impacts on Health, the Economy and Human Capital' Available at <https://www.unep.org/resources/report/air-pollution-and-development-africa-impacts-health-economy-and-human-capital>

United Nations Environment Programme., 'Air Quality' Available at <https://www.unep.org/topics/air#:~:text=Air%20quality,cooperation%20and%20global%20advocacy%20efforts.&text=Air%20pollution%20is%20the%20greatest,human%20health%20and%20the%20climate.&text=%2D%20Strengthening%20global%20and%20regional%20movements,air%20quality%20advocacy%20and%20networks.&text=What%20air%20are%20you%20breathing>

United Nations Environment Programme., 'Collective action needed to improve quality of the air we share' Available at <https://www.unep.org/news-and-stories/story/collective-action-needed-improve-quality-air-we-share#:~:text=Other%20ways%20to%20address%20air,reducing%20trash%20and%20crop%20burning>

United Nations Environment Programme., 'How is Air Quality Measured?' Available at <https://www.unep.org/news-and-stories/story/how-air-quality-measured#:~:text=Some%20use%20lasers%20to%20scan,nitrogen%20dioxide%20and%20sulfur%20dioxide>

United Nations Environment Programme., 'Human Rights and Clean Air' Available at <https://www.unep.org/news-and-stories/video/human-rights-and-clean-air#:~:text=The%20right%20to%20breathe%20clean,that%20they%20are%20being%20filled>

United Nations Environment Programme., 'Pollution and Health' Available at <https://www.unep.org/topics/chemicals-and-pollution-action/chemicals-management/pollution-and-health>

United Nations General Assembly., 'The Human Right to a Clean, Healthy and Sustainable Environment' A/76/L.75

United Nations., 'Advancing SDG 7 in Africa.' Available at <https://sdgs.un.org/sites/default/files/2023-06/2023%20Advancing%20SDG7%20in%20the%20Africa-062923.pdf>

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United Nations., 'Renewable Energy - Powering a Safer Future' Available at <https://www.un.org/en/climatechange/raising-ambition/renewable-energy>

United Nations., 'Understanding Africa's Global Air Pollutant Emissions and Contributing Economic Sectors' Available at [https://www.un.org/osaa/sites/www.un.org.osaa/files/files/documents/2024/publications/23343\\_un\\_policypaper\\_understandingafrica\\_v06.pdf](https://www.un.org/osaa/sites/www.un.org.osaa/files/files/documents/2024/publications/23343_un_policypaper_understandingafrica_v06.pdf)

World Health Organization., 'Global Air Quality Guidelines' Available at <https://iris.who.int/bitstream/handle/10665/345329/9789240034228-eng.pdf?sequence=1>

World Health Organization., 'Air Pollution' Available at [https://www.who.int/health-topics/air-pollution#tab=tab\\_1](https://www.who.int/health-topics/air-pollution#tab=tab_1)

Wu. T.L., '3 Major Effects of Air Pollution on the Environment' Available at <https://earth.org/effects-of-air-pollution-on-the-environment/#:~:text=Air%20pollutants%20are%20substances%20that,cooled%20for%20two%20consecutive%20years>

Zimmer K, 'The Human Right That Benefits Nature' <https://www.bbc.com/future/article/20210316-how-the-human-right-to-a-healthy-environment-helps-nature>