

Who Speaks for the Pollinators: Optimising Public Participation and other Environmental Governance Tools for Sustainability

Kariuki Muigua

Table of Contents

Abstract..... 3

1.0 Introduction 3

2.0 Pollinators and Sustainable Development: Promises and Pitfalls 5

3.0 Protecting Pollinators for Sustainability 8

4.0 Conclusion 11

References 12

Who Speaks for the Pollinators: Optimising Public Participation and other Environmental Governance Tools for Sustainability

Kariuki Muigua*

Abstract

This paper discusses approaches through which pollinators can be adequately protected. The paper argues that pollinators play a pertinent role in the pursuit of Sustainable Development by supporting food security, human and ecosystem health and biodiversity conservation. Despite their important contribution to Sustainable Development, the paper notes that pollinators are facing mounting threats due to human and environmental factors leading to their decline and disappearance. The paper examines some of the key threats facing pollinators globally. In light of these concerns, the paper argues that protecting pollinators is an urgent and necessary imperative for people and planet. It explores how public participation and other environmental governance tools can be optimised to protect pollinators for sustainability.

1.0 Introduction

Pollinators have been defined as animals that move pollen from male structures (anthers) of flowers to the female structure (stigma) of the same plant species¹. Pollinators have also been defined as agents (whether abiotic or biotic) which transfer pollen from anthers to stigma either within one flower or between flowers². It has been argued that wind and insects are the main external agents of pollination but water, birds, and mammals (mainly bats) are also pollinators³. However, it has been noted that the most vital pollinators are animals (primarily insect, but sometimes avian or mammalian) that fertilize plants,

* PhD in Law (Nrb), FCI Arb (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) [December, 2025].

¹ What are Pollinators and why do we need them?., Available at <https://www.pinelanenursery.com/what-are-pollinators-and-why-do-we-need-them/> (Accessed on 09/12/2025)

² Osborne. J.L., & Free. J.B., 'Flowering and Reproduction: Pollination' Available at <https://www.sciencedirect.com/science/article/abs/pii/B0122270509002374> (Accessed on 09/12/2025)

³ Ibid

resulting in the formation of seeds and fruit⁴. Among insects, bees have been identified as the most important pollinators but other insects such as beetles, flies, butterflies, and moths are also crucial pollinators⁵.

Pollinators play a crucial role in ecosystems including fostering food security. According to the Food and Agriculture Organization of the United Nations (FAO), the abundance and diversity of pollinators ranging from bee species, moths, flies, wasps, beetles, butterflies, and various vertebrates like bats, birds, and certain mammals is key for health ecosystems and food production⁶. It has been argued that by ensuring the process of pollination, pollinators are critical for food production and security and human livelihoods, and directly link wild ecosystems with agricultural production systems⁷.

It is estimated that nearly three-quarters of the world's food crops rely at least in part on pollination by insects and other animals demonstrating the fundamental importance of pollinators in ensuring food security⁸. Consequently, it has been argued that pollinators are essential for our existence, sustaining agriculture and biodiversity globally⁹. By facilitating the reproduction of plants, pollinators contribute to the maintenance of biodiversity in both natural ecosystems and a sustainable food chain¹⁰. However, despite their importance for food security, biodiversity and health ecosystems, many pollinators are being driven towards extinction due to unfavorable human

⁴ What are Pollinators and why do we need them?., Op Cit

⁵ Osborne. J.L., & Free. J.B., 'Flowering and Reproduction: Pollination' Op Cit

⁶ Food and Agriculture Organization of the United Nations., 'Global Action on Pollination Services for Sustainable Agriculture' Available at <https://www.fao.org/pollination/about/en> (Accessed on 09/12/2025)

⁷ Ibid

⁸ United Nations Environment Programme., 'Pollinators under threat - so what?' Available at <https://www.unep.org/news-and-stories/story/pollinators-under-threat-so-what#:~:text=Nearly%2090%20per%20cent%20of,%2C%20music%2C%20religion%20and%20technology> (Accessed on 09/12/2025)

⁹ Food and Agriculture Organization of the United Nations., 'World Bee Day' Available at <https://www.fao.org/world-bee-day/en/> (09/12/2025)

¹⁰ The Vital Role of Bees in Biodiversity Conservation and a Sustainable Food Chain., Available at <https://hivehero.ca/blogs/straight-from-the-hive/the-vital-role-of-bees-in-biodiversity-conservation-and-a-sustainable-food-chain> (Accessed on 09/12/2025)

activities and environmental factors¹¹. This undermines food production and biodiversity conservation efforts¹². Consequently, protecting pollinators is paramount for human and ecosystem health.

This paper discusses approaches through which pollinators can be adequately protected. The paper argues that pollinators play a pertinent role in the pursuit of Sustainable Development by supporting food security, human and ecosystem health and biodiversity conservation. Despite their important contribution to Sustainable Development, the paper notes that pollinators are facing mounting threats due to human and environmental factors leading to their decline and disappearance. The paper examines some of the key threats facing pollinators globally. In light of these concerns, the paper argues that protecting pollinators is an urgent and necessary imperative for people and planet. It explores how public participation and other environmental governance tools can be optimised to protect pollinators for sustainability.

2.0 Pollinators and Sustainable Development: Promises and Pitfalls

Pollinators play an integral role in the pursuit of Sustainable Development. It has been argued that pollinators are critical in unlocking many of the Sustainable Development Goals (SDGs). For example, by supporting food production and diversity, pollinators play an important role in fostering food security towards zero hunger¹³. Pollinators support food production through the processes of pollination. This process occurs when pollen is moved within flowers or carried from flower to flower by pollinating animals including birds, bees, bats, butterflies, moths, beetles, and other animals¹⁴. This transfer of pollen in and between flowers of the same species leads to fertilization, and successful production of seed and fruit for plants¹⁵. According to FAO, pollinators such as bees, birds and bats affect nearly 35 percent of the world's crop production, increasing outputs

¹¹ United Nations Environment Programme., 'Pollinators Under Threat - So What?' Op Cit

¹² Ibid

¹³ Food and Agriculture Organization of the United Nations., 'Pollination Services for Sustainable Agriculture' Available at <https://openknowledge.fao.org/server/api/core/bitstreams/c4db1bf5-f39b-4359-939a-c30de0f81680/content> (Accessed on 10/12/2025)

¹⁴ Pollination., Available at <https://www.pollinator.org/pollination> (Accessed on 10/12/2025)

¹⁵ Ibid

of 87 of the leading food crops globally¹⁶. Pollinators therefore facilitate and improve food production towards food security. It has been argued that without the abundance and diversity of pollinators to support adequate pollination, yields decline, food becomes scarcer and more expensive thus placing food security and the livelihoods of farmers and communities at risk¹⁷.

In addition, pollinators play a pertinent role in fostering good health and well-being by ensuring availability of nutritious diets¹⁸. Pollinators ensure the availability of foods rich in nutrients including vegetable, fruits and nuts which are critical for balanced and healthy diets and disease prevention¹⁹. Further, pollinators also support medicinal plants while contributing to healthy and resilient ecosystems which support human health through services such as clean air and water²⁰. Without pollinators, the production and supply of healthy and nutritious foods could decline leading to poorer diets with negative health consequences²¹.

Pollinators also make a significant contribution to economic growth. By supporting agriculture and food production, pollinators sustain livelihoods and enable global, regional, national and local trade in food thus fostering economic growth at all levels²². Further, pollinators are essential for biodiversity and health ecosystems. It has been argued that pollination is one of the most important mechanisms in the maintenance and

¹⁶ Food and Agriculture Organization of the United Nations., 'Pollination Services for Sustainable Agriculture' Op Cit

¹⁷ Food and Agriculture Organization of the United Nations., 'Five reasons pollinators matter for One Health' Available at <https://www.fao.org/one-health/highlights/5-reasons-pollinators-matter-for-one-health/en#:~:text=Pollinators%20ensure%20the%20availability%20of,They%20strengthen%20plant%20health> (Accessed on 10/12/2025)

¹⁸ Pollinators are Critical for the SDGs and Vice Versa., Available at https://www.safeguard.biozentrum.uni-wuerzburg.de/Project/PublicFileSystem/media/others/SAFEGUARD_COP15_PolicyBrief.pdf (Accessed on 10/12/2025)

¹⁹ Food and Agriculture Organization of the United Nations., 'Five reasons pollinators matter for One Health' Op Cit

²⁰ Ibid

²¹ Ibid

²² Economic Value of Pollinators., Available at <https://www.bayer.com/en/agriculture/article/economic-value-pollinators> (Accessed on 10/12/2025)

promotion of biodiversity and life on Earth²³. For example, pollinators enable the reproduction of most of the world's flowering wild plants²⁴. It has been argued that these plants are the backbone of healthy and resilient ecosystems by providing habitat, shelter and food for a wide range of wildlife species²⁵. Further, pollinators play an important role in the regeneration of vital ecosystems including forests and wetlands thus strengthening biodiversity conservation efforts globally²⁶. Consequently, it has been argued that decline and disappearance of pollinators threatens biodiversity and the ability of ecosystems to withstand environmental threats including climate change²⁷.

From the foregoing, it emerges that pollinators play a key role in the quest towards Sustainable Development by fostering food security, ensuring good health and well-being, supporting livelihoods and economic growth, and maintaining biodiversity and healthy ecosystems. In addition to these roles, pollinators, especially bees, have played a key role throughout human history as inspirations for art, music, religion and technology²⁸. It has been observed that bees are symbols of identity and heritage in some major world religions and traditions²⁹.

Despite their significant contribution for both people and planet, pollinators are facing mounting threats leading to their decline and disappearance. It has been argued that human-induced factors such as habitat degradation, land use changes, pollution, intensive agricultural practices and excessive use of pesticides are driving global decline in vital pollinators including bees³⁰. Further, environmental factors such as the spread of

²³ Secretariat of the Convention on Biological Diversity., 'Pollinators and Biodiversity' Available at <https://www.cbd.int/cop/cop-14/media/briefs/en/cop14-press-brief-pollinators.pdf> (Accessed on 10/12/2025)

²⁴ Food and Agriculture Organization of the United Nations., 'Five reasons pollinators matter for One Health' Op Cit

²⁵ Ibid

²⁶ Ibid

²⁷ Ibid

²⁸ United Nations Environment Programme., 'Pollinators Under Threat - So What?' Op Cit

²⁹ Ibid

³⁰ Secretariat of the Convention on Biological Diversity., 'Pollinators and Biodiversity' Op Cit

invasive species, pests and diseases, and climate change are driving the loss and decline of pollinators³¹. In particular, it has been argued that the impacts of climate change including temperature extremes and flowering time shifts are major contributing factors to the decline of pollinators since they disrupt the balance between flowering plants and their pollinators³². Air pollution is also a major challenge affecting pollinators especially bees, interfering with their ability to forage efficiently³³.

The decline and disappearance of pollinators poses a threat to a variety of plants critical to food security, human health and well-being and livelihoods³⁴. It also undermines the health and vitality of ecosystems with negative consequences for people and planet³⁵. Consequently, protecting pollinators is crucial for sustainability.

3.0 Protecting Pollinators for Sustainability

Pollinators, particularly insects such as bees, are essential for people and planet. By facilitating the process of pollination, pollinators enhance food security, human health and well-being, livelihoods, economic growth and biodiversity and healthy ecosystems³⁶. However, the diversity and population of pollinators including bees, butterflies, bats and birds is declining globally posing a serious threat to human and ecosystem health and livelihoods³⁷. Protecting pollinators is therefore an urgent and important agenda globally

³¹ Ekesi, S., Lattorff, M., & Dubois, T., 'Research Finds Protecting Pollinators is Critical For Food Security in Africa' Available at <https://agrilinks.org/post/research-finds-protecting-pollinators-critical-food-security-africa> (Accessed on 10/12/2025)

³² Food and Agriculture Organization of the United Nations., 'Global Action on Pollination Services for Sustainable Agriculture' Op Cit

³³ United Nations Development Programme., 'Protecting Bees to Enhance Biodiversity Conservation' Available at <https://www.undp.org/uganda/blog/protecting-bees-enhance-biodiversity-conservation> (Accessed on 10/12/2025)

³⁴ United Nations Environment Programme., 'Why bees are essential to people and planet' Available at <https://www.unep.org/news-and-stories/story/why-bees-are-essential-people-and-planet#:~:text=When%20animals%20and%20insects%20pick,%2C%20and%20among%20them%2C%20bees> (Accessed on 10/12/2025)

³⁵ Food and Agriculture Organization of the United Nations., 'Pollinators vital to our food supply under threat' Available at <https://www.fao.org/newsroom/detail/Pollinators-vital-to-our-food-supply-under-threat/en> (Accessed on 10/12/2025)

³⁶ United Nations Environment Programme., 'Why bees are essential to people and planet' Op Cit

³⁷ Ibid

in the quest for sustainability. At the Global level, the *Kunming-Montreal Global Biodiversity Framework*³⁸ acknowledges the role of pollinators in fostering human and ecosystem health and urges states to enhance efforts to protect pollinators for sound biodiversity conservation. Target 11 of the Framework urges all countries to restore, maintain and enhance nature's contributions to people, including ecosystem functions and services, such as the regulation of air, water and climate, soil health, *pollination* and reduction of disease risk, as well as protection from natural hazards and disasters, through nature-based solutions and/or ecosystem-based approaches for the benefit of all people and nature³⁹. It also requires states to reduce pollution risks and the negative impact of pollution from all sources by reducing the overall risk from pesticides and highly hazardous chemicals which pose a threat to pollinators and biodiversity⁴⁰.

Protecting pollinators requires all states to optimise environmental governance tools including public participation. For example, it has been correctly noted that conserving pollinators requires strategies that involve the whole-of-society. Such strategies include controlling/reducing the use of pesticides, conserving and restoring habitats and ecosystems, tackling pollution and climate change, reducing the spread of pests and diseases, and curbing the spread of invasive alien species⁴¹. According to FAO, involving the public is key towards encouraging pollinator-friendly practices especially in the agricultural sector towards stopping the decline of pollinator populations⁴².

³⁸ Convention on Biological Diversity., 'Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity: 15/4. Kunming-Montreal Global Biodiversity Framework' Available at <https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf> (Accessed on 10/12/2025)

³⁹ Ibid, target 11

⁴⁰ Ibid

⁴¹ United Nations Environment Programme., 'Why bees are essential to people and planet' Op Cit

⁴² Food and Agriculture Organization of the United Nations., 'Why bees matter: The importance of bees and other pollinators for food and agriculture' Available at <https://www.fao.org/family-farming/detail/en/c/1682753/> (Accessed on 10/12/2025)

Public participation is therefore a key environmental governance tool towards safeguarding pollinators for sustainability. It has been argued that public participation is an important approach that can improve the quality of decision-making at all levels by providing decision-makers with additional, unique information on local conditions in the context of social, environmental and economic decision making⁴³. Public participation is a key principle towards effective management of the environment and natural resources since it allows individuals to express their views on key governmental policies and laws concerning conditions in their communities including the use and access to natural resources⁴⁴. It ensures that decisions are effective, responsive, acceptable and well-implemented⁴⁵. Embracing public participation is therefore necessary towards designing and implementing sustainable solutions and practices that protect pollinators from human-induced and environmental threats⁴⁶.

Further, it is imperative to optimise other environmental governance tools. For example, it has been argued that science and technology provides effective solutions towards protecting pollinators by understanding the causes of decline, detecting threats to ecosystems and habitats, and implementing sustainable solutions such as Integrated Pest Management (IPM) to tackle the threat of pesticides⁴⁷. Further, it has been argued that practices based on indigenous peoples and local knowledge can enhance the protection of pollinators including through sustainable agricultural practices and sound ecosystem management⁴⁸. Harnessing other environmental governance tools including science and

⁴³ Cerezo. L, & Garcia. G., 'Lay Knowledge and Public Participation in Technological and Environmental Policy.' Available at <https://scholar.lib.vt.edu/ejournals/SPT/v2n1/pdf/CEREZO.PDF> (Accessed on 10/12/2025)

⁴⁴ Muigua. K., 'Reflections on Managing Natural Resources and Equitable Benefit Sharing in Kenya.' *Law Society of Kenya Journal*, Vol. 15, No. 1 (2019)

⁴⁵ Ibid

⁴⁶ Secretariat of the Convention on Biological Diversity., 'Pollinators and Biodiversity' Op Cit

⁴⁷ European Commission., 'Supporting policy with scientific evidence' Available at https://knowledge4policy.ec.europa.eu/projects-activities/sting-science-technology-pollinating-insects-plus_en (Accessed on 10/12/2025)

⁴⁸ Secretariat of the Convention on Biological Diversity., 'Pollinators and Biodiversity' Op Cit

technology and the use of indigenous knowledge is therefore crucial in safeguarding pollinators for sustainability.

4.0 Conclusion

Pollinators play an important role in fostering Sustainable Development. However, in light of mounting human and environmental threats which are causing the decline and disappearance of pollinators, it is imperative to optimise public participation in order to effectively implement sustainable solutions towards protecting pollinators⁴⁹. Further, harnessing other environmental governance tools including science and technology and indigenous knowledge is vital in protecting pollinators for sustainability⁵⁰. Optimising public participation and other environmental governance tools including science and technology and indigenous knowledge is therefore a viable approach towards safeguarding pollinators for sustainability.

⁴⁹ Food and Agriculture Organization of the United Nations., 'Why bees matter: The importance of bees and other pollinators for food and agriculture' Op Cit

⁵⁰ Secretariat of the Convention on Biological Diversity., 'Pollinators and Biodiversity' Op Cit

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