AFRICAN UNION
INTERAFRICAN BUREAU
FOR ANIMAL RESOURCES

POLLINATION SERVICES:

An untapped input for enhancing productivity in crops and Fodder essential for poverty alleviation and attainment of elusive nutrition targets and ecosystem biodiversity



Compiled By Hannelie Human, Edwin Aguddah, Jacqueline Gowe, Sarah Ossiya, Abdullahi Yusuf, Chinyere Ikechukwu-eneh.

Disclaimer: The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official Policy or position of the African Union – Inter African Bureau for Animal Resources.

All rights reserved. Reproduction and dissemination of material in this information product for educational or other non-commercial purposes are authorized without any prior written permission from the copyright holders provided the source is fully acknowledged. Reproduction of material in this information product for resale or other commercial purposes is prohibited without written permission of the copyright holders.

Requests for such permission should be addressed to:

The Director
African Union – Inter African Bureau for Animal Resources (AU-IBAR)
Kenindia Business Park, Museum Hill, Westlands Road
P.O. Box 30786-00100, Nairobi, KENYA
Or by e-mail to: ibar.office@au-ibar.org

Published by: AU-IBAR, Nairobi, Kenya

Copyright: © 2025 African Union – Inter African Bureau for Animal Resources (AU-IBAR)



Table of Contents

Executive Summary	iv
Introduction	1
Justification	2
Knowledge Gap	2
Africa's vast Pollinator Resources	3
Empowerment and Rural Development.	5
Other Benefits of	6
Keeping Bees	6
Ending Hunger in Africa - food security, Nutrition, Health and Food Safety	7
Honey bees, pesticides and the environment	8
Core Priorities	9
Targets	9
Recommendations	10
Institutional Framework and Process for Post Malabo Agenda:	11
Conclusion	12
Proposed Indicators	12

Executive Summary

The contribution of honeybee pollination to crop yield and quality is comparable to the contribution of water, quality seeds, fertilisers, herbicides and pesticides [1]. Fruits and vegetables with high nutrient value, are also dependent on bee pollination. Pollination is thus an underrated option to improve food and nutrition security as well as grow the economy. Africa must harness this key input towards crop productivity increase.

In South Africa, apiculture provides 300 000 direct jobs (with 1.5 million dependents). The agricultural sector requires the service of commercial honeybee colonies. Globally, the economic contribution of insect pollinators to food crops is US$ 195 - 387 billion [2].

Pollination Services' core priorities is focused on shaping the post Malabo CAADP Agenda over the next 10 years as regards food security, resilience, inclusivity and health ecosystem on the African continent.

Introduction

- Pollination serves as a basic pillar for 9.5% of the world's agricultural food production, thereby improving the profitability and productivity of 75% of agricultural crops. Without pollinators, the human race and all of earth's terrestrial ecosystems would not survive. More than half of the world's diet comes from animal-pollinated plants. Globally, the economic contribution of insect pollinators to food crops is estimated at US$ 195 - 387 billion [2]. Without proper pollination services, yields are not optimised and can be reduced by 40%. As much as 50% of global micronutrient supplies come from pollinator-dependent crops in Central and southern Africa suggesting that underutilization of managed pollination services and disruptions in natural pollination could have serious implications for Africa's food security which aligns with the CAADP theme post Malabo

- Malnutrition has serious and lasting developmental, economic, social and medical impacts for communities and countries. The WHO reported that globally in 2022, 390 million adults were underweight, 149 million children under five were estimated to be stunted, and 45 million were too thin for their height. These mostly occur in low- and middle-income countries especially in Africa. Poverty amplifies malnutrition risks and furthermore increases health care costs, reduces productivity, and slows economic growth, which can perpetuate a cycle of poverty and ill-health [3].

- The African Union has a strong component on sustainability with emphasis on diet diversity as a critical outcome [4]. In order to achieve this outcome, the role of pollination services is inevitable as over 75% of food crops are ensured by this process. While the cereals that drive the main trends in agricultural revenues can meet the bulk of our caloric needs, overall nutrition relies upon a much broader set of crops that are highly nutritional and of economic importance; contributing to bridging the malnutrition gap, as well as improving health do rely mostly on pollinators [5]. In the many challenges Africa is facing, market-focused farming can create income for smallholder farmers, helps to build resilience to external risks, enhance human health, strengthen local food networks, sustainable livelihoods, and cultural heritage.

- Pollination is not just a fascinating natural history. It is an essential ecological survival function that produces all plant-based industrial products, of which 87% require pollination. Soybeans are a valuable for both human and animal consumption and are used for animal feed, oil production, and as a source of protein in food products.

- Cattle are known to consume a significant amount of soybeans in their diet: a mature beef cow consumes around 0.3% of its body weight per day. Without pollinators, these plants will not be able to produce enough fertile seeds to regenerate and a lack of cross-pollination may reduce the chances of these plants to adapt to climate change. As a result, they could become rapidly extinct and the remaining 13% of flowering plants will probably be insufficient to provide adequate habitats, food, and raw materials for medicines, industry and buildings. This can change ecosystems considerably and humans can lose the homeland and benefits they derive from nature.

Justification

Africa remains largely food insecure due to the continent's low agricultural productivity. Smallholder farming in Africa accounts for more than 60% of Africa's population and approximately 23% of Africa's gross domestic product (GDP) with current yields of cereals and legumes at only 15–30 percent of the potential. Pollination and the value-added services from pollinators are capable of doubling crop production, increasing fodder, providing valuable income, empowerment, rural development and maintaining ecosystem services.

Knowledge Gap

Honey bee pollination provides crops with higher nutritional value for the majority of food crops. However, this huge potential in Africa remains poorly untapped (Pollination Services). In West Africa the economic benefit of honeybees to food production, compared to self-pollination, was shown to be up to 62% per year more and an average yield gap without pollinators of 37% in cotton and 59% in sesame was observed. In comparison to wild bees alone, interactions between wild bees and honeybees' pollination rates doubled [1].

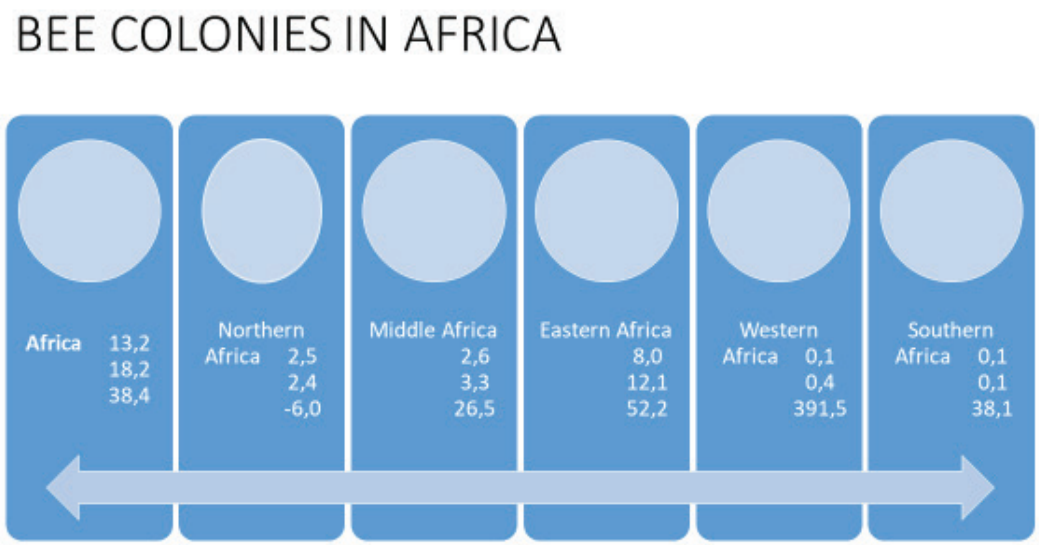
Challenges	Opportunities
: Inadequate technical capacity, knowledge gap, poor adoption of policy framework, lack of standard, poor advocacy and adoption of improved practices.	Employment creation, optimised yields potentials, manufacturing and fabrication of apiculture equipment, security of the bee population, healthier ecosystem, food security and nutrition and improved livelihoods.

Solutions/Interventions

- Adoption of harmonised policies, institutional and regulatory framework on the continent
- Policy framework-utilisation of crop indicators optimisation of crop production
- Adoption of pollination policies and institutional framework/regulatory framework including, institutionalisation of pollination protection of pollinators from pesticides
- Development of the apiculture value chain-hive/colony census, honey production,
- Protection of pollinators
- Recognition of the sector - pollination services, health and nutrition, apiculture value added products
- Employment for youth and women in pollination services.

Africa's vast Pollinator Resources

Africa is a hub for bee biodiversity with more than 2,700 different species which includes 9-12 different types of honeybees and many stingless bees that are present in all habitats (including the deserts) [6]. It is estimated that there are about 9 wild honeybee colonies per Km^2 in Africa in comparison to three per Km^2 in Europe [6]. Although there are no exact numbers on how many honeybee hives are on the continent, it is estimated that Africa is home to 25% of the world's 57 million beehives and accounts for 12% honey and 24% of global wax production but it only contributes to less than 1% of world honey trade (FAOSTAT 2021).



Source: FAOSTAT 2021

The honeybee is also tightly interwoven into human culture with beekeeping on the African continent dating back to 4500 years ago (Crane, 1999). Due to its low start-up costs, reliance on renewable natural resources (nectar and pollen), subsistence beekeeping is particularly attractive for improving family incomes in Africa where most people live usually on under 1 US$ per day. Beekeeping can yield significant returns at the same time conserving the environment by protecting biodiversity and ensuring sustainable use of natural resources (FAOSTAT2008) In Africa beekeeping is a highly variable activity, ranging from massive concentrations of both commercial and hobby beekeepers (e.g. in South Africa), smallholder beekeeping mainly for conservation (Kenya, Tanzania and Uganda) to untapped apicultural potentials on both extremes (Nigeria). Due to the high abundance of endemic wild honeybees there is a need to protect this critical resource across the African continent by linking intra-African apicultural practices to harness the potential of the sector.



Empowerment and Rural Development.

Small-scale beekeeping has great potential in Africa, as a means of entrepreneurial development and economic empowerment, particularly among rural communities and especially for women. Of course, economic empowerment using honeybees can only be successful if there is both a healthy and sustainable population of honeybees, and the availability of local expertise necessary to unlock the development potential. Africa in general offers great potential in terms of apiculture and meliponiculture, production of honey and other bee products and especially in terms of the use of managed honeybees to increase crop production through managed pollination services. At present a common approach is needed in Africa to develop an apicultural sector, for food security, nutrition, health, poverty reduction, enhancing livelihoods and inclusivity in Agric-food systems. It is important to note that Apiculture has the ability to meet all the SDG Goals in terms of resilience and sustainability for economic growth (Apimondia 2019)





Other Benefits of Keeping Bees

- Apiculture does not only support pollination but also offers additional benefits to African farmers and rural communities. Beekeepers can generate income from honey production, beeswax, propolis, royal jelly, and other hive products. This income diversification contributes to poverty reduction and increased economic opportunities for smallholder farmers. Moreover, beekeeping is environmentally friendly and can be integrated into various agricultural systems, making it a sustainable and adaptable practice

- Hive products: honey is money. The global value of **honey** trade in 2023 was 8.94 billion and projected to grow to 15.59 billion by 2032. **Propolis** sold in 2023 was 699.5million and can reach 1.063million by 2032 being used for the manufacturing of tablets, capsules and spray extracts, huge demand during the covid period. **Royal jelly** 1.4billion in 2021 and expected to reach 2.1billion by 2031. **Beeswax** 512.4 million sold in 2022 and will reach 674.86 million by 2030. **Bee venom** - 618.6million in 2022 expected growth of 5% to 2033 used in the production of skin collagen, beneficial to ovarian and prostate cancer and anti-inflammatory disorders.

- Bee hive products such as honey, pollen, propolis, royal jelly, beeswax, and bee venom have been used in African traditional medicine for many years. These products have been found to exhibit anti-inflammatory, anti-bacterial, anti-fungal, anti-viral and antioxidant activities. And can be useful in cancer therapy (Sforcin et al. 2017). Stingless bee honey in particular is highlighted as a superfood especially for treating cancer (Rozman et al. 2022) and its wound healing properties.

Ending Hunger in Africa - food security, Nutrition, Health and Food Safety

There is an ever-increasing need for sustainable, resilient food systems for healthy diets. The Food and Agriculture Organization of the United Nations (FAO) estimates a 30% population growth by the year 2050 with nearly all of this growth occurring in developing countries for which an 80% increase in food production is necessary to keep pace with population growth. Pollinators are estimated to be responsible for roughly one third of human caloric intake as well as up to 40% of the global nutrient supply. As much as 56% of a population could be placed at new risk of vitamin A deficiency because of the loss of animal pollinators. A large global burden of disease would result from reduced intake of fruit, nuts and seeds, and vegetables because of animal pollinator declines (**World Health Organization and Secretariat of the Convention on Biological Diversity, 2015).**

In Africa, important crops for farmers' income and livelihoods such as coffee, avocado and mango are all crops that benefit from pollination in terms of number of fruits produced and/or weight of fruits/seeds. Indigenous vegetables crops that are pollinator dependent include African nightshades (*Solanum scabrum*), amaranths (*Amaranthus blitum*), spiderplant (*Cleome gynandra*), slenderleaf (*Crotalaria ochroleuca* and *Crotalaria brevidens*), African kale (*Brassica carinata*), jute mallow (*Corchorus olitorius*) and African eggplant (*Solanum macrocarpon and Solanum gilo*). Also important are nuts and wild fruits harvested from natural and semi-natural areas such as shea nuts (*Vitellaria para*doxa).

Honey bees, pesticides and the environment

It is also important to view honeybees as representative of all pollinators, as an **indicator species**, and consider that what happens to honeybees with respect to loss of habitat or environmental hazards actually happens to all other pollinators as well. The UN Conference on Environment and Development in Rio de Janeiro (1992) formulated the Conservation of **Biological Diversity (CBD) agreement**, under which the conservation of pollinators was later given priority (1996). As a result of the global decline of pollinators, including honeybees, due to **pesticides, pollution, urbanization, globalization** and pests and diseases, a global initiative to preserve and prevent pollinator decline, the International Pollination Initiative (IPI), has recently been launched by the FAO.

- **Enhancing Resilience of Livelihoods and Agri-food Systems, Halving Poverty through Inclusive Agri-food Growth and Transformation**

  The need to diversify Africa's economy in the light of the current global economic crises cannot be over-emphasized. The Apiculture (Beekeeping) industry has been identified as a panacea for the much needed diversification. It is interesting to note that Global Honey yield is estimated at 1.4 million tons annually costing about US$ 9 billion. It is also estimated that honeybees could contribute to increasing agricultural productivity and food security by more than a third through pollination. Honey bee pollination is estimated to be worth USD 212 Billion globally (UNDP/FAO STATISTICS 2010). Thus, the global supply of honey and beeswax is dominated by Asia, Europe and the Americas (FAOSTAT.:2013). Africa's contribution has been negligible due to low levels of investment, use of traditional beekeeping equipment and lack of formalisation of the apiculture value chain.

- **Inclusivity and equality in agri-food systems (youth and gender) - stakeholder engagement.**

  Beekeeping is a relatively easy and low-cost, low labour intensive enterprise that does not require vast expanse of land and makes it viable for women, youth and other disadvantaged groups. Beekeeping is environmentally friendly as it promotes conservation and protection of natural forests, the natural habitat for bees and helps to mitigate the effect of GreenHouse Carbon emission resulting from climate change. In actual fact, it enhances environmental conservation through propagation of trees to provide forage for bees. It can be integrated with crop farming

because it provides pollination required for maximum yield. Honey can be harvested two to three times in a year and about 20kg - 60kg of honey/hive depending on the type of hive. With value addition other hive products such as comb honey, beeswax, propolis, pollen and royal jelly can also be easily marketed. The demand for these other honeybee hive products is on the increase both locally and internationally. Because of these potentials, beekeeping is a suitable tool for building the resilient livelihood of rural communities. It also is gender and youth friendly thus can be adopted for accelerated rural development and poverty alleviation in Africa.

Core Priorities

- Increase adoption of modern technology
- Advocacy & Awareness
- Youth & women participation in the industry
- Public Private partnership with Government across member states

Targets

- Grow the current (10%) to (50%) pollination service providers on the continent by 2030
- Adoption of Standards by 50% member states in 2030
- Adoption of Innovative apiary technologies by 70% of Beekeepers

Recommendations

1. **Creating awareness and disseminating knowledge:** Launch awareness programs to highlight the importance of pollinators and their role in supporting agricultural productivity. Develop training initiatives for farmers, extension workers, and policymakers on integrating pollinator-friendly practices in agriculture and adopting sustainable apiculture techniques.

2. **Support for Apiculture Development:** Provide training, resources, and incentives for beekeepers to improve bee health, honey production, value addition and market access. Create a dedicated budget line for Apiculture activities

3. **Supporting research and innovation:** Invest in scientific research to understand the status and trends of pollinators in different regions of Africa. This research should aim to identify factors impacting pollinator abundance and diversity, develop strategies to mitigate threats, and promote the conservation of standing habitats essential for pollinators. Encourage the adoption of innovative technologies that enhance pollination services, such as the use of native plant species, habitat restoration, and managed pollination in greenhouse agriculture.

4. **Bee Conservation:** Develop strategies to conserve and enhance pollinator populations through habitat restoration, integrated pest management, and reduction of pesticide use

5. **Strengthening partnerships and collaboration:** Foster partnerships between government agencies, agricultural institutions, researchers, and beekeeping associations to promote knowledge exchange, capacity building, and the development of national apiculture strategies and policies. Encourage the participation of local communities, especially women and youth, in beekeeping initiatives to empower them economically and contribute to sustainable rural development.

6. **Policy integration and mainstreaming:** Advocate for the integration of pollination and apiculture concerns in national and regional agricultural policies, strategies, and action plans. Incorporate indicators related to pollinator abundance and diversity, as well as the adoption of beekeeping practices, into existing monitoring and evaluation frameworks.

Institutional Framework and Process for Post Malabo Agenda:

1. 1. Continental & National Apiculture Platforms: Strengthen the African Apiculture Platform (AAP) and National Apiculture Platforms (NAPs) to effectively coordinate activities related to pollination services and apiculture within the CAADP Post Malabo framework.

2. 2. Integration into National Agriculture Strategies: Encourage member states to include specific targets and indicators for pollination services and apiculture in their national agriculture plans.

3. 3. Monitoring and Evaluation Mechanisms: Develop monitoring and evaluation frameworks to track progress, assess impact, and adjust strategies for promoting pollination services and apiculture.
4.
5. **1.** Launch awareness programs to highlight the importance of pollinators and their role in supporting agricultural productivity.

6. 2. Develop training initiatives for farmers, extension workers, and policymakers on integrating pollinator-friendly practices in agriculture and adopting sustainable apiculture techniques.
7.
8. **3.** Support for Apiculture: Capacity building on good beekeeping practice and provision of modern beekeeping and processing equipment for beekeepers and provision of incentives for beekeepers to improve bee health, honey production, value addition and market access.

9. 4. Promotion of Pollination Services: Develop strategies to conserve and enhance pollinator populations through habitat restoration, integrated pest management, and reduction of pesticide use.

10. 5. Supporting research and innovation: Invest in scientific research to understand the status and trends of pollinators in different regions of Africa. Development of Honey Maps in member states.

Conclusion

The inclusion of pollination services in the CAADP Post Malabo agenda will demonstrate Africa's commitment to sustainable agriculture, biodiversity conservation, and poverty eradication. Investing in pollinators and beekeeping not only supports food security and agricultural productivity but also contributes to the achievement of several United Nations Sustainable Development Goals, including zero hunger, gender equality, and responsible consumption and production

Proposed Indicators

- Policy framework-utilisation of crop indicators optimisation of crop production
- Adoption of pollination policies and institutional framework/regulatory framework including, institutionalisation of pollination protection of pollinators from pesticides
- Development of the apiculture value chain-hive/colony census, honey production,
- Protection of pollinators
- Recognition of the sector - pollination services, health and nutrition, apiculture value added products
- Employment for youth and women in pollination service



African Union – Interafrican Bureau for Animal Resources
(AU-IBAR)
Kenindia Business Park
Museum Hill, Westlands Road
PO Box 30786-00100 Nairobi, Kenya
Tel: +254 (20) 3674 000
Email: ibar.office@au-ibar.org
Website: www.au-ibar.org