

The African Ecological Futures

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The African Ecological Futures (AEF) planning project, a joint initiative between the African Development Bank (AfDB) and the Worldwide Fund for Nature (WWF) that took place between 2013 and 2015, is an example of how participatory scenario planning can benefit the continent. The process involved a series of analytical studies combined with workshops with policy makers and development partners with skill sets ranging from conservation and ecology to economics and international development. The outcomes of these workshops were four expert-developed and collectively-owned scenarios for the evolution of Africa's ecological resource base over the next 50 years (2015–2065).

Keywords: sustainable development ; social–ecological systems ; biodiversity ; participatory scenario planning ; governance ; strategic planning ; investment ; decision support frameworks ; green infrastructure ; Africa

1. Introduction

Africa's natural capital is immense—from the forests and minerals of the Congo, the diamonds of western and southern Africa, the water towers in Guinea, to the wildlife-packed savannahs and coral reefs of East Africa ^[1]. Perhaps the most unique aspect of Africa's natural capital is its biodiversity. The continent contains the world's most diverse and abundant megafaunal populations, which have been largely exterminated elsewhere in the world ^{[2][3]}. At the same time, African people rely heavily on the services that natural ecosystems provide such as clean water, firewood, protein from fisheries and wildlife, building materials, and revenue from wildlife-based tourism. Many economies continue to be dominated by agricultural production, either for export as in the case of cocoa production from Ghana, coffee and tea from Kenya, citrus fruits from Morocco, or wine from South Africa or for national consumption in subsistence economies. Tourism and other natural resource dependent sectors such as forestry and energy production add to this dependency on the continent's strong natural resource base. Hence, nature and natural resources remain the foundation for Africa's current and future development. It is therefore concerning that the continent's current development trajectory is undermining its ecosystems, as evidenced by declines in wildlife populations and habitats, and degrading freshwater systems, land, and other critical parts of ecosystems ^{[4][5]}.

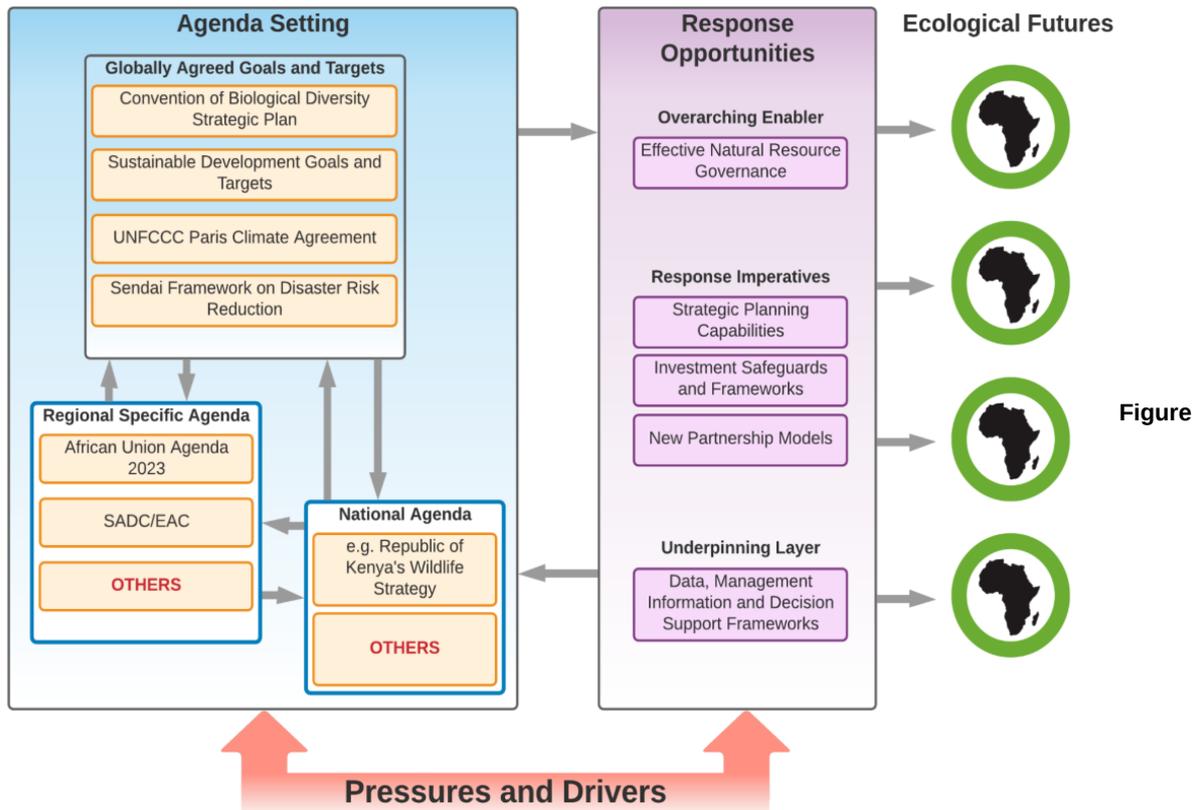
Despite strong economic advances, in particular over the past decade ^{[6][7]}, Africa can still improve on many development indicators. For example, less than 40% of the continent's population has access to electricity, and internet usage is at 28.2% in Africa as compared to Europe, who are the highest users at 82.5% ^[8]. Many landlocked countries lack railways and remain reliant on inefficient trucking freight transport, while only a third of the rural population has access to roads (e.g., especially in West Africa) ^[9]. Moreover, only 11% of African urban dwellers have access to sewer connections and 59% to piped water, down from 67% in 2003 ^[9]. Furthermore, the number of people living in poverty in Africa is still increasing ^[10], a sign of inequality in wealth distribution.

Africa's rapid economic development, population growth, and associated needs for access to natural resources, in particular where a large section of poverty-driven population remains highly dependent on such resources for their livelihoods and survival, comes at a cost to the continent's rich natural capital. Deforestation rates are increasing, particularly in nations with dry forests ^[11], wildlife populations are declining and becoming more isolated ^[4], and marine and freshwater fish stocks are plummeting ^{[12][13][14]}. Mega infrastructure projects are penetrating previously remote areas, catalyzing the unsustainable exploitation of natural resources, to feed growing local needs and the ever-increasing demands of the global economic system ^[15]. The consequent decrease in ecosystem resilience further aggravates the impacts of climate change, which is predicted to drive approximately 68 million to 132 million into poverty by 2030—mostly in sub-Saharan Africa ^[16]. If this largely unstrategic and ecologically blind development continues, it will threaten the future development and prosperity of the continent, with particularly severe impacts on many of the most marginalised, vulnerable people who depend on natural resources for their livelihoods ^[17].

Africa's human population is projected to double by 2050 to 2.5 billion people, and then double or triple again by 2100 ^[18] ^[19]. Africa is also one of the fastest urbanising regions and its burgeoning middle classes will grow from 355 million in

2010 to 1.1 billion in 2060 [20]. This rapid population expansion, urbanisation and the growing middle class indicates a need to vastly increase investments in infrastructure (e.g., for health, education, transport, energy, housing), and increase demands for food production, energy, water and other resources [21]. Finding a way to economically develop while maintaining the integrity of the environment which people depend on is therefore one of the great challenges faced by the continent.

However, Africa still has an opportunity to determine its own development trajectory, and chart new pathways to sustainability. Most African nations have in place national development plans and have committed to global targets such as the United Nations Sustainable Development Goals (SDGs) [22], the Convention on Biological Diversity's Strategic Plan [23], and the UNFCCC Paris Climate Agreement [24] (Figure 1). Additionally, all countries come together under the African Union, a multilateral governance platform promoting continental unity and cooperation. One of the key pillars of the African Union's ambitious Agenda 2063 is "environmentally sustainable and climate resilient economies and communities" [25]. Although not ubiquitous, the ambition is clear. To achieve it, Africa must look forward and plan accordingly.



1. Agenda setting can drive response opportunities and define Africa's Ecological Futures.

"Futures thinking" involves taking a future-oriented approach to strategic planning [26], backed by an understanding of the developmental and social-ecological history. The term "futures" covers a range of techniques for understanding and anticipating, rather than trying to predict the future. It is usually pluralised since many different futures are possible. The aim of futures thinking is to create pathways towards ambitious long-term goals, and it is regarded as an effective technique to inform decision making that balances long-term planning with present action. One approach of futures thinking is scenario planning-which present plausible descriptions about how the future may develop, based on a coherent, internally consistent set of assumptions (or logic) about key relationships and their driving forces [27][28]. When developed in a participatory manner, the process includes a diverse array of relevant stakeholder views, which can improve the feasibility, validity, uptake, and concreteness of scenarios [29][30][31].

Increasing the capacity for futures thinking and generating scenarios that galvanise transformative change are recognised as important endeavours for achieving sustainability worldwide. However, in Africa the availability of necessary expertise to apply futures thinking is low, and scenario analyses in the environmental field have been underutilised [32]. Moreover, developing a coherent set of scenarios for the continent is challenging, considering the rich cultural diversity, vast geographic heterogeneity which no doubt, hosts many different, and sometimes conflicting visions of the future.

2. Defining Pathways towards African Ecological Futures

The scenarios process proved to be a valuable tool for analysing trade-offs and guiding discussions of what is an extremely complex system of interacting parameters that influence the potential development trajectories of Africa. By identifying a set of parameters that are more of a societal nature, as opposed to the more traditional “green” versus “brown” development scenarios, this analysis provides a framework for an open discussion about the core choices to be made by policy makers in Africa—including the dynamics and implications of external versus inward-looking development, and open versus closed societies.

It should also be noted that the ‘global shock’ presented by the COVID-19 pandemic has shown that extremely rare events can have widespread and severe impacts that jeopardise the success of implementing response opportunities. These extreme events can alter the relationships and impacts of global drivers of environmental change, highlighting vulnerabilities and disrupting progress towards achieving the sustainable development goals [4][33]. Such events are difficult to predict, but a resilience-based approach can allow social–ecological systems with the flexibility to respond and adapt within a changing environment [34].

The analysis and perspectives we share above are specific to Africa, but the entire planet faces an uncertain social–ecological future. We must develop and implement processes and approaches for innovating, analysing and communicating alternative development trajectories and sustainable futures. For instance, the recently completed review on The Economics of Biodiversity [35] identified three potential pathways to sustainability: (i) ensure that our demands on nature do not exceed supply, and that we increase nature’s supply relative to its current level; (ii) change our measures of economic success to help guide us on a more sustainable path; and (iii) transform our institutions and systems to enable and sustain these changes for future generations. Exploring the implications of these pathways in the context of a scenarios process will be critical to identifying actionable and evidence-based development interventions to guide policy decisions.

The overall imperative of development across the continent, coupled with increased access to information, new decision support and planning tools, emerging new technologies, and an increasing interest in nature and sustainability provide a unique opportunity to redefine the continent’s future. In particular, national and regional decision makers can learn from the short term and extractive development pathways followed by industrialised nations which dramatically depleted their own and others’ ecosystems, wiping out biodiversity, undermining resilience and imperilling the planet in their unbridled pursuit of economic growth. The challenge is a development pathway that is just and equitable so that no one is left behind while simultaneously delivering benefits to people and nature.

African citizens and leaders have the ability to control their own ecological destiny—but it requires shared vision, robust evidence, and a committed and coordinated response. An inclusive African Ecological Futures process that recognises both endogenous and exogenous drivers, threats, and opportunities is a critical first step towards realising dynamic new development pathways for the continent. However, we cannot walk these pathways alone. Our future is tied to the future of the planet and we must work together as a continent and as a global community to embrace new trajectories, new approaches, new technologies, and new values—that recognise and strengthen nature’s critical role in economic development and human wellbeing—as part of a sustainable global future that addresses human-induced change and ensures the resilience and stability of the earth system overall.

References

1. AfDB and WWF. African Ecological Footprint Report: Green Infrastructure for Africa’s Ecological Security; Gland, Switzerland. 2012. Available online: https://www.afdb.org/sites/default/files/documents/projects-and-operations/africa_ecological_footprint_report_-_green_infrastructure_for_africas_ecological_security.pdf (accessed on 24 May 2021).
2. Ripple, W.J.; Newsome, T.M.; Wolf, C.; Dirzo, R.; Everatt, K.T.; Galetti, M.; Hayward, M.W.; Kerley, G.I.H.; Levi, T.; Lindsey, P.A.; et al. Collapse of the world’s largest herbivores. *Sci. Adv.* 2015, 1, e1400103.
3. Wolf, C.; Ripple, W.J. Prey depletion as a threat to the world’s large carnivores. *R. Soc. Open Sci.* 2016, 3, 160252.
4. Lindsey, P.; Allan, J.; Brehony, P.; Dickman, A.; Robson, A.; Begg, C.; Bhammar, H.; Blanken, L.; Breuer, T.; Fitzgerald, K.; et al. Conserving Africa’s wildlife and wildlands through the COVID-19 crisis and beyond. *Nat. Ecol. Evol.* 2020, 4, 1300–1310.

5. Owen-Smith, N. Megafaunal Extinctions: The Conservation Message from 11,000 Years B.P. *Conserv. Biol.* 1989, 3, 405–412.
6. AfDB Tracking Africa's Progress in Figures; Tunis, 2014. Available online: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Tracking_Africa%E2%80%99s_Progress_in_Figures.pdf (accessed on 24 May 2021).
7. AfDB African Economic Outlook 2021; Côte d'Ivoire. Available online: <https://www.afdb.org/en/knowledge/publications/african-economic-outlook> (accessed on 4 June 2021).
8. ITU (International Telecommunications Union). *Measuring Digital Development: Facts and Figures 2019*; Geneva, Switzerland, 2019; Available online: <https://news.itu.int/measuring-digital-development-facts-figures-2019/> (accessed on 5 November 2019).
9. Eberhard, R. *Access to Water and Sanitation in Sub-Saharan Africa*; Berlin, Germany, 2019; Available online: https://www.oecd.org/water/GIZ_2018_Access_Study_Part%20II_Narrative%20Report_Briefing_document.pdf (accessed on 24 May 2021).
10. Schoch, M.; Lakner, C. The Number of Poor People Continues to Rise in Sub-Saharan Africa, Despite a Slow Decline in the Poverty Rate. 2020. UNDP. Available online: <https://blogs.worldbank.org/opendata/number-poor-people-continues-rise-sub-saharan-africa-despite-slow-decline-poverty-rate> (accessed on 24 May 2021).
11. Rudel, T.K. The national determinants of deforestation in sub-Saharan Africa. *Philos. Trans. R. Soc. B Biol. Sci.* 2013, 368, 20120405.
12. Belhabib, D.; Cheung, W.W.L.; Kroodsmas, D.; Lam, V.W.Y.; Underwood, P.J.; Virdin, J. Catching industrial fishing incursions into inshore waters of Africa from space. *Fish Fish.* 2020, 21, 379–392.
13. Asche, F.; Garlock, T.M.; Akpalu, W.; Amaechina, E.C.; Botta, R.; Chukwuone, N.A.; Eggert, H.; Hutchings, K.; Lokina, R.; Tibesigwa, B.; et al. Fisheries performance in Africa: An analysis based on data from 14 countries. *Mar. Policy* 2021, 125, 104263.
14. Archer, E.; Dziba, L.; Mulongoy, K.J.; Maoela, M.A.; Walters, M. *Regional Assessment Report on Biodiversity and Ecosystem Services for Africa*; IPBES: Bonn, Germany, 2018.
15. Laurance, W.F.; Sloan, S.; Weng, L.; Sayer, J.A. Estimating the Environmental Costs of Africa's Massive "development Corridors". *Curr. Biol.* 2015, 25, 3202–3208.
16. Hallegatte, S.; Walsh, B. Available online: <https://blogs.worldbank.org/climatechange/covid-climate-change-and-poverty-avoiding-worst-impacts> (accessed on 24 May 2021).
17. Erdoğan, S.; Çakar, N.D.; Ulucak, R.; Danish; Kassouri, Y. The role of natural resources abundance and dependence in achieving environmental sustainability: Evidence from resource-based economies. *Sustain. Dev.* 2021, 29, 143–154.
18. UNCTAD. *Handbook of Statistics 2020—Population*. Available online: <https://unctad.org/webflyer/handbook-statistics-2020> (accessed on 24 May 2021).
19. UNICEF Home Page. Available online: <https://www.unicef.org/press-releases/dividend-or-disaster-unicefs-new-report-population-growth-africa> (accessed on 24 May 2021).
20. AfDB; WWF. *African Ecological Futures 2015*. Available online: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/xwwf_african_futures_report_english-lo-rez.pdf (accessed on 24 May 2021).
21. Moomaw, W.; Griffin, K.K.; Lomax, J. The Critical Role of Global Food Consumption Patterns in Achieving Sustainable Food Systems and Food for All. Available online: https://wedocs.unep.org/bitstream/handle/20.500.11822/25186/Food_Consumption_Patterns.pdf?sequence=1&isAllowed=y (accessed on 24 May 2021).
22. UN. *Sustainable Development Goals*. Available online: <https://sustainabledevelopment.un.org/post2015/summit> (accessed on 24 May 2021).
23. CBD. *Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets "Living in Harmony with Nature"*. Available online: <https://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf> (accessed on 24 May 2021).
24. UNFCCC. *Paris Agreement*. Available online: https://unfccc.int/sites/default/files/english_paris_agreement.pdf (accessed on 24 May 2021).
25. African Union *Goals & Priority Areas of Agenda 2063*. Available online: <https://au.int/en/agenda2063/goals> (accessed on 24 May 2021).
26. Sardar, Z. The Namesake: Futures; futures studies; futurology; futuristic; foresight—What's in a name? *Futures* 2010, 42, 177–184.

27. van Vuuren, D.P.; Kok, M.T.J.; Girod, B.; Lucas, P.L.; de Vries, B. Scenarios in Global Environmental Assessments: Key characteristics and lessons for future use. *Glob. Environ. Chang.* 2012, 22, 884–895.
28. Thorn, J.P.R.; Klein, J.A.; Steger, C.; Hopping, K.A.; Capitani, C.; Tucker, C.M.; Reid, R.S.; Marchant, R.A. Scenario archetypes reveal risks and opportunities for global mountain futures. *Glob. Environ. Chang.* 2021, 69, 102291.
29. Vervoort, J.M.; Thornton, P.K.; Kristjanson, P.; Förch, W.; Ericksen, P.J.; Kok, K.; Ingram, J.S.I.; Herrero, M.; Palazzo, A.; Helfgott, A.E.S.; et al. Challenges to scenario-guided adaptive action on food security under climate change. *Glob. Environ. Chang.* 2014, 28, 383–394.
30. Lavorel, S.; Colloff, M.J.; Locatelli, B.; Gourdard, R.; Prober, S.M.; Gabillet, M.; Devaux, C.; Laforgue, D.; Peyrache-Gadeau, V. Mustering the power of ecosystems for adaptation to climate change. *Environ. Sci. Policy* 2019, 92, 87–97.
31. Thorn, J.P.R.; Klein, J.A.; Steger, C.; Hopping, K.A.; Capitani, C.; Tucker, C.M.; Nolin, A.W.; Reid, R.S.; Seidl, R.; Chitale, V.S.; et al. A systematic review of participatory scenario planning to envision mountain social–ecological systems futures. *Ecol. Soc.* 2020, 25, 1–55.
32. IPCC; Rivera, A.; Bravo, C.; Buob, G. Summary for Policymakers. In *Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems*; IPCC: Geneva, Switzerland, 2019; ISBN 9789291691548.
33. OECD. *OECD Regional Outlook 2021: Addressing COVID-19 and Moving to Net Zero Greenhouse Gas Emissions*. Available online: <https://www.oecd.org/publications/oecd-regional-outlook-2021-17017efe-en.htm> (accessed on 24 May 2021).
34. Folke, C. Resilience (Republished). *Ecol. Soc.* 2016, 21, 1–30.
35. Dasgupta, P. *The Economics of Biodiversity: The Dasgupta Review*; HM Treasury: London, UK, 2021; ISBN 9781911680307.

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