

Key points

The concepts of 'biodiversity economy' and 'bioeconomy' are both gaining international traction. There is a risk of them being used interchangeably, but they can mean fundamentally different things.

Although the G20 has proposed a set of High-Level Principles on Bioeconomy, at national level there are different interpretations, not all of which are good for biodiversity. Discussions of bioeconomy should be clear on which particular vision is under consideration.

'Biodiversity economy' offers a different framing and has potential to deliver progress towards a wide range of international biodiversity targets.

Whatever terminology is used, investment is needed to maximise the potential of nascent, nature-based activities that generate economic value while benefiting people and planet, with both public and private financiers playing a key role in fuelling and shaping this emerging engine for green and inclusive growth.

Bioeconomy: a transformative step towards sustainability or threat to biodiversity and social justice?

The concepts of 'biodiversity economy' and 'bioeconomy' are both gaining international traction. While they sound similar, they actually mean quite different things. Most significantly, not all interpretations of bioeconomy are good for biodiversity. Similarly, green, blue and circular economy all involve varying degrees of dependence on, and support for, biodiversity. Biodiversity economy, however, has potential to deliver significant progress towards many of the targets under the Global Biodiversity Framework. The G20 High-Level Principles on Bioeconomy agreed in 2024 have the potential — if applied — to ensure that bioeconomy approaches are good for biodiversity, for social inclusivity and for sustainability. This is the vision of bioeconomy that is needed if we are to live in harmony with nature.

Bioeconomy on the international policy agenda

In 2024, the G20 agreed a set of High-Level Principles on Bioeconomy aimed at building a common understanding and guiding bioeconomy activities.¹ Bioeconomy was also briefly discussed at the May 2024 meeting of the Convention on Biological Diversity (CBD) Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA), where it was suggested that guidance was needed "to promote sustainable biodiversity-based activities, products and services and to ensure equitable and sustainable outcomes of a bioeconomy".²

But what exactly is bioeconomy? Is it the same as, or different from, other concepts that are also gaining traction such as 'biodiversity economy', 'wildlife economy' and 'green economy'?

Same word, different understandings and multiple visions

The term 'bioeconomy' has its origins in work on 'bioeconomics' in the 1970s by Romanian economist Georgescu-Roegen, who advocated a 'new economy' that was resource efficient and used technology for human good, "not rising profits, warfare, or national prestige".³ Since the 1970s, however, the term has evolved and now means different things to different people. To some it is an umbrella term for various economic activities derived from biological goods and processes; to others it is shorthand for a process to replace fossil fuels with biomass energy; and to yet others it is very much about biotechnology, science and innovation.

Oddly, in many interpretations of bioeconomy there is no explicit focus on sustainability,

A 'bioecology' vision highlights sustainability and ecological processes that promote biodiversity

resource conservation or equitable distribution of costs and benefits.⁴

Some commentators have raised concerns about the recent promotion of bioeconomy in

international policy forums. For example, discussions at the SBSTTA meeting provoked one commentator to note: "Despite the 'bio' in its name, there is no guarantee that the bioeconomy, or even biodiversity-based products, will actually lead to biodiversity conservation and restoration.

On the contrary, experiences with the bioenergy industry, which in reality forms the bulk of the bioeconomy, have taught us that a rapidly increased use of 'biodiversity-based products' for a sector with an almost insatiable appetite like the energy sector is a recipe for disaster."⁵

The fear expressed in this quote arises from concern about what has been described as a 'bioresource vision' of bioeconomy.⁶ This focuses on processing biological resources into products such as food, animal feed, bio-based products and bioenergy.

There is, however, one interpretation of bioeconomy, described as a 'bioecology' vision, which highlights sustainability and ecological processes that optimise the use of energy and nutrients and promote biodiversity.⁶ Some have termed this a 'new' or 'restorative' bioeconomy that builds on the sociocultural and ecological richness of a place.⁴

The G20 High-Level Principles on Bioeconomy reflect much of this alternative vision of bioeconomy, noting, for example, that bioeconomy activities should (among other things):

- "Be inclusive and equitable, uphold the rights of all persons, including Indigenous Peoples and members of local communities, promote gender equality and the participation of all stakeholders..."
- "Contribute to the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge..."
- "Advance sustainable consumption and production patterns and the efficient and circular use of biological resources, whilst promoting the restoration and regeneration of degraded areas and ecosystems."¹

But the countries that have developed bioeconomy strategies to date do not necessarily reflect this vision and these principles.

Is 'biodiversity economy' better/different?

The concept of 'biodiversity economy' (or comparable terms such as 'nature-based' or 'wildlife' economy) is also gaining international traction, and offers an alternative or complementary framing to bioeconomy. South Africa is the first country to have developed a national biodiversity economy strategy (NBES), which defines biodiversity economy as "businesses and economic activities that either directly depend on biodiversity for their core business or that contribute to conservation of biodiversity through their activities".⁷

South Africa's NBES aims to contribute to economic growth, with a specific focus on local benefits, job creation, poverty alleviation and food security, while maintaining the ecological integrity of the biodiversity resource base.⁸ As such, unlike some concepts of bioeconomy, it has an explicit focus on sustaining biodiversity and on social inclusion and sustainability.

Biodiversity economy and the Global Biodiversity Framework targets

One thing that bioeconomy and biodiversity economy have in common is that they both describe the businesses, activities, services and products that generate economic benefits from the use and/or conservation of biological resources. This applies whether these resources are wild species and landscapes, genetic resources, or biological resources more broadly.

Target 9 of the Global Biodiversity Framework (GBF) makes specific reference to the need to develop "biodiversity-based activities, products and services" to ensure benefits to people from the sustainable management and use of wild species. Biodiversity-based activities, products and services are the building blocks of a biodiversity or wildlife economy. But beyond this, a biodiversity economy has the potential to deliver on multiple targets across all parts of the GBF, as Table 1 illustrates.

What about green, blue and circular economies?

The United Nations Environment Programme (UNEP) defined a green economy in 2011 as "one that results in improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient, and socially inclusive."¹⁰ Later, in 2020, the Partners for Inclusive Green Economy (PIGE) specifically noted that a green economy "safeguards,

Table 1. Contributions of a biodiversity economy to GBF targets⁹

GBF target	Biodiversity/wildlife economy (BE/WE) contributions
Target 3: “Conserve 30% of land, waters and seas ... while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognizing and respecting the rights of indigenous peoples and local communities, including over their traditional territories.”	A BE/WE incentivises conservation on community conservancies, wildlife ranches and private nature reserves.
Target 5: “Ensure sustainable, safe and legal harvesting and trade of wild species.”	Harvesting of and trade in wild species are a key element of a BE/WE. Regulatory frameworks and good governance, necessary for BE sustainability, will support the safe and legal harvesting of, and trade in, products derived from wild species.
Target 9: “Ensure that the management and use of wild species are sustainable, thereby providing social, economic and environmental benefits for people ... including through sustainable biodiversity-based activities, products and services.”	A BE/WE is made up of biodiversity-based activities, products and services. Wild species are sustainably managed to support subsistence and to contribute to livelihoods and local, national and regional economies.
Target 10: “Enhance biodiversity and sustainability in agriculture, aquaculture, fisheries and forestry.”	Key activities within a BE are aquaculture, forestry and fisheries, which when well regulated should conserve and sustain biodiversity.
Target 11: “Restore, maintain and enhance nature's contributions to people, including ecosystem functions and services ... through nature-based solutions and/or ecosystem-based approaches for the benefit of all people and nature.”	Many elements of a BE/WE can be described as nature-based solutions and/or ecosystem-based approaches that, if sustainably managed, benefit people and nature.
Target 13: “Increase the sharing of benefits from genetic resources, digital sequence information and traditional knowledge.”	Regulated bioprospecting is a key activity within a BE, with a focus on equitable benefit-sharing aligning with the requirements of the CBD's Nagoya Protocol (an agreement establishing a legally binding framework for the fair and equitable sharing of benefits from the use of genetic resources).
Target 14: “Integrate biodiversity in decision-making at every level.”	A flourishing BE/WE will raise awareness of the value of biodiversity assets at local, national and international levels and will support the integration of biodiversity in decision making at all levels.
Target 19: “Substantially and progressively increase the level of financial resources from all sources ... including ... innovative schemes such as payment for ecosystem services, green bonds, biodiversity offsets and credits, [and] benefit-sharing mechanisms.”	A BE provides a mechanism to mobilise and generate revenue based on the sustainable use of nature. Payments for ecosystem services and nature markets are key contributors to an effective BE.
Targets 21 and 22: “Ensure ... equitable, inclusive ... participation ... by indigenous peoples and local communities”, at the same time recognising their “traditional knowledge”.	Many activities and practices within a BE/WE are anchored by traditional and local knowledge, innovations and technologies. A BE/WE can be a mechanism for valuing and protecting this knowledge.

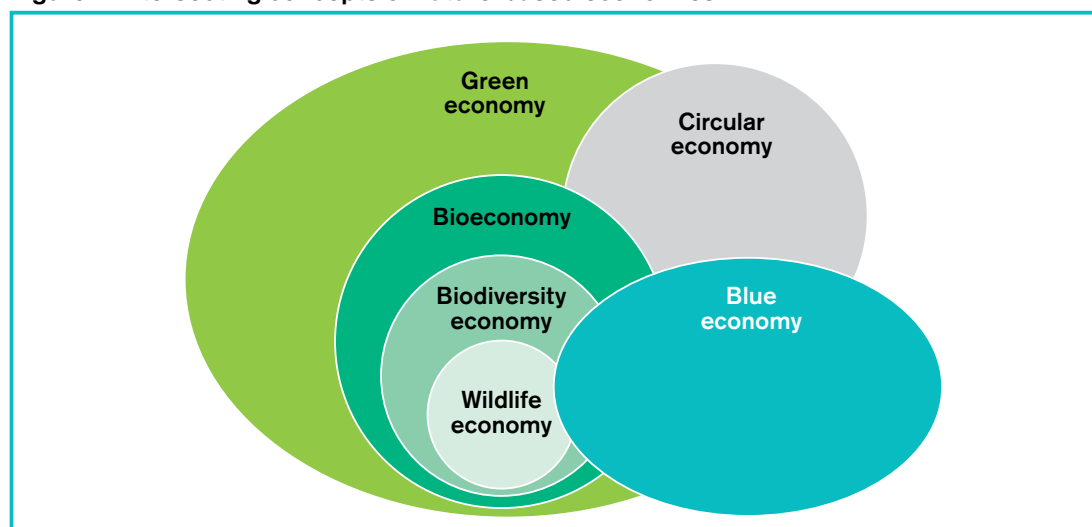
restores and invests in nature” as one of five key principles.¹¹ Comparing the concepts of green economy and bioeconomy, commentators have suggested that bioeconomy could be considered an element of a green economy but that green economy is a broader concept with a stronger focus on social dimensions such as green jobs and on nature conservation¹² — although the G20 High-Level Principles now take these dimensions into account.

Blue economy, by contrast, is somewhat different. The term describes businesses, activities, services, products and infrastructure that generate economic benefits from direct and indirect use of aquatic resources and aquatic

environments (marine and freshwater). However, while some components of a blue economy depend on biodiversity — for example, nature-based tourism and fisheries — other elements may be damaging to biodiversity, such as maritime shipping, deep sea mining and port development.

Circular economy is again different and not specifically dependent on biodiversity or focused on biodiversity-based activities. However, it can contribute to supporting a biodiversity or wildlife economy by virtue of its regenerative/protective characteristics. An emerging concept that appears to capture the best of all those described above is ‘circular bioeconomy’, which has a goal of

Figure 1. Intersecting concepts of nature-based economies



achieving sustainable wellbeing in harmony with nature.¹³ This also seems to be the spirit of the G20 High-Level Principles, which, if widely adopted could be a game-changer for sustainability.

Figure 1 provides an illustration of how different types of nature-related economies intersect and overlap.

Living in harmony with nature – towards an equitable biodiversity-based bioeconomy

Economies powered by and respectful of nature represent an exciting opportunity for green, just and inclusive sustainable development. There is a huge need and opportunity for both public and private investment in activities and sectors that can drive this green development.

Bioeconomy is a concept gaining increasing international attention, but there is a real danger that the wrong kind of bioeconomy could further accelerate biodiversity loss and reinforce existing social injustices and inequities. It is critically important that discussions about bioeconomy are clear about which specific vision of bioeconomy is under consideration.

Notes

¹ G20 Initiative on Bioeconomy (2024) G20 High-Level Principles on Bioeconomy. World Bioeconomy Association. / ² CBD SBSTTA (2024) Scientific and technical needs to support the implementation of the Kunming-Montreal Global Biodiversity Framework, p.6. UNEP. / ³ Vogelppohl, T and Töller, AE (2021) Perspectives on the bioeconomy as an emerging policy field, *Journal of Environmental Policy & Planning*, 23(2), pp.143–151. doi:10.1080/1523908X.2021.1901394. / ⁴ Bastos, L, Mairon, G and Palme, U (2022) The bioeconomy–biodiversity nexus: Enhancing or undermining nature's contributions to people?, *Conservation*, 2(1), pp.7–25. doi:10.3390/conservation2010002. / ⁵ Lovera, S (2024) Can biodiversity-based products and the bioeconomy be 'sustainable'? Lessons learned from the bioenergy disaster. *ECO*, 26 May. / ⁶ Bugge, MM, Hansen, T and Klitkou, A (2016) What is the bioeconomy? A review of the literature, *Sustainability*, 8(7), p.691. doi:10.3390/su8070691. / ⁷ South African Department of Forestry, Fisheries and the Environment (DFFE) (2016) National Biodiversity Economy Strategy (NBES). The NBES is currently being updated. / ⁸ Matibe, K (2024) chief director, biodiversity economy and sustainable use, South Africa Department of Forestry, Fisheries and the Environment (2024) Personal communication, June. / ⁹ Table adapted from Snyman, S and Tshitwamolomoni, L (2025) Wildlife Economy Investment Index (WEII): A Tool for Measuring Progress and Reducing Sovereign Debt. G20 South Africa 2025 Sherpa Track Technical Papers. / ¹⁰ UNEP (2011) Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication. / ¹¹ PIGE (2020) Principles, priorities and pathways for inclusive green economies: Economic transformation to deliver the SDGs. Green Economy Coalition. / ¹² D'Amato, D, Droste, N, Allen, B, Kettunen, M, Lähänen, K, Korhonen, J, Leskinen, P, Matthies, BD and Toppinen, A (2017) Green, circular, bio economy: A comparative analysis of sustainability avenues. *Journal of Cleaner Production*, 168, pp.716–734. doi:10.1016/j.jclepro.2017.09.053. / ¹³ Palahí, M, Pansar, M, Costanza, R, Kubiszewski, I, Potočnik, J, Stuchtey, M, Nasi, R, Lovins, H, Giovannini, E, Fioramonti, L et al. (2020) Investing in nature as the true engine of our economy: A 10-point action plan for a circular bioeconomy of wellbeing (Knowledge to Action 02). European Forest Institute. doi:10.36333/k2a02.

Despite the 'bio' in bioeconomy, not all approaches are good for biodiversity, and the terms 'biodiversity economy' and 'bioeconomy' should not be used interchangeably. Many approaches to bioeconomy — for example, those focused on biotechnology and bioresources — use biological resources for economic gain. But they do not necessarily have a focus on biodiversity stewardship or on equity and inclusion.

As discussion on bioeconomy progresses, and as the concept is adopted by more countries, donors and investors, it will be important to keep the G20 High-Level Principles at heart and use them as a checklist to ensure we are indeed heading towards living in harmony with nature, not in conflict.

Whatever terminology is used, investment is needed to maximise the potential of nascent nature-based activities that generate economic value while benefiting people and planet. Both public and private financiers have a key role in fuelling and shaping this emerging engine for green and inclusive growth.

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