

International Resource Panel

Taking Action for Nature:

The Role of Business and the Circular Economy

The case for action

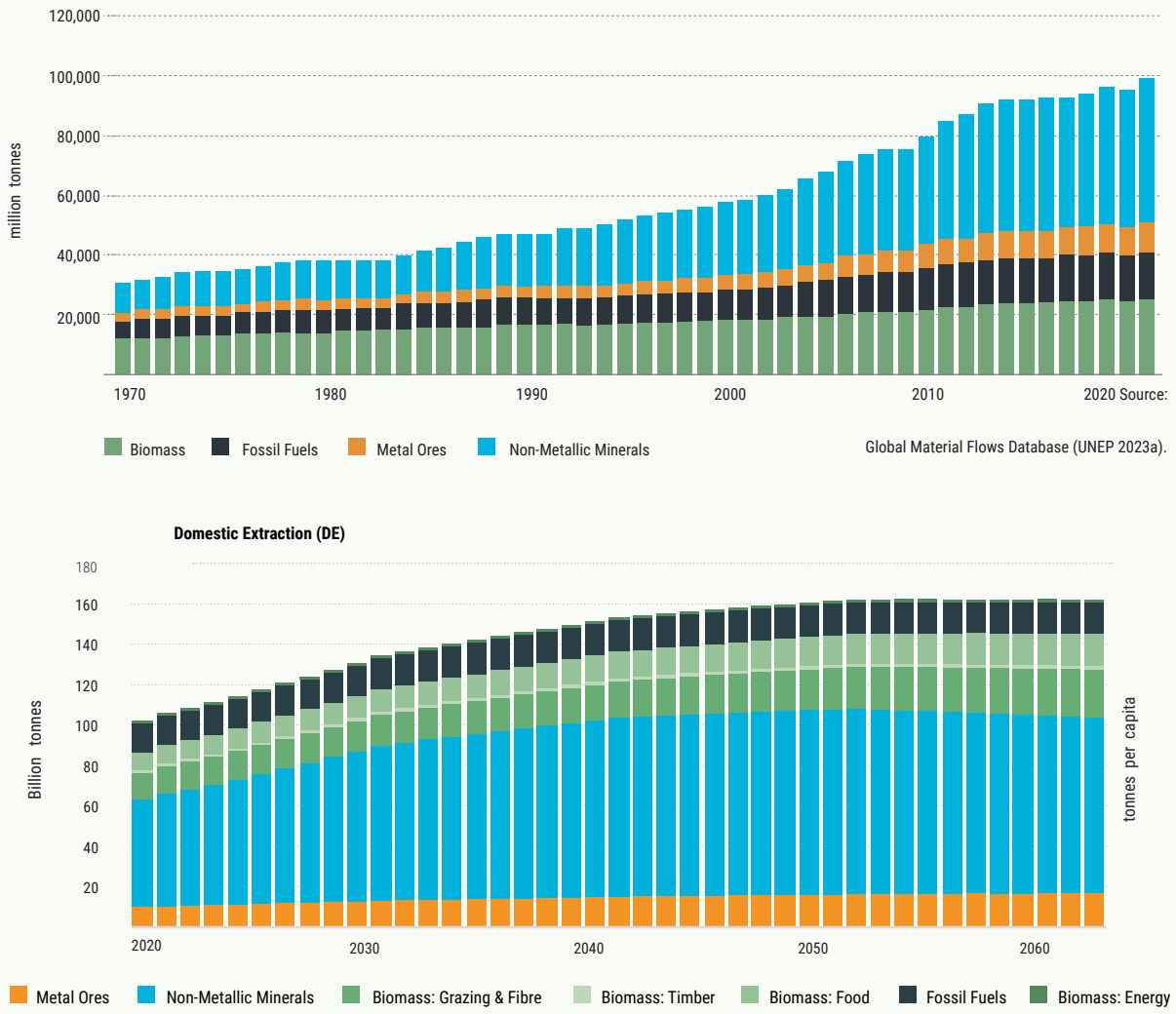
Businesses around the world rely on nature and biodiversity, even though those words rarely appear on corporate balance sheets. An estimated 1.2 billion jobs strongly depend on the effective management and sustainability of ecosystems[1]. Biodiversity underpins agriculture by aiding crop pollination and promoting healthy soil formation. For example, each year crops worth between 240 and 560 billion dollars rely on honeybee pollination[2], and *all* crops rely on soil biodiversity to release crop nutrients from organic sources, including roots and crop residues.

Yet our biodiversity is declining faster than at any time in human history. In less than half a century about half of Earth's forests[3] have been lost. Over the same period recorded populations of animals, mammals, birds, fish, amphibians and reptiles have fallen by more than two thirds. One million animal and plant species are now threatened with extinction[4].

Resource extraction and processing is the primary channel through which business drives biodiversity loss. Together, the systems that provide us with food, energy, transport and housing drive most resource-related environmental impacts, accounting for more than 95 per cent of biodiversity loss, up to 60 per cent of climate emissions and nearly 40 per cent of environmental health impacts of particulate matter[5].

1 UNEP (2021*). Building Biodiversity: The Nature Resource Management Approach.* A report by the International Resource Panel. Nairobi, Kenya.
2 Ibid.
3 Ibid.
4 Ibid.
5 This includes cardiovascular and respiratory diseases caused by fine primary particulate matter emissions or secondary particulate matter. Source: UNEP (2024). *Global Resources Outlook - 2024: Bend the Trend: Pathways to a Liveable Planet as Resource Use Spikes.* A report by the International Resource Panel. Nairobi, Kenya.

Figure 1. Projected growth in material extraction from 1970 - 2020 (top) and from 2020 to 2060 (bottom). Source: UNEP (2024).



The scale of resource extraction has increased dramatically in recent decades. Over the past 50 years the volume of Earth's resources we extract has tripled, to more than 100 billion tonnes annually. That is projected to increase by 60 per cent by 2060 (see figure 1)[6].

This is undermining the foundation of planetary wellbeing on which all businesses, indeed all humanity, rely. The 2021 Dasgupta review estimated that over the previous 25 years our per capita stock of natural capital had fallen by roughly 40 per cent even as produced capital had doubled – meaning that the asset base that underlies our economic activity continues to deplete even as productivity increases[7]. This trajectory is unlikely to be sustainable over the long term.

For almost two decades, the International Resource Panel (IRP) has examined the interactions between sustainability and natural resource use, including biomass, metals, non-metallic minerals, fossil fuels, water and land. A science-policy platform established by the United Nations Environment Programme (UNEP) in 2007, the IRP investigates the full life cycle of resource use — from extraction through processing, consumption and disposal — to build a better understanding of how to develop economies while reducing environmental degradation and resource depletion and enhancing human wellbeing.

6 Ibid.
7 Dasgupta, P. (2021) The Economics of Biodiversity: The Dasgupta Review. London: HM Treasury

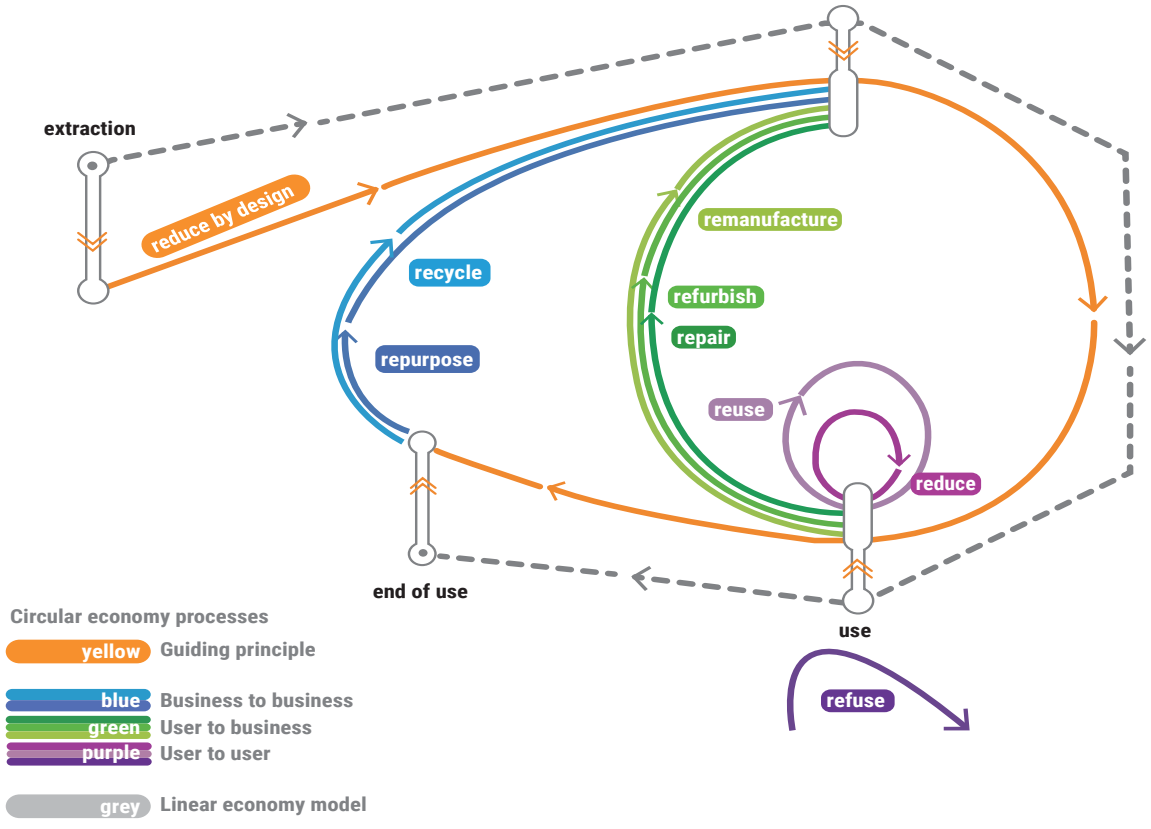
The loss of biodiversity and nature presents serious business risks for companies around the world. These may take the form of supply chain risks, for example in the food and construction industry, and production challenges for any industry reliant on raw materials. Biodiversity loss also gives rise to regulatory risks as countries increasingly look to businesses to improve sustainability through their supply chains, and financial risks as companies with poor environmental performance may struggle to attract investment. Financial risks can also include loss of asset value, such as through the degradation of productive agricultural land including the loss of soil biodiversity.

Implementing circular and resource efficient approaches offers significant opportunities for both nature and business. Circular approaches provide an alternative to the linear "take, make, use and dispose" economic model. A more circular economy seeks to reduce raw material demand and waste generation through measures such as material efficiency, recycling and product design that enables repair and reuse (see figure 2).

These approaches reduce pressure on ecosystems and biodiversity while also lowering demand for costly raw materials, reducing waste, and decreasing energy and other input costs. This can improve profitability, create new revenue streams, enhance corporate reputation and support job creation.

At the global level, a 2018 report by the International Labour Organization (ILO) estimated that a circular economy emphasizing reuse, recycling, remanufacturing and repair could create around 6 million jobs by 2030, as part of a net 24 million jobs from a green economy[8]. In practical terms, some actions that reduce pressure on biodiversity and act more responsibly can help businesses become more competitive, profitable and sustainable over the long term[9].

Figure 2: Circular approaches can dramatically reduce business pressure on nature and biodiversity[10]

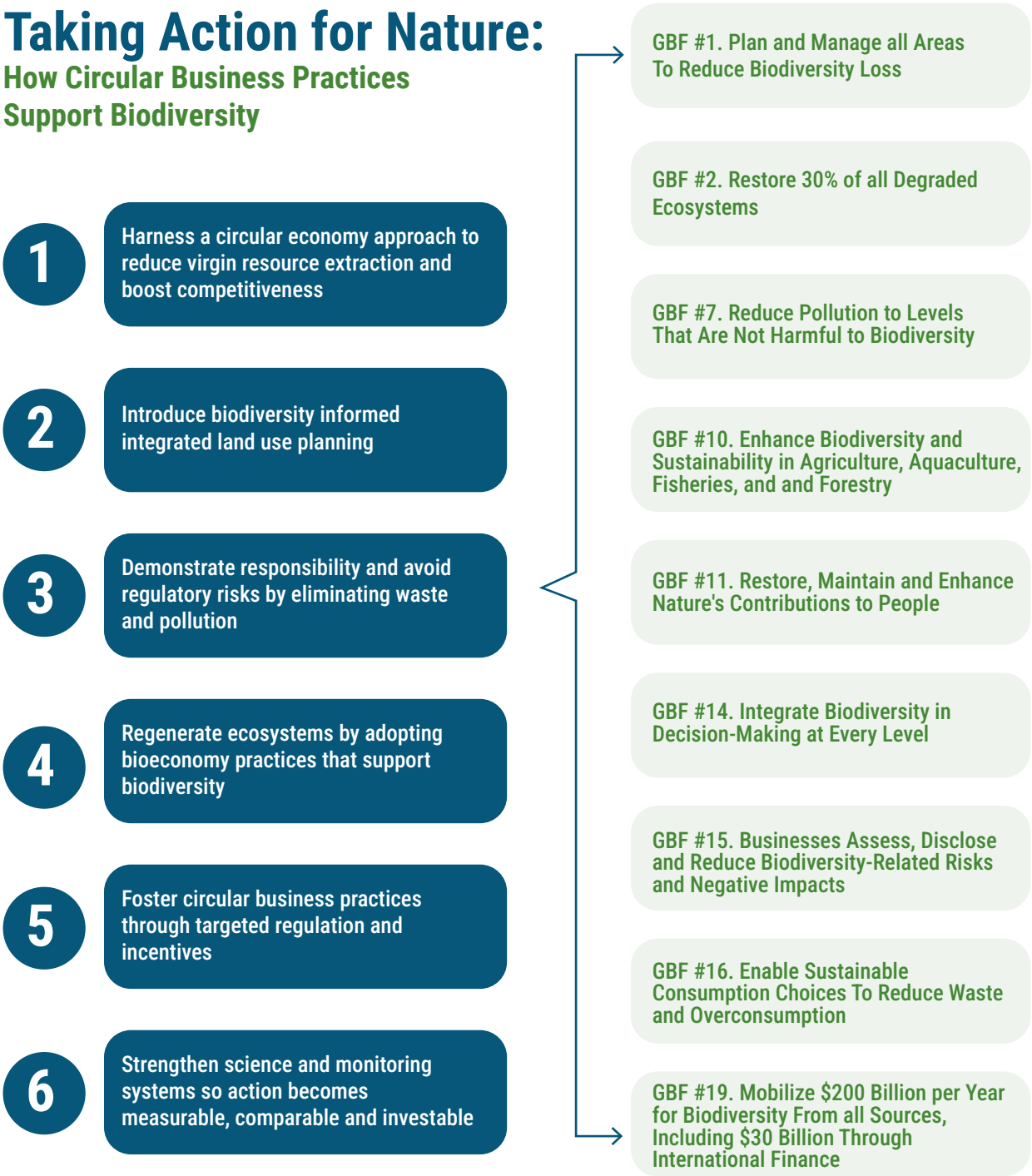


8 ILO (2018) *World Employment and Social Outlook 2018*: *Greening with Jobs*. Geneva: International Labour Organization

9 Di Tommaso, C., Foglia, M., & Pacelli, V. (2025). "The impact of biodiversity score on the European firm's performance." *International Review of Financial Analysis*, Vol. 106.

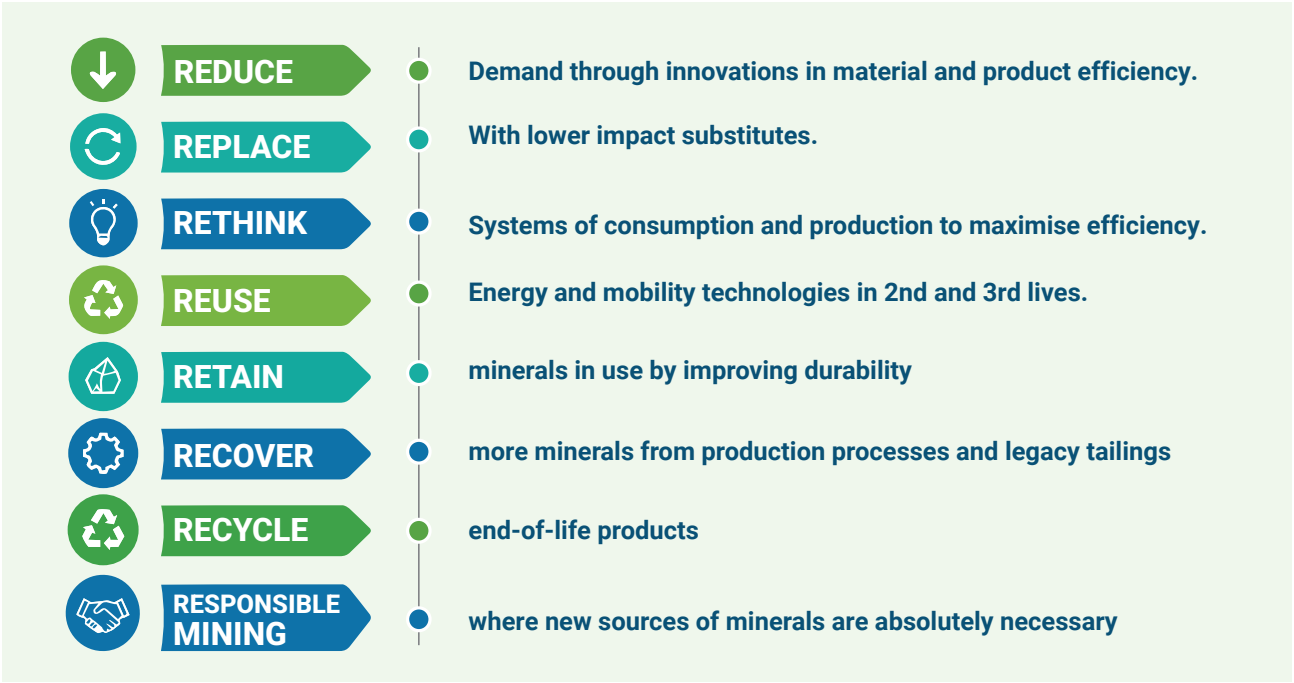
10 UNEP (n.d.) UNEP Circularity Platform: https://buildingcircularity.org/

Drawing on two decades of experience and work by the IRP, this paper proposes six ways in which businesses can take action for nature that support the achievement of global biodiversity goals while enhancing business resilience and long-term profitability (see figure 3).



KM1: Harness a circular economy approach to reduce virgin resource extraction

If businesses and governments work together to apply circular economy principles across supply chains, from raw material extraction to finished products, they can significantly reduce demand for virgin raw materials (see figure 4).



Implementing a circular economy approach requires systemic analysis of how the supply chain can be made more efficient, something that is good for both business and biodiversity. The first is to REDUCE the quantities of raw material needed through innovation in material and product efficiency, and by rethinking the core systems and services that require the raw material in the first place. For example, expanding public transport and shared-car schemes can meet a population's needs for mobility.

The second is to REPLACE raw material inputs that are particularly harmful to nature and biodiversity with lower impact substitutes wherever possible.

The third is to design more durable products that RETAIN the raw materials, for example by moving away from single use plastics.

The fourth step is to create products that can be REUSED, for example electric vehicle batteries that are designed with second and third "lives" in mind for stationary energy storage.

The fifth step is to look at ways to RECOVER materials that would otherwise be lost from the economy.

The sixth is to improve systems to RECYCLE raw materials at the end of their second or third lives, thereby keeping those materials within the value chain.

The seventh step is to ensure that the remaining demand for materials is met through RESPONSIBLE PRODUCTION.

It is also important to recognise that lower raw material use can have unintended consequences if it enables higher overall consumption. This is known as the rebound effect, or Jevons Paradox[11]. It occurs when lower-impact circular products or services stimulate additional production or consumption, for example through lower costs for consumers or a perception that consumption of the product is more "sustainable," thereby reducing or even offsetting the intended environmental gains.

KM2: Introduce biodiversity-informed integrated land-use planning

Land use is key to biodiversity conservation. Biodiversity is threatened through increasing pressure on land from food production, biofuels and urbanisation, which could result not only in the disturbance of biogeochemical cycles but also in significant losses of genetic capital[12]. The expansion of cropland is a particular cause of biodiversity loss in tropical forests and temperate grasslands. This affects above-ground fauna and flora as well as soil biodiversity[13].

Food production dominates global land use. Agricultural expansion drove almost 90 per cent of global deforestation between 2000 and 2018, with cropland conversion dominating forest loss in Africa and Asia and livestock grazing responsible for almost three quarters of deforestation in South America[14]. In 2020, the food provisioning system used 23.6 billion tonnes of materials, of which 84 per cent was biomass, and accounted for 67 per cent of global land-related biodiversity loss impacts and 56 per cent of water stress impacts among the four major provisioning systems assessed by the IRP (food, built environment, mobility and energy)[15].

Urbanisation's direct impact on biodiversity is small compared to that of agriculture, but it is still significant. A 2014 IRP assessment of global land use noted that urban expansion tends to take place in areas that had been relatively undisturbed previously, meaning that new urban growth is more likely to occur in high-value biodiversity areas rather than already degraded land[16]. Meanwhile, new urban expansion tends to be concentrated in the most fertile areas, displacing farming elsewhere into less-disturbed land. In addition the indirect impact of the infrastructure that accompanies urbanisation in terms of supply chains and transport infrastructure has a much larger biodiversity footprint than the direct acreage of an urban area might suggest[17].

Inclusive integrated land management is an important tool for businesses to maximise the efficient use of land and minimise the impact on biodiversity. The IRP defines five elements that support integrated land management: stakeholder engagement; matching land use to its sustainable potential; collaborative development of a shared vision and action plan; implementation; and tracking changes

11 This is after work done in the 19th century by a British economic William Stanley Jevons who noted that more economical use of coal seemed, perhaps counterintuitively, to increase the overall use of coal.
12 UNEP (2009) *Towards Sustainable Production and Use of Resources: Assessing Biofuels.* A report by the International Resource Panel. Nairobi, Kenya.
13 UNEP (2014) *Assessing Global Land Use:* Balancing Consumption with Sustainable Supply. A report by the International Resource Panel. Nairobi, Kenya.
14 FAO (2021) *Global Forest Resources Assessment.* Food and Agriculture Organization of the United Nations. Rome, Italy.
15 UNEP (2024). *Global Resources Outlook - 2024:* Bend the Trend: Pathways to a Liveable Planet as Resource Use Spikes. A report by the International Resource Panel. Nairobi, Kenya.
16 UNEP (2014) *Assessing Global Land Use: Balancing Consumption with Sustainable Supply.* A report by the International Resource Panel. Nairobi, Kenya.
17 UNEP (2024). *Global Resources Outlook - 2024: Bend the Trend: Pathways to a Liveable Planet as Resource Use Spikes.* A report by the International Resource Panel. Nairobi, Kenya.

over time[18]. A 2019 IRP report reviewed more than 350 such initiatives and found that a large proportion reported positive impacts across agriculture, ecosystems, livelihoods and institutions. These outcomes reduced environmental footprints and created additional opportunities for investment, market uptake and stakeholder support[19].

Biodiversity informed integrated land use planning can also help to reduce business risks. The Indonesian government's OneMap Initiative was launched precisely because unclear, overlapping land records were resulting in government agencies granting competing rights to palm oil producers and extractive companies over the same land. This was contributing to accelerated biodiversity loss and disputes with Indigenous People and other communities who have traditionally held land in common[20]. The situation also created significant challenges for businesses. Engaging in processes to clarify land records helps to strengthen investment confidence while also avoiding business activity in high risk areas of particular biodiversity importance.

Businesses have a vested interest in working together with governments and civil society on land use planning. In Honduras the Paisajes Sostenibles (PaSos) initiative, facilitated by the Solidaridad Network, brought together the full range of landscape stakeholders, including business, in a high-biodiversity coastal region facing rapid agricultural expansion, and convinced them to commit jointly to a 2030 action plan balancing food security, biodiversity, water and climate targets. This approach helps optimise landscape management and minimise ecological footprint of export products, something that could, in future, be highlighted to consumers as part of a transparent, premium value chain[21].

18 UNEP (2021). *Building Biodiversity: The Nature Resource Management Approach*. A report by the International Resource Panel. Nairobi, Kenya.
19 UNEP (2019) *Land Restoration for Achieving the Sustainable Development Goals:* A report by the International Resource Panel. Nairobi, Kenya.
20 UNEP (2021). *Building Biodiversity : The Nature Resource Management Approach.* A report by the International Resource Panel. Nairobi, Kenya.
21 UNEP (2021). *Building Biodiversity : The Nature Resource Management Approach.* A report by the International Resource Panel. Nairobi, Kenya.



KM3: Demonstrate responsibility and avoid regulatory risks by eliminating waste and pollution

Waste and pollution are both a threat to nature and an avoidable business cost. Take plastics, for example. In 2019 an estimated 22 million tonnes of plastics leaked into the environment[22], and the rate of loss has increased since then. This has significant implications for environmental health: UNEP has identified more than 13,000 chemicals associated with plastics, many of which raise concern about human health and the environment[23].

Businesses can take simple, often cost-beneficial steps to stop plastic leakage into nature: eliminating unnecessary plastic use; redesigning packaging through upstream innovation; scaling reuse, refill and return models; improving collection and traceability; and avoiding chemicals that undermine human health, ecosystem integrity or high-quality material recovery[24]. These strategies are commercially relevant: reusable packaging models can improve user experience, generate customer insights, build brand loyalty and reduce costs. A 2021 IRP report estimates that an ambitious combination of interventions using existing technology could reduce marine plastic litter entering the ocean by 82 per cent compared with business-as-usual by 2040[25]. This business opportunity is also significant: shifting just 20 per cent of plastic packaging from single use to reuse has been estimated to generate USD 10 billion in value for business[26].

Addressing food loss can significantly reduce the impacts of the food sector on nature. FAO estimates that 13.2 per cent of food is lost after harvest and before reaching the consumer[27], while UNEP's Food Waste Index Report 2024 estimates that 1.05 billion tonnes of food waste were generated in 2022 at retail, food service and household levels, equal to 19 per cent of food available to consumers[28].

The business case is substantial. The toll of food loss and waste on the global economy is estimated at roughly USD 1 trillion annually[29], which means that prevention is not only an environmental imperative, but a major resource opportunity. Practical actions for business include better demand forecasting, improved storage and cold chains, harvest timing, portioning, date-labelling reform, dynamic pricing, redistribution of edible surplus, secondary markets for imperfect produce, and retail practices that avoid cosmetic rejection[30].

Nutrient pollution is another major biodiversity risk that circular strategies can reduce. Excess nitrogen and phosphorus from fertilisers, manure, wastewater and poorly managed organic waste can run off into rivers, lakes and coastal waters, causing eutrophication, algal blooms, oxygen depletion and "dead

22 OECD (2022). *Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options*. Paris: OECD Publishing. https://doi.org/10.1787/de747aef-en.
23 UNEP (2023). *Chemicals in Plastics: A Technical Report*. Nairobi, Kenya.
24 Ellen MacArthur Foundation (2019). *Reuse: Rethinking Packaging*. Cowes, UK
25 UNEP (2019) *Policy Options to Eliminate Additional Marine Plastic Litter by 2050 under the G20 Osaka Blue Ocean Vision.* A report by the International Resource Panel. Nairobi, Kenya.
26 Ellen MacArthur Foundation (2019). *Reuse: Rethinking Packaging*. Cowes, UK
27 FAO (2026). 'Food loss and food waste', *Policy Support and Governance Gateway*. Rome: Food and Agriculture Organization of the United Nations. Available at: https://www.fao.org/policy-support/policy-themes/food-loss-and-food-waste/
28 UNEP (2024). *Food Waste Index Report 2024: Think Eat Save: Tracking Progress to Halve Global Food Waste*. Nairobi, Kenya. Available at: https://www.unep.org/resources/publication/food-waste-index-report-2024
29 FAO (2026). 'Food loss and food waste', *Policy Support and Governance Gateway*. Rome: Food and Agriculture Organization of the United Nations. Available at: https://www.fao.org/policy-support/policy-themes/food-loss-and-food-waste/
30 FAO (2026). 'Food loss and food waste', *Policy Support and Governance Gateway*. Rome: Food and Agriculture Organization of the United Nations. Available at: https://www.fao.org/policy-support/policy-themes/food-loss-and-food-waste/; UNEP (2024). *Food Waste Index Report 2024: Think Eat Save: Tracking Progress to Halve Global Food Waste*. Nairobi, Kenya. Available at: https://www.unep.org/resources/publication/food-waste-index-report-2024; Kayikci, Y., Demir, S., Mangla, S.K., Subramanian, N. and Koc, B. (2022). 'Data-driven optimal dynamic pricing strategy for reducing perishable food waste at retailers', in *Journal of Cleaner Production*, 344, 131068.

zones"[31]. Circular nutrient management can reduce these losses by recovering nitrogen, phosphorus, potassium and organic matter from manure, food waste, wastewater, digestate and compost, and returning them to soils to support soil health and productivity. This reduces dependence on synthetic fertilisers, cuts nutrient leakage and helps rebuild soil organic matter.

KM4: Adopt bioeconomy practices that regenerate ecosystems and support biodiversity

The "bioeconomy" refers to the use of renewable natural resources to produce food, energy and industrial goods. The health of ecosystems is the foundation of businesses that source renewable raw materials, including those engaged in agriculture, fisheries, forestry and other bio-based sectors. For business, ecosystem health and biodiversity are productive assets, not external environmental concerns.

A sustainable bioeconomy is not simply an economy that uses more biological materials[32]. It is an economy that uses biomass within ecological limits, reduces avoidable demand, protects high-biodiversity and high-carbon ecosystems, and keeps biological resources in use at their highest value for as long as possible[33]. This distinction is critical for biodiversity policy and for business strategy. Replacing fossil or mineral inputs with biomass such as biofuels can reduce some impacts, but it can also shift pressure onto land, water, forests, grasslands and neighbouring communities if biomass demand grows faster than ecosystems can regenerate[34].

For business, the practical implication is clear: bio-based is not automatically biodiversity-positive. Bio-based packaging, textiles, construction materials, fuels and chemicals should be assessed against the land they require, the ecosystems they may displace, the residues they remove, and their end-of-life pathway. The bioeconomy can reproduce a linear "take, make, consume, dispose" model unless circularity is explicitly designed around extended use, reuse, recycling, appropriate end-of-life pathways and maintenance of natural capital.

Circularity in food and biomass systems depends on maintaining the regenerative capacity of the ecosystems that produce biological resources. Biomass is renewable only if biological systems continue to function[35]. Circular strategies that increase biomass use while degrading soils, depleting nutrients, reducing on-farm biodiversity or increasing pressure on natural capital weaken the ecosystems on which future production depends. Circular strategies applied to the bioeconomy should therefore

31 Carpenter, S.R. (2008). 'Phosphorus control is critical to mitigating eutrophication', *Proceedings of the National Academy of Sciences*, 105(32), pp. 11039–11040. doi:10.1073/pnas.0806112105. Diaz, R.J. and Rosenberg, R. (2008) 'Spreading dead zones and consequences for marine ecosystems', in *Science*, 321(5891), pp. 926–929. https://doi.org/10.1126/science.1156401.UNEP (2023). *Nutrients*, Available at: https://www.unep.org/topics/ocean-seas-and-coasts/ecosystem-degradation-pollution/nutrients

32 Holden, N.M., Neill, A.M., Stout, J.C., O'Brien, D. and Morris, M.A. (2023) 'Biocircularity: A framework to define sustainable, circular bioeconomy', in *Circular Economy and Sustainability*, 3, pp. 77–91. https://doi.org/10.1007/s43615-022-00180-y ; de Queiroz-Stein, G. and Siegel, K.M. (2023) 'Possibilities for mainstreaming biodiversity? Two perspectives on the concept of bioeconomy', in *Earth System Governance*, 17, 100181. https://doi.org/10.1016/j.esg.2023.100181

33 UNEP (2024) *Global Resources Outlook - 2024: Bend the Trend: Pathways to a Liveable Planet as Resource Use Spikes*. A report by the International Resource Panel. Nairobi: UNEP. Muscat, A., de Olde, E.M., Ripoll-Bosch, R., Van Zanten, H.H.E., Metze, T.A.P., Termeer, C.J.A.M., van Ittersum, M.K. and de Boer, I.J.M. (2021) 'Principles, drivers and opportunities of a circular bioeconomy', *Nature Food*, 2, pp. 561–566. https://doi.org/10.1038/s43016-021-00340-7

34 UNEP (2024). *Global Resources Outlook - 2024: Bend the Trend: Pathways to a Liveable Planet as Resource Use Spikes*. A report by the International Resource Panel. Nairobi: UNEP. Muscat, A., de Olde, E.M., Ripoll-Bosch, R., Van Zanten, H.H.E., Metze, T.A.P., Termeer, C.J.A.M., van Ittersum, M.K. and de Boer, I.J.M. (2021) 'Principles, drivers and opportunities of a circular bioeconomy', *Nature Food*, 2, pp. 561–566. https://doi.org/10.1038/s43016-021-00340-7

35 For more see FAO (Nd) Soil biodiversity. https://www.fao.org/soils-portal/soil-biodiversity/facts-and-figures/en/

prioritise better use of existing biomass streams and productive land, rather than expansion into intact ecosystems. They should also avoid biomass removal where this increases the risk of soil erosion, loss of soil carbon or the displacement of existing production systems into intact ecosystems[36].

This makes regenerative and agroecological production practices a core circular economy strategy. The IRP identifies regenerative and agroecological practices, including no-till agriculture, integrated pest and nutrient management, diversified cropping and agroforestry as approaches that can help restore soil fertility, enhance ecosystem services and improve resilience to climate stress. Businesses and the public sector can work together to support farmers through long-term purchasing agreements and other tools that encourage land use practices that strengthen soil and biodiversity conservation, such as linking finance to soil conservation, technical assistance, fair pricing, shared measurement systems and demand for diverse crops and ingredients. Circular food and biomass systems require sourcing models that reward farmers not only for output volume, but for maintaining the soil, water and biodiversity functions that keep production viable over time.

For business, the priority is therefore not simply to increase the share of bio-based inputs, but to ensure that bio-based sourcing reduces net pressure on land, protects ecosystems, and supports resilient rural livelihoods. Circular strategies for a sustainable bioeconomy should be implemented according to a clear hierarchy: reduce avoidable demand for biomass particularly in the most land-intensive and single-use products; cascade biomass to its highest-value uses prioritizing food, feed, and durable long-lived products; and implement strict no-conversion safeguards so that bio-based growth does not drive the loss of forests, wetlands, peatlands, savannas, grasslands or other ecosystems of high biodiversity or carbon value[37]. Land potential evaluation is a powerful concept that can help inform sustainable land-use decisions across the bioeconomy (see box).

LAND POTENTIAL EVALUATION - A KEY IMPLEMENTATION PRINCIPLE

A key implementation principle is to match land use and production practices to the potential of the land. The IRP defines land potential as the capacity of land to sustainably generate ecosystem services and emphasizes that agricultural production should be aligned with land potential to avoid land degradation and maintain ecosystems functions.

In some landscapes, restoring degraded land, diversifying production or integrating trees can improve resilience and productivity. In others, lower-intensity land use, conservation or natural regeneration may deliver greater benefits, including for biodiversity than continued production.

Rather than prescribing a single model, land-use and production systems should be designed according to land characteristics, soil conditions, water availability and ecosystem resilience. Together, these factors determine the capacity of land to support local livelihoods, biodiversity conservation and long-term productivity

36 Diaz-Chavez R., Stichnothe H., and Johnson K. (2016). "Sustainability Considerations for the Future Bioeconomy". In Lamers et al (eds) *Developing the Global Bioeconomy. Technical, Market, and Environmental Lessons from Bioenergy.*1st Edition. Academic Press. 2016.

37 UNEP (2024). *Global Resources Outlook - 2024: Bend the Trend: Pathways to a Liveable Planet as Resource Use Spikes*. A report by the International Resource Panel. Nairobi: UNEP.

KM 5: Foster circular business practices through targeted regulation and incentives

Voluntary corporate action alone will not drive the system change that we need. Governments can do much to help business help nature. Infrastructure, policies and financial incentives that allow firms to put circular economy principles into practice are essential, enabling businesses to use existing assets more intensively, extend product and building lifetimes, recover materials at high value, and invest in business models that avoid unnecessary extraction and land conversion[38].

Many financial incentives still favour linear resource use. UNEP's *State of Finance for Nature 2026*[39] estimates that in 2023, US$ 7.3 trillion flowed into nature-negative activities, including US$ 2.4 trillion in public environmentally harmful subsidies to fossil fuels, agriculture, water, transport and construction. By contrast, nature-based solutions received just US$ 220 billion, with private investment accounting for only US$ 23.4 billion. This imbalance affects circular economy implementation directly: biodiversity-aligned business models will remain harder to scale where public subsidies, procurement rules, financial risk models and tax systems continue to favour virgin extraction, land conversion and material-intensive infrastructure.

Strong government policy is sometimes needed to level the playing field. Innovative policies, including regulation, are often required where circular solutions compete against virgin materials whose prices do not fully reflect biodiversity loss, pollution, water stress, land degradation, health impacts or social costs. If carefully designed, these policies can help create a more level playing field for the private sector, increasing its willingness to support circular economy solutions. They can also create new business opportunities.

Public finance, including through blended finance, can change the risk-return profile of circular solutions. The IRP highlights the need to invest in circular infrastructure, including repair, recycling and shared systems; to internalize the impacts of virgin resource extraction; and to develop finance taxonomies and performance indicators that support sustainable resource use across value chains[40]. Combining public and private finance can often generate greater economic, social and environmental returns than separate investments undertaken independently by the public and private sectors. Blended finance guarantees and transition finance can help firms and suppliers absorb the upfront costs of new infrastructure, certification, traceability and changes in production systems. For example, interest rate reductions on agricultural loans, and subsidized crop insurance, are used in many countries to incentivize the adoption of conservation agriculture practices, where the majority of the cost (e.g. purchase of new machinery and temporary yield reduction) are borne by the farmers. Public procurement can also create demand for circular materials and services. Fiscal reform can improve the competitiveness of secondary materials and resource-efficient production.

38 UNEP (2024). *Global Resources Outlook - 2024: Bend the Trend: Pathways to a Liveable Planet as Resource Use Spikes*. A report by the International Resource Panel. Nairobi, Kenya.

39 UNEP (2026). *State of Finance for Nature 2026: Nature in the Red: Powering the Trillion Dollar Nature Transition Economy*. Nairobi, Kenya.

40 Diaz-Chavez R. (2025). "Financing and Investing in Biobased Technologies" in United Nations Environment Programme Copenhagen Climate Centre (UNEP-CCC). *Climate Technology Progress Report 2025: Advancing Biobased Technologies in the Bioeconomy*. Copenhagen, Denmark.

KM6: Strengthen science and monitoring systems so action becomes measurable, comparable and investable

Businesses need to understand and measure their impact on nature. Companies cannot credibly reduce biodiversity pressures if they do not know where materials are sourced, how they move through global value chains, how and where ecosystems are affected, where impacts are displaced across borders, and which interventions reduce total resource demand rather than shifting burdens elsewhere.

Circular economy strategies are most effective in supporting nature and biodiversity when their impacts can be tracked across the value chain, from extraction and production to use, reuse, recovery and disposal[41]. Businesses and investors increasingly face expectations to assess and report nature-related dependencies, impacts, risks and opportunities. Target 15 of the Kunming-Montreal Global Biodiversity Framework, for example, explicitly calls for large and transnational companies and financial institutions to monitor, assess and transparently disclose biodiversity risks, dependencies and impacts across their operations, supply chains, value chains and portfolios. Meanwhile the Taskforce for Nature-Related Financial Disclosures (TNFD) framework provides a market-oriented structure for governance, strategy, risk and impact management, and metrics and targets.

Better data reduces uncertainty. It helps companies identify nature-risk hotspots in sourcing regions, assess whether circular strategies reduce absolute pressure on ecosystems, compare virgin and secondary material options, and prioritise interventions that deliver the greatest environmental and economic returns per unit of investment.

It also improves access to finance. Countries and companies that support robust, transparent systems for tracing value chains are likely to be better positioned to anticipate challenges and attract finance, because investors can better assess exposure, performance and transition credibility. Poor data, by contrast, increases due-diligence costs, weakens claims about circularity, and leaves companies exposed to regulatory, reputational and supply-chain risks. New tools for optimising and targeting investments based on robust assessments of projected economic, social and environmental returns are being developed and promoted by the United Nations Convention to Combat Desertification (UNCCD), Food and Agriculture Organization of the United Nations (FAO) and other institutions.

41 UNEP (2021). *Building Biodiversity : The Nature Resource Management Approach.* A report by the International Resource Panel. Nairobi, Kenya.

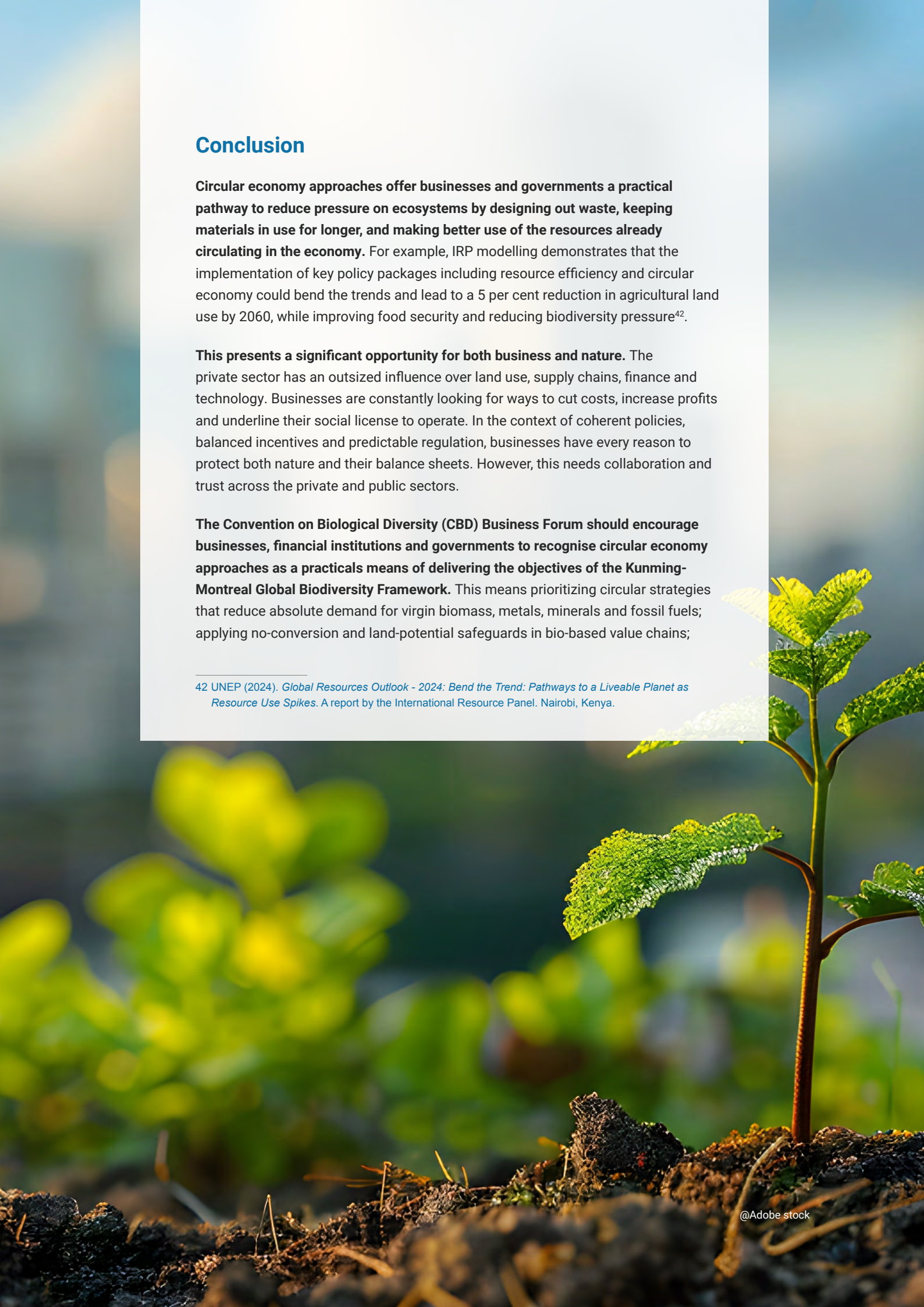
Conclusion

Circular economy approaches offer businesses and governments a practical pathway to reduce pressure on ecosystems by designing out waste, keeping materials in use for longer, and making better use of the resources already circulating in the economy. For example, IRP modelling demonstrates that the implementation of key policy packages including resource efficiency and circular economy could bend the trends and lead to a 5 per cent reduction in agricultural land use by 2060, while improving food security and reducing biodiversity pressure[42].

This presents a significant opportunity for both business and nature. The private sector has an outsized influence over land use, supply chains, finance and technology. Businesses are constantly looking for ways to cut costs, increase profits and underline their social license to operate. In the context of coherent policies, balanced incentives and predictable regulation, businesses have every reason to protect both nature and their balance sheets. However, this needs collaboration and trust across the private and public sectors.

The Convention on Biological Diversity (CBD) Business Forum should encourage businesses, financial institutions and governments to recognise circular economy approaches as a practicals means of delivering the objectives of the Kunming-Montreal Global Biodiversity Framework. This means prioritizing circular strategies that reduce absolute demand for virgin biomass, metals, minerals and fossil fuels; applying no-conversion and land-potential safeguards in bio-based value chains;

42 UNEP (2024). *Global Resources Outlook - 2024: Bend the Trend: Pathways to a Liveable Planet as Resource Use Spikes*. A report by the International Resource Panel. Nairobi, Kenya.



investing in repair, reuse, remanufacturing, recovery and regenerative production systems; and reporting whether circular actions are reducing material footprints, land pressure, water stress, pollution and biodiversity impacts across entire value chains.

The International Resource Panel

The International Resource Panel (IRP) is a global science–policy platform. It provides authoritative knowledge on natural resource use and its environmental, economic, and social implications. Natural resources underpin every aspect of human well-being and economic activity, but their unsustainable use is driving climate change, biodiversity loss, and pollution. Hosted by the United Nations Environment Programme, the International Resource Panel brings together leading scientists, governments, the private sector and civil society from around the world to inform decision-making and support just, sustainable, efficient and circular development pathways.

Here is a selection of past IRP reports that investigate the relationship between business and biodiversity:

- UNEP (2009). *Towards Sustainable Production and Use of Resources: Assessing Biofuels.* A report by the International Resource Panel. Nairobi, Kenya.
- UNEP (2014). *Building Natural Capital: How REDD+ can support a green economy.* A report by the International Resource Panel. Nairobi, Kenya.
- UNEP (2014). *Assessing Global Land Use: Balancing consumption with sustainable supply.* A report by the International Resource Panel. Nairobi, Kenya.
- UNEP (2016). *Unlocking the Sustainable Potential of Land Resources: Evaluation Systems, Strategies and Tools.* A report by the International Resource Panel. Nairobi, Kenya.
- UNEP (2016). *Food Systems and Natural Resources.* A report by the International Resource Panel. Nairobi, Kenya.
- UNEP (2019). *Land Restoration for Achieving the Sustainable Development Goals*. A report by the International Resource Panel. Nairobi, Kenya.
- UNEP (2019). *Global Resources Outlook - 2019.* A report by the International Resource Panel. Nairobi, Kenya.
- UNEP (2020). *Mineral Resource Governance in the 21st Century: Gearing extractive industries towards sustainable development*. A report by the International Resource Panel. Nairobi, Kenya.
- UNEP (2021). *Governing Coastal Resources: Managing land-based activities to support the transition to a sustainable blue economy.* A report by the International Resource Panel. Nairobi, Kenya.
- UNEP (2024). *Global Resources Outlook - 2024.* A report by the International Resource Panel. Nairobi, Kenya.

Forthcoming reports:

A range of work is underway that will extend this work including: a rapid study on critical energy transition minerals (expected 2027); a scientific assessment on critical transition minerals (expected 2028); a report on resource efficiency and circular economy for a sustainable bioeconomy (expected 2028); and the next Global Resources Outlook (also planned for 2028).

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Suggested citation: International Resource Panel (2026). Taking Action for Nature: The Role of Business and the Circular Economy. Supplementary Materials.

URL: resourcepanel.org/reports/Taking-Action-For-Nature

Cover: Adobe stock
Design and layout: Virginia Njoroge (UNEP)

ACKNOWLEDGEMENTS
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This document was written under the auspices of the International Resource Panel of the United Nations Environment Programme. Thanks are extended to Janez Potočnik and Izabella Teixeira, Panel Co-chairs of the IRP, the members of the IRP and its Steering Committee, the UNEP-IRP Secretariat (Hala Razian, Hannah Lorenz) and also to Oliver Brown for their valuable contributions to the development of this document.

International Resource Panel

Funded by the European Union

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This publication was funded by the European Union. Its content is the sole responsibility of IRP and does not necessarily reflect the views of the EU.