A-Track

WORKING PAPER

Better business:

Re-thinking business models for nature positive outcomes

October 2024

a-track.info

WORKING PAPER

Better business:

Re-thinking business models for nature positive outcomes

October 2024

A-Track

A-Track is a four-year, €11 million project that will accelerate transformative action for nature. It will create robust and reliable resources, tailored to the needs of key decision-makers, and will support the flows of biodiversity information for use in business, finance and government decisions. The A-Track consortium of 11 partners brings together leading thought leaders and practitioners who have been driving change in the measurement and valuation of natural capital and biodiversity. The project is funded by the European Union's Horizon Europe programme with co-funding from UK Research and Innovation, and the Swiss National Science Foundation.

The University of Cambridge Institute for Sustainability Leadership

The University of Cambridge Institute for Sustainability Leadership partners with business and governments to develop leadership and solutions for a sustainable economy. We aim to achieve net zero, protect and restore nature, and build inclusive and resilient societies. For over three decades we have built the leadership capacity and capabilities of individuals and organisations, and created industry-leading collaborations, to catalyse change and accelerate the path to a sustainable economy. Our interdisciplinary research engagement builds the evidence base for practical action.

Contents

Glossary 6

Executive summary 7

1 Introduction 9

2 Conceptual framework 16

2.1 What is a business model? 16

2.2 (Re)defining value and understanding the 'five capitals' 19

2.3 Defining 'nature positive' 27

2.4 Quantifying nature positive 32

2.5 An overview of the literature on 'green' business models 34

2.6 What is a nature positive aligned business model? 37

3 Typology of business models 38

3.1 Why would a typology be useful? 38

3.2 Methodology and limitations 40

3.3 The typology 41

3.4 Key boundary conditions 50

4 Developing a change methodology 55

5 Conclusion 58

Annex 1 List of businesses examined to inform this report 60

Bibliography 66

Additional references from Table 1 72

WORKING PAPER

Better business:

Re-thinking business models for nature positive outcomes

October 2024

Deliverable title:	Business models that contribute to nature positive outcomes: state of play and best practice
Deliverable number:	D5.1
Planned delivery date:	M12
Actual submission date:	15 Oct 2024
Work package:	WP 5 Business models that contribute to nature positive outcomes
Work package leader:	CISL
Deliverable leader:	University of Cambridge Institute for Sustainability Leadership (CISL).
Dissemination Level:	Public

Authors and contributors

This report was written by Anum Yousaf Sheikh with support from Sanna Markkanen, Edmund Dickens and Harry Greenfield at CISL.
The authors are grateful for the contributions of Eliot Whittington, Corinne Martin, Sara Taaffe, Beverley Cornaby, Ben Kellard, Sam Laakkonen, Jie Zhou and Viola Jordan (CISL); Guy Duke, Rosimeiry Portela, Graeme Nicholls and Tom McKenna (Capitals Coalition); Nadine McCormick (WBCSD); and Fernando Círez Oto (Tecnalia).

Citing this report

University of Cambridge Institute for Sustainability Leadership (CISL), Capitals Coalition, WBCSD and Tecnalia. (2024). Better business: Re-thinking business models for nature positive outcomes. A-Track. Cambridge, UK: University of Cambridge Institute for Sustainability Leadership.

Copyright

This deliverable is part of a project that has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101082268.

Views and opinions expressed are, however, those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.

Glossary

Biodiversity: A subset of nature, biodiversity refers to the variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part. Biodiversity includes diversity within species, between species and of ecosystems.

Business model: A systematic way of understanding, analysing and communicating how a business operates and achieves its objectives. It describes the rationale of how an organisation creates, delivers and captures value[1].

Ecosystem service flows: The flows of benefits to people from ecosystems, commonly divided into the following categories: provisioning, regulating, cultural and supporting.

Environmental footprint: Measures human demand and impact on natural capital, ie the quantity of nature it takes to support people and their economies. Environmental footprint tracks human demand on nature through an ecological accounting system.

Mitigation hierarchy: A widely used tool that guides users towards limiting as far as possible the negative impacts on biodiversity from development projects. It emphasises best-practice of avoiding and minimising any negative impacts, and then restoring sites no longer used by a project, before finally considering offsetting residual impacts[2].

Natural capital stocks: The stock of renewable and non-renewable natural resources (eg plants, animals, air, water, soils, minerals) that yield a flow of benefits to people[3].

Nature: Nature encompasses all elements of the natural environment, recognising the interdependence of abiotic or non-living elements (eg climate, soil, water, air) and biotic or living elements (eg biodiversity of all living things, including terrestrial, freshwater, marine and soil, at the level of ecosystem, species and genes).

Nature positive: A global goal to halt and reverse nature loss by 2030 so that nature is being restored and regenerated rather than declining. Nature positive refers to outcomes that are net positive for nature and biodiversity, directly and measurably increasing in the health, abundance, diversity and resilience of species, ecosystems and processes. For biodiversity, the global goal is to reverse biodiversity loss by 2030; expressed as nature positive by 2030. This is defined as codified in the mission of the Kunming-Montreal Global Biodiversity Framework[4].

Service model: The method by which a business delivers value to its consumers, which comprises its customer channels, customer segments and customer engagement strategies.

Executive summary

Globally, nature is in crisis, with rates of species loss up to 1,000 times higher than would normally be expected due to habitat loss, deforestation, climatic changes, population growth, agricultural expansion and other human-derived pressures[5]. This is having significant detrimental impacts on the natural systems that support life on earth, underpin almost all aspects of our economy, and constitute one of our best allies in fighting other global challenges such as climate change and the spread of disease. Recognising these facts, the World Economic Forum identifies biodiversity loss and ecosystem collapse to be among the most pressing challenges facing humanity over the next 10 years[6].

Having largely recognised the need to take action on climate impacts in recent decades, businesses are increasingly aware of the need to address nature loss. This is much more than a 'nice-to-have' measure; a degraded natural world can adversely impact business operations, supply chains and market stability both directly and indirectly, putting the future resilience of individual businesses – even entire sectors – at risk. As businesses navigate the ever-changing landscape of guidance, tools and frameworks to help them assess and take action on their nature impacts, it is important to keep sight of the ultimate goal for nature. Businesses, governments and civil society have united behind an ambition for a nature positive society and economy, which will require significant transformation of both. This will include a need for new business models that are aligned with the global nature positive goal, with unsustainable business models a significant barrier to restoring nature.

A key distinction relevant to this work is the difference between business *practices* and business *models:* the former refers to individual, incremental actions a business might take to improve outcomes for nature, while the latter describes a more fundamental realignment of a business' core value proposition. Although piecemeal changes, for example to operations or procurement, might generate some benefits for nature, without substantive changes to value creation, capture and delivery this would not be considered a business model shift. This report defines a nature positive aligned business model as ***"a financially viable business entity whose value proposition and rationale are centred around nature positive principles".***

With the ultimate goal of understanding how we can do business better to support the regeneration of nature, this report investigates: 1) how value is created, captured and delivered by businesses; 2) how business models can be nature positive aligned; 3) examples of such business models presented as a typology; and 4) the practical application of these business models through a change methodology that practitioners can use to plan shifts in their organisations' approach to value creation, capture and delivery (resulting in business model transformation).

This is the first phase in a project which will look at the barriers and opportunities to scaling up and integrating nature positive aligned business models. Future work will involve testing and refining the business model typology and developing the change methodology and refining, testing and piloting the business model archetypes to determine where the most scope lies for impactful scaling. The results of this process will be published in future reports in this series as part of the A-Track project.

This report defines a nature positive aligned business model as:

"a financially viable business entity whose value proposition and rationale are centred around nature positive principles."

1 Introduction

It is imperative for businesses, citizens and governments to work towards a global 'nature positive' goal. This term refers to the commitment to halt and reverse biodiversity loss by avoiding and reducing negative impacts and protecting and restoring natural ecosystems. Protecting and restoring nature are important because of the risk that nature degradation poses to the stability and sustainability of global economies, as well as to people's lives and well-being. From climate change and biodiversity loss to water scarcity and soil degradation, a degraded natural world impacts business operations, supply chains and market stability both directly and indirectly[7, 8]. Given the scale of nature degradation that has already occurred, it is not enough to simply stop activities that harm nature: we need to restore and reverse the damage that has already been done. By adopting nature positive practices, businesses can safeguard their long-term viability and resilience, and also align themselves with the global societal goal of being nature positive.

Consumers and investors are increasingly demanding transparency and sustainability from the companies they support. Contributing to nature restoration rather than degradation can enhance a company's reputation, fostering customer loyalty and attracting investment from financiers who value sustainability. It also opens doors to new markets and opportunities in the burgeoning green economy, driving innovation and competitiveness. Regulatory environments are evolving to reflect the growing understanding of the importance of nature, with governments worldwide implementing stricter environmental regulations and incentives for sustainable practices (eg the EU's Nature Restoration Law and Corporate Sustainability Reporting Directive). Businesses that proactively embrace nature positive practices and strategies are better positioned to comply with these regulations, avoiding potential fines, and to also take advantage of government incentives.

An increasing number of companies understand that by taking action on nature, they can reduce nature-related risks – which may be physical, financial, reputational or regulatory – and take advantage of emerging commercial opportunities[6, 9]. Environmental risks such as critical changes to earth systems, biodiversity loss, ecosystem collapse, natural resource shortage and pollution have consistently featured in the top ten long-term global risks in recent years[7].

On average – and through the deployment of key levers in nature-dependent sectors – actions that contribute to nature positive outcomes could provide a combined value opportunity of nearly $700 billion annually at a global level through reduced operating costs for businesses[10]. These opportunities can be realised through changing business practices and models as well as investment, collaboration and innovation.

Given their wide-ranging dependencies and impacts on nature, businesses in all sectors of the economy must drive an urgent shift to a nature positive, net zero and equitable economy to ensure their own long-term resilience. Recent estimates suggest that 'nature negative' finance flows (ie investments that have a direct adverse impact on nature) from both public and private sources amount to $7 trillion annually[11]. Meanwhile, nature-based solutions remain severely underfunded: current finance flows to nature-related initiatives stand at $200 billion, which is only a third of the levels needed to reach climate, biodiversity and land degradation targets by 2030. Governments continue to provide most of this funding (almost 82 per cent), with private finance being held back by various barriers such as misaligned incentives, a perception of high risks and a lack of investment returns[12]. Thus, there is a significant opportunity for the private sector to take a more proactive role in meeting the global nature positive goal. Despite the irrefutable need for action and growing commitments related to, for example, the Kunming-Montreal Global Biodiversity Framework (GBF) and the Nature Restoration Law in Europe, nature-related finance has increased only 11 per cent since 2022[11].

Sustainability, as a concept, has traditionally emphasised reducing negative impacts and ensuring that resources are used in a way that meets present needs without compromising the ability of future generations to meet their own needs. Sustainable practices often focus on efficiency, waste reduction and conservation. For example, businesses might reduce energy consumption, minimise waste or source materials responsibly. **Nature positivity** and **regeneration** go beyond the conventional understanding of what is 'sustainable' and 'do no harm' by actively seeking to systematically avoid and reduce negative impacts as well as create positive impacts on both ecosystems and human communities, including by restoring nature that has been degraded in the past[13]. Recognising that human activities should contribute to the health and vitality of the planet, this approach is rooted in the understanding that ecosystem services are highly dependent on the health of nature, and it is critical that we restore and regenerate ecosystems so that they continue to function and provide benefits to society.

Since the adoption of the GBF[14], the critical need for a co-ordinated effort to address the nature crisis has been recognised by governments and businesses. Doing so, while also addressing the climate crisis, will require all stakeholders (including, but not limited to, policymakers, financial institutions, businesses and the third sector) to proactively drive change at the individual, organisational and systemic level. The necessary changes will include looking at new business models that align with the global goal to halt and reverse nature loss. New business models can help to embed pro-nature practices within a business while also helping businesses to take advantage of the commercial opportunities from tackling the nature crisis.

Environmental progress has often stalled when the demands of the planet come into conflict with the over-arching commercial goals of a business or sector. The transition to a climate neutral and nature positive economy will create new opportunities for businesses to gain a competitive advantage. At its core, a business model is a value proposition, accompanied by a strategy for making money from this. Identifying and promoting business models that align with environmental goals can help to speed up the economic transformation needed to deliver the GBF targets. This will need to be supported by a policy, regulatory and financial landscape that incentivises the adoption of these new business models.

While a growing number of businesses are adopting practices and initiatives that aim to avoid and reduce negative impacts and protect and restore nature, very few business models are currently aligned with the necessary systemic transformation towards nature positive goals. Indeed, in some cases, pro-nature practices and initiatives may come into tension with a company's core business model. The transformation of the economy required to halt and reverse nature loss will require deep transitions across a range of sectors and in response new business models will need to be developed[15].

This is why it is important to develop a better understanding of how business models can be aligned with the global nature positive goal. All human activity, especially economic activity, tends to have some negative impact on nature and a non-zero environmental footprint, meaning that an individual business (or business model) will rarely be nature positive itself.

Businesses can, however, play a part within wider systems to deliver positive impacts for nature. As a starting point, a business can evaluate the impacts and dependences of its operations on nature and biodiversity and implement changes to business practices as a result, but information is currently limited on how pro-nature practices can coalesce into a business model that contributes to nature positive outcomes and is aligned with the nature positive goal. Additionally, there is uncertainty about how these models can be economically viable, evaluated, developed, adopted, transformed, scaled up, financed and, ultimately, mainstreamed.

Nature positivity remains a critical global goal, equivalent to limiting the global warming to 1.5°C for climate, leading us to ask what contribution to this goal businesses can make. For the purpose of this report, we employ the term 'nature positive aligned business models' to specify that even if businesses have an impact at an organisational level, they can align with the global nature positive goal by being mindful of the nature of their ecological footprint and understanding the breadth and depth of their impact on nature and biodiversity. This term describes businesses whose core proposition and value creation, capture and delivery model avoids, minimises or offsets adverse impacts in line with the mitigation hierarchy and/or generates positive outcomes for nature or biodiversity.

Currently, uncertainty about how companies can contribute to the nature positive goal translates into the continued pursuit and financing of business practices that not only contribute to the degradation of nature but also fail to accelerate its protection and restoration.

It also makes it harder for financiers and innovators to identify, account for and support value creation that goes beyond the conventional understanding of 'sustainable'. Companies that do seek to move beyond 'sustainable' towards regenerative, restorative and nature positive aligned practices often do so through incremental changes that affect only a very small segment of their operations, or in a piecemeal (non-strategic) manner, again resulting in slower and less-extensive positive outcomes for nature and biodiversity.

In light of these trends and the growing recognition that action on nature must be accelerated in order to meet our high-level climate and nature goals, the multi-partner, EU Horizon-funded project titled 'Accelerating Transformation through Capitals Knowledge (A-Track)' was devised to better integrate natural capital into decision-making across business, finance and policy. The project aims to: support the flow of biodiversity information for use in decision-making; strengthen the consideration of biodiversity and ecosystem services in life cycle assessment; mainstream natural capital accounting and assessment; facilitate the adoption and scaling of business models that contribute to nature positive outcomes; and nurture financial innovations that contribute to nature positive outcomes. For businesses in particular, there is a recognition of the need to better understand and navigate the complex landscape of nature-related frameworks, tools and guidance in order to start implementing tangible actions that benefit nature. Working with stakeholders ranging from biodiversity data providers to financial institutions, A-Track will create robust and reliable resources that will support those in key decision-making roles to fully consider nature impacts going forward.

This **working paper** is the first output from Work Package 5 (WP5) within the A-Track project. Within the project, WP5 aims to facilitate and incentivise the adoption and scaling of business models that contribute to nature positive outcomes (or nature positive aligned business models), by identifying 'archetypes' and exploring how to scale, finance and integrate them into mainstream practice.

The foundations in this paper will be used as the basis for testing both organisational and systemic transformation, including investigating the market and policy barriers to commercialisation of the business model archetypes. This working paper seeks to contribute to emergent thinking on nature positive aligned business models, and to germinate greater understanding of how these models can be put into practice by:

- Defining the key concepts and providing some background from academic and practitioner literature about the state of play regarding nature positive aligned business models.
  – *(Section 2)*.

- Constructing a proposed typology that includes 'archetypes' of what forms these business models could take and also boundary conditions that could impact the operationalisation of these archetypes.
  – *(Section 3)*.

- Beginning to develop a broad framework for existing and incipient businesses to demonstrate how they could transform their business practices and nature positive aligned business.
  – *(Section 4)*.

This output will serve as a foundation for engaging with real-world businesses in future stages of this work package, enabling field-testing of the proposed archetypes, boundary conditions and change methodology. The insights gained from this process in the subsequent outputs will inform revisions and further development of the typology and framework presented herewith.

2 Conceptual framework

This section outlines some of the theoretical discussions necessary to contextualise the business model typology (consisting of seven archetypes) discussed in *Section 3*. While the eventual aim of the business model archetypes is to help support business decision-making, robust theoretical underpinnings to the categories are needed. This approach will help to produce an adaptable and actionable change methodology (a defined process guiding businesses to institute effective transformation). The discussion below is based on a comprehensive but non-systematic review of academic and grey literature on: nature positive business/ enterprise; business model innovation; and sustainable, circular and regenerative business models.

2.1 What is a business model?

A 'business model' provides a systematic way of understanding, analysing and communicating how a business operates and achieves its objectives. Although a range of definitions for business model exist within management literature, this project uses Osterwalder and Pigneur's (2010) definition: ***"A business model describes the rationale of how an organisation creates, delivers, and captures value"*** (p. 14)[1]. This model encompasses the core aspects of a business, including its value propositions, target customers, revenue streams, channels of distribution, customer relationships, key activities, key resources, key partnerships and cost structure.

The core of a business model is **the value proposition,** which defines the unique value a company offers to its customers. This could be in the form of a product, service or a combination of both to solve a specific problem or to fulfil a need for a particular customer segment, as well as other forms of non-market benefits. The value proposition is closely linked to **the target customer segments**, which are the specific groups of people or organisations that the business aims to serve. Understanding the needs, preferences and behaviours of these target customers is crucial for crafting an effective value proposition.

Revenue streams are another critical component of a business model, detailing how the company generates income from its value propositions. They could include various pricing mechanisms such as sales, subscriptions, leasing, licensing or brokerage fees. **Channels** are the means by which the company delivers its value proposition to customers, encompassing all touchpoints such as physical stores, online platforms and distribution networks. **Customer relationships** outline the type of interaction a business maintains with its customers, ranging from personal assistance to automated services and community engagement.

Key activities describe the most important actions a company must take to operate successfully and deliver its value proposition. These activities may include production, problem-solving, platform management and marketing. **Key resources** are the assets required to perform these activities, which can be physical, intellectual, human or financial. **Key partnerships** are the network of suppliers, partners and alliances that help the business to operate efficiently, allowing it to focus on its core activities while leveraging external expertise and resources.

Finally, **the cost structure** delineates the major costs involved in operating the business, including fixed and variable costs, economies of scale and cost drivers. By analysing the cost structure, a company can identify areas for cost optimisation and ensure its operations are financially sustainable.

In essence, a business model serves as a blueprint for how a company plans to make money and sustain itself in the market. It provides a clear and structured approach to understanding the business' internal and external environment, enabling entrepreneurs, managers and stakeholders to make informed decisions, adapt to changing conditions and innovate effectively.

The following diagram shows Osterwalder and Pigneur's business model canvas, as adapted by Bocken *et al.* (2018)[16, 4]. This forms a cornerstone of our analysis conducted to develop the typology of nature positive aligned business models.

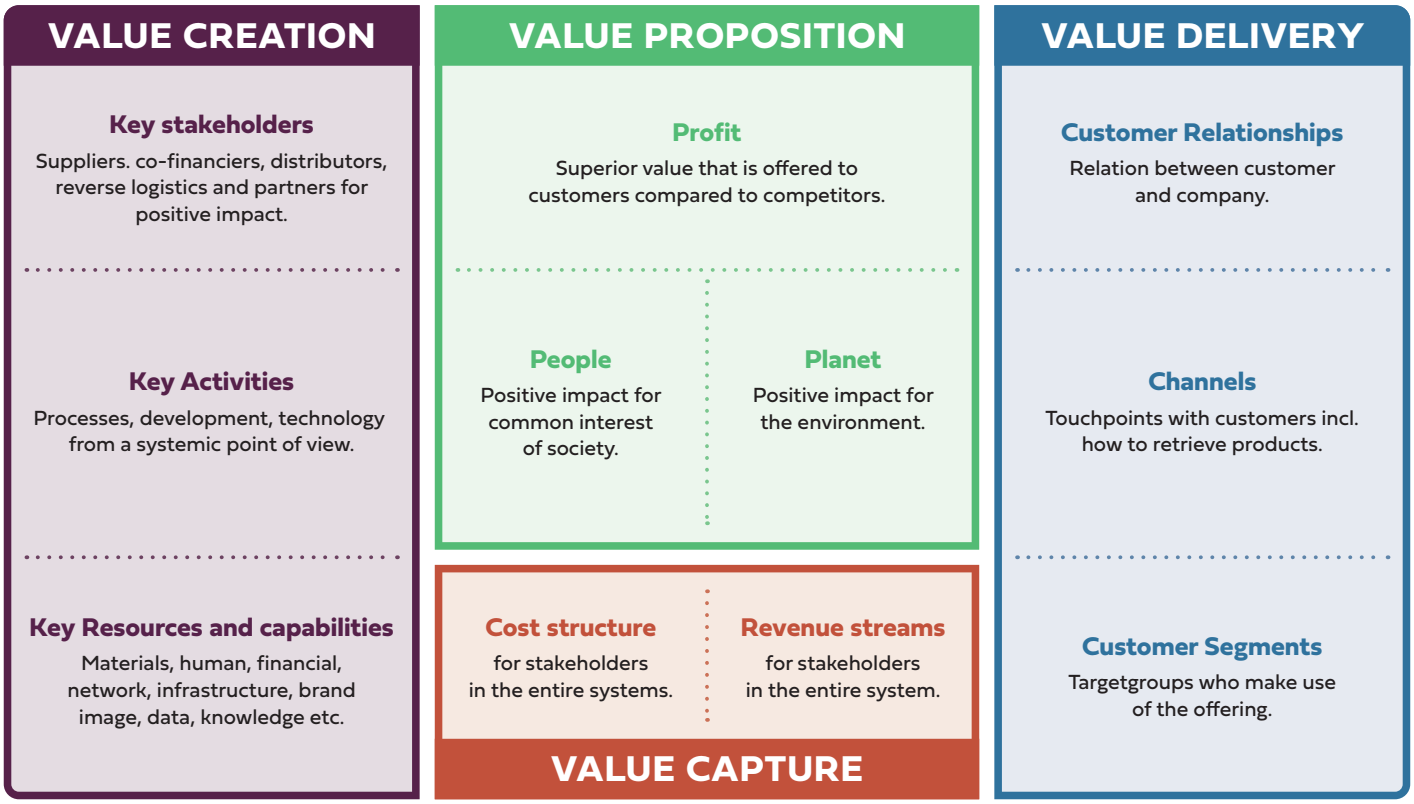


Figure 1: **The Business Model Canvas.** Reproduced from 'Experimenting with a circular business model: Lessons from eight cases' (Bocken *et al.*, 2018, p.82)

The business model canvas depicted in *Figure 1* allows us to distinguish between a ***business practice*** and a ***business model.*** **The business practices are the building blocks that coalesce to form the underlying architecture of a business, ie its business model**. For a business to be considered nature positive aligned, ie those looking to conceive a new enterprise and/or transform an existing one at the business model level, its value proposition must have nature positive principles at heart. This will allow companies to embed their purpose effectively through their governance, strategy, culture and innovation[17]. While some essential economic activities may have unavoidable nature-related consequences, the revaluation of a business' value proposition would allow it to restructure its practices in line with the **mitigation hierarchy** as discussed in *Section 2.3*.

A wealth of academic literature and practitioner resources is available for businesses looking to take action on nature[i]. However, piecemeal changes to business operations that contribute to nature positive outcomes but do not *substantively* impact the way an enterprise **creates, captures and delivers** value would not be considered a change in the business model. Although any changes to deliver *some* nature positive outcomes are valuable, isolated changes to specific activities alone will not engender change at the scale and pace that is required, especially in sectors where business models tend not to be nature positive aligned. This is a particularly important consideration if the underlying business model contains a value proposition that tends to deliver outcomes that harm nature. Equipped with an understanding of how business models operate, businesses will be able to move from **operational** change to **transformational** change in support of the nature positive goal.

2.2 (Re)defining value and understanding the 'five capitals'

Since 'value' is a cornerstone of how we define and organise business models, it is essential we have a clear understanding of what we mean by the term in general and specifically in the nature positive context. Contributing to nature positive (or, in some instances, more sustainable, circular and regenerative) outcomes can aggregate value for businesses at two different levels: organisational and systemic. **At an organisational level**, it can allow businesses to expand their conception of value beyond a simple profit and loss calculus. This entails encompassing *economic, environmental* and *social* aspects of value, while considering the needs and aligning the interests of all stakeholder groups rather than giving priority to shareholders' expectations[16].

---

i How 3 very different industries could go nature-positive | World Economic Forum (weforum.org); Practitioner's toolkit for nature-positive Enterprises (Fauna & Flora); Sector actions towards a nature-positive future (Business for Nature); Roadmap to Nature Positive - Foundations for the built environment system (World Business Council for Sustainable Development); Nature-positive strategy: Practical guidance for corporates (Pollination) | Climate Change Investment & Advisory Firm (pollinationgroup.com)

Economic, environmental and social value forms refer to different ways of understanding and assessing value across three interconnected dimensions. They interact with each other in a wider system with emergent properties and are essential for realising each other's benefits. They are essentially reliant on different forms of capital – capital has traditionally been thought of only as money, but it describes any resource or asset that stores or provides value to people. Other forms of capital (such as natural capital) work in a similar fashion to traditional capital – if we invest in them, they create value, and if we degrade them, we limit their value[18]. Therefore understanding the different forms of capital and how they generate value is key for any businesses looking to assess their wider impacts and dependencies, as well as understanding how to align with the global nature positive goal.

The **'Five Capitals Approach'** is a sustainability framework that provides a holistic way to assess and improve the value that a business creates for its stakeholders and society at large. This approach is based on the idea that businesses rely on five different types of capital to operate and create long-term value: **natural, human, social, manufactured and financial capital**[19]. By managing these five capitals responsibly, businesses can achieve sustainable success while minimising negative impacts on people and the environment.

Manufactured or produced capital refers to the physical infrastructure, tools, technology and processes that businesses use to produce goods and services. It includes factories, machinery, IT systems and other tangible assets. Effective management of manufactured capital ensures that these assets are used efficiently and maintained for long-term use. **Financial capital** is the traditional capital that most businesses focus on: money, investments and assets that generate income. Financial capital is needed to fund day-to-day operations and future growth. However, within the five capitals framework, financial capital should be viewed not as an end goal but as a means to create value across all other capitals.

Human capital represents the skills, knowledge, health and well-being of people involved in and affected by a business. It includes employees, contractors and even customers. Investing in human capital means ensuring fair labour practices, supporting professional development, fostering diversity and inclusion, and safeguarding employee well-being. **Social capital** encompasses the relationships, networks and societal structures that allow businesses and communities to thrive. It includes trust, collaboration and goodwill, as well as social cohesion within communities. Businesses build social capital by maintaining positive relationships with stakeholders, contributing to the community and acting ethically.

Nature encompasses all elements of the natural environment, recognising the interdependence of abiotic or non-living elements (eg climate, soil, water, air) and biotic or living elements (eg biodiversity of all living things, including terrestrial, freshwater, marine and soil, at the level of ecosystem, species and genes). **Natural capital stocks** represent the physical quantities or assets of renewable and non-renewable natural resources that exist at any given time. These stocks form the foundation from which various ecosystem services and economic benefits flow. For example, forests consist of the total biomass of trees and plant life; oceans and fisheries encompass marine life and fish populations and freshwater resources include the water in rivers, lakes, aquifers and glaciers. These stocks are crucial assets, but they are finite and can be depleted if not managed sustainably.

Flows or ecosystem service flows, on the other hand, refer to the benefits or services that are derived from natural capital stocks over time, which include support, regulation, cultural and provisioning services. These flows represent the ongoing use and replenishment of natural resources. Ecosystem services are one form of flow, providing clean air, water filtration, pollination of crops, climate regulation and nutrient cycling. For instance, a forest stock provides a continuous flow of services such as oxygen production and carbon sequestration. Another flow is resource extraction, whereby natural resources such as trees, fish or minerals are harvested. Although these flows generate economic value, they can reduce the stock, if not managed carefully. Additionally, flows include renewable resource regeneration, whereby resources such as forests, fish populations or aquifers naturally replenish over time. The continuous cycling of nutrients and energy through ecosystems is also a critical flow, supporting life processes and the production of biomass.

The sustainability of the ecosystem service flows is directly linked to the health and size of the stocks. If stocks are over-extracted or degraded, the flows will diminish, posing a threat to long-term human well-being and economic stability. Thus, managing stocks and flows is essential for achieving or contributing to nature positive outcomes. This interlinked relationship is depicted in *Figure 2*.

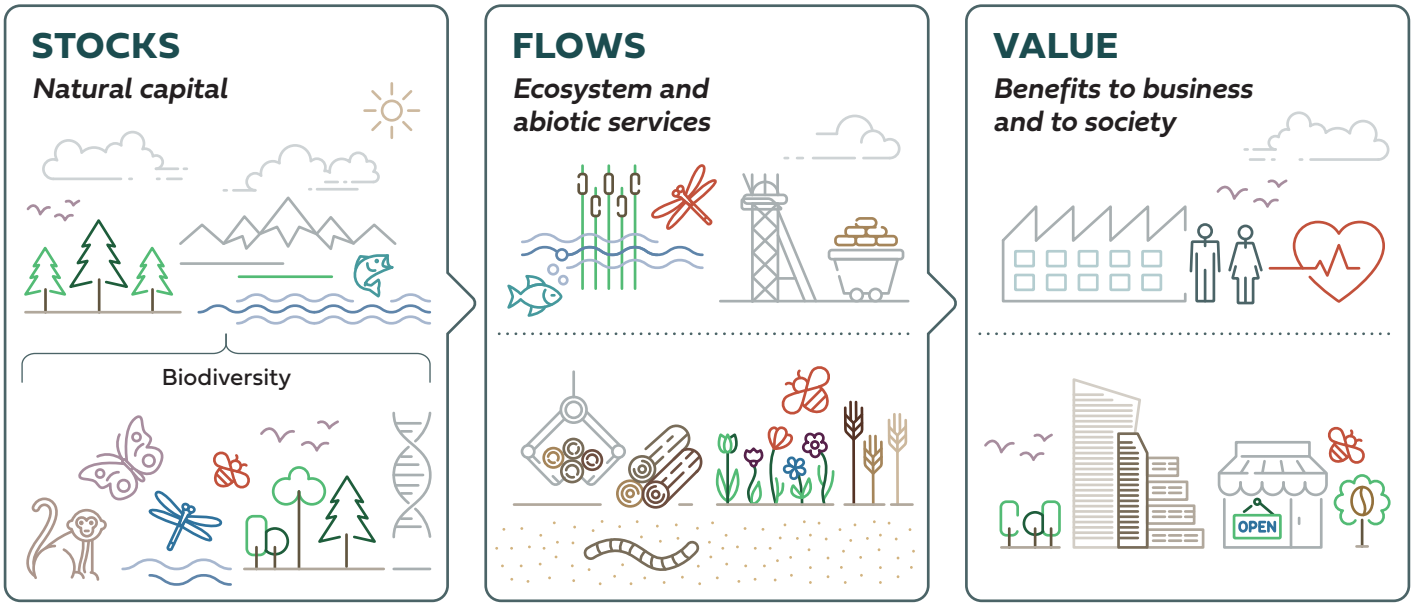


Figure 2: **The relationship between natural capital, stocks and flows**
Source: The Capitals Coalition[18]

The various capitals mentioned above generate different kinds of 'value'. **Economic value** represents the financial and material benefits that individuals, businesses and societies derive from goods, services and resources. It is often quantified in monetary terms and includes the **market value** of goods and services, **productivity** (the efficiency with which resources such as labour, capital and raw materials are converted into products or services), **profitability** (the financial gain achieved by businesses after accounting for costs), **cost savings** (the reduction of expenses through the efficient use of resources, innovation or economies of scale) and **investment returns** (the financial benefits obtained from investing capital in businesses, stocks or other assets).

Social value encompasses the benefits that enhance the well-being, health and quality of life for individuals and communities. As well as **health and well-being**, it includes **cultural heritage** (the preservation of natural and cultural sites that hold significance for communities and indigenous peoples), **social equity** (fair distribution of resources and opportunities), **community cohesion** (strong, supportive communities where people work together for common goals, often enhanced by shared access to natural spaces) and **education and awareness**.

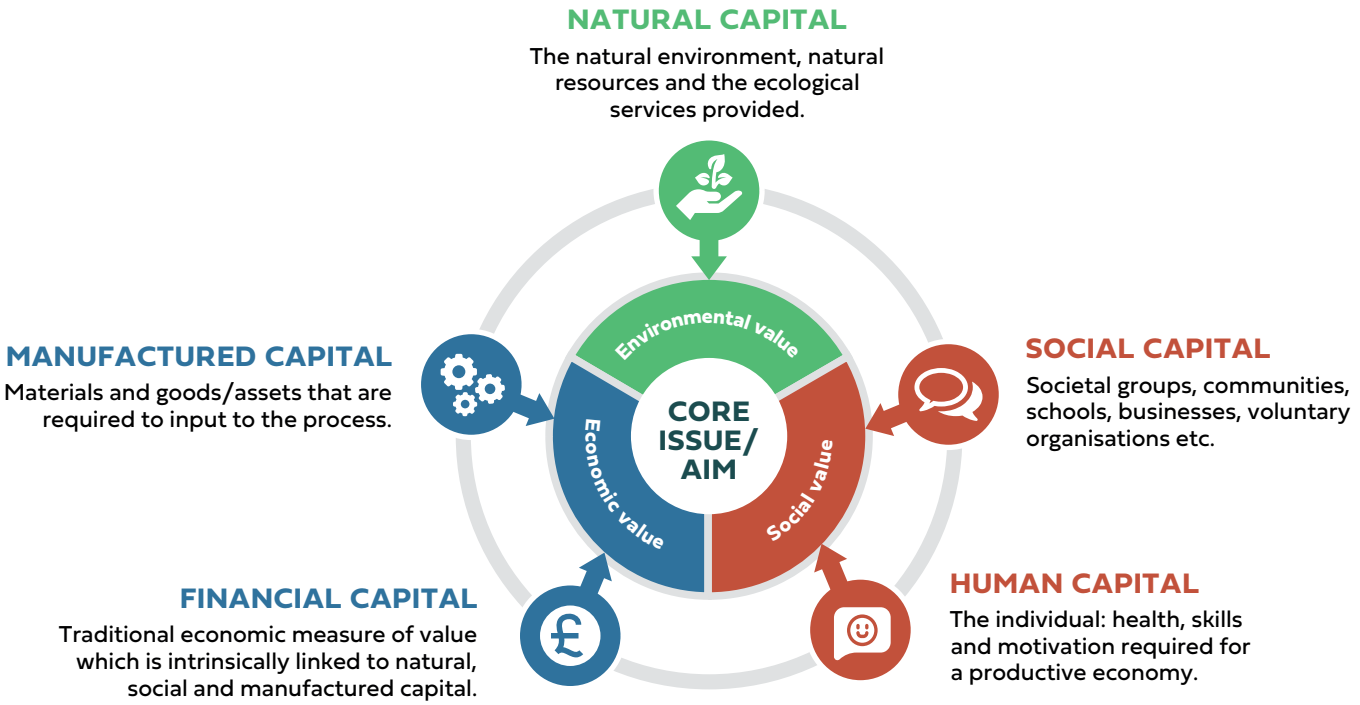
Environmental value refers to the benefits derived from natural resources, including ecosystems, species, air, water, soil and minerals. It also includes mineral and fossil fuel deposits, such as metals, oil and coal, which can be extracted for energy and materials. These resources are fundamental to human well-being, economic activities and the overall functioning of the Earth's systems. Therefore, an understanding of natural capital stocks and ecosystem service flows – two concepts that are crucial for understanding how these resources are maintained and used over time for generating environmental value – is essential in order to move towards a nature positive economy and society.

Approaches linking economic forms of value with environmental and the social values are not new: they date back to the triple bottom line approach, introduced in the 1990s to encourage businesses to assess their performance and impact beyond financial metrics and consider a broader spectrum of responsibilities to stakeholders and the planet[20]. This approach aligns with the idea that businesses should be accountable for not only their economic profits but also their social and environmental footprint, aiming for a more balanced and sustainable approach to organisational management[21]. Another approach that integrates triple bottom line thinking, the hierarchy of human needs and different forms of capital is Daly's triangle[22, 23]. It highlights the hierarchical relationship between the environment, society and the economy, emphasising that sustainable development requires the balancing of these three elements. The Daly's triangle model underscores the idea that economic activities must be aligned with environmental limits and social goals to achieve long-term sustainability. It challenges the traditional view that economic growth is the primary objective, advocating instead for an economy which prioritises environmental integrity and social well-being.

Approaches such as the Five Capitals Approach or the Natural Capital Protocol to help understand different forms of capital and also those such as the triple bottom line to help understand different forms of value are useful tools for businesses that want to embed sustainability into their operations and decision-making processes. These approaches recognise that financial capital alone is insufficient for long-term success and call for the responsible management of all the resources and relationships that businesses depend on.

An understanding of the different forms of capital and value can facilitate more holistic business decision-making, as this approach encourages businesses to consider the long-term impact of their activities on all forms of capital and the different kinds of value they generate, not just financial returns. By managing and preserving natural, human and social capitals, businesses can minimise risks, reduce negative externalities, and ensure a more sustainable and nature positive future. Businesses that consider all five capitals are likely to be more resilient in the face of economic, environmental or social disruptions. ***Figure 3*** demonstrates the relationship between the various forms of capital, the value they generate and the core aims of businesses.

Figure 3: **Reconceptualising capital and value** Reproduced from 'Measures for successful outcomes: the five capitals approach – a discussion paper' (Association for Consultancy and Engineering, 2024, p.5)[24]



Businesses can use the expanded concept of value to raise their ambition when changing their business practices and models. In addition to the different forms of value that are captured at the business/organisational level, more holistic and iterative value can also be gained at a **systemic level** from businesses making nature positive transitions, for example where the number of businesses making changes or the scale of the changes undertaken lead to higher order transformations, such as to sectors or institutions.

When value and capital are understood in the wider sense outlined above, it becomes clear that we have already de-valued our planet through nature and biodiversity loss. These losses pose significant risks to businesses across various categories, including physical, regulatory, market, reputational and financial risks[25]. These risks emerge from business dependencies on nature, the fallout of business impact on nature or the fallout of nature loss on society. Therefore, the cost of facing these risks should be factored in when envisaging business practices and business models[26]. The financial industry has begun to quantify the economic consequences of nature loss. According to recent estimates, half of the world's GDP, or $44 trillion of value generation, is moderately or highly dependent on nature[27]. Every year we are losing ecosystem services worth more than 10 per cent of our global economic output. An assessment by the Natural Capital Finance Alliance[28] found that 13 of the 18 sectors that make up the FTSE 100 have production processes with high or very high material dependence on nature, representing $1.6 trillion in market capitalisation[29].

The risks associated with nature and biodiversity loss are categorised into five broad categories: physical, regulatory, market, reputational and financial. **Physical risks** arise from the degradation of natural capital and ecosystem services. They include risks to commodity production (as nature contributes to production processes), supply chain disruption, compromising business continuity (as nature provides the stable conditions for businesses to operate) and loss of business value (for instance loss to business assets and real estate). **Regulatory risks** emerge as governments implement stricter environmental regulations to counteract nature loss. Businesses may face legal liabilities or penalties if they fail to comply with these new policies or contribute to environmental damage. Failure to adhere to regulations can result in fines, sanctions or even the loss of operating licences.

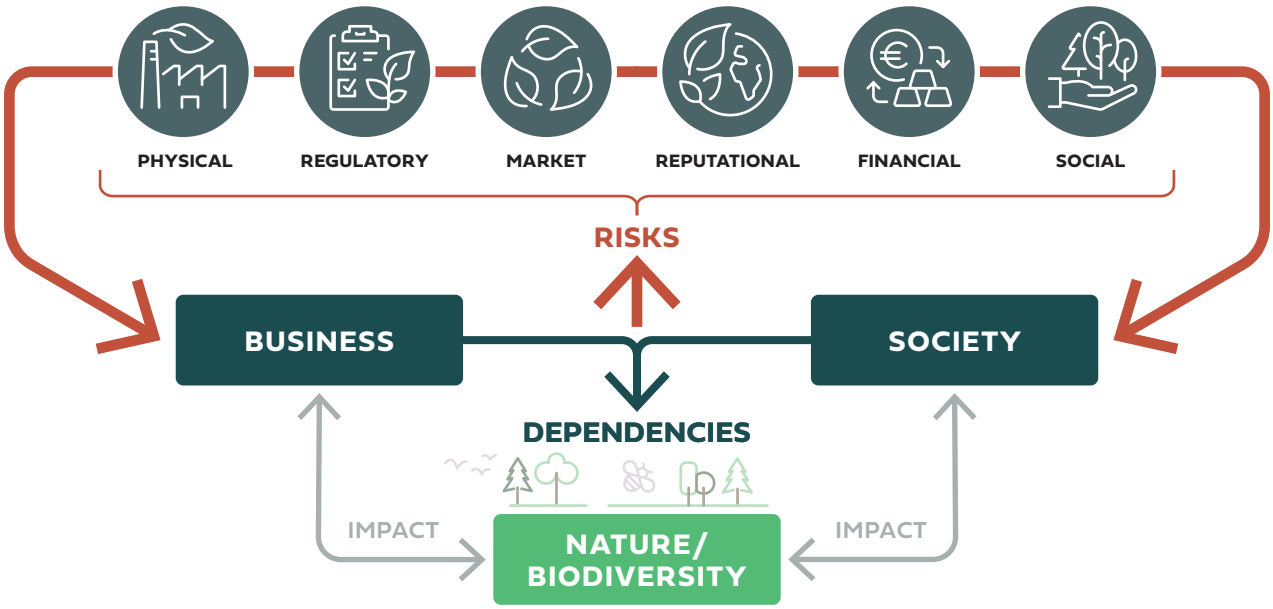
Market risks are linked to shifting consumer preferences. As more consumers become environmentally conscious, companies that rely on unsustainable practices may experience a decline in demand and market share. **Reputational risks** play a significant role as well, as companies associated with ecosystem degradation or unsustainable practices may face a public backlash, damaged brand value and loss of investor trust. Such negative perceptions can make it difficult for businesses to maintain a social licence to operate and can result in protests, boycotts or strained relationships with communities.

Finally, **financial risks** stem from increased operational costs and investment challenges. The degradation of natural systems, such as those providing water purification or pollination, forces businesses to invest in artificial alternatives, raising expenses. Investors are also placing more emphasis on environmental performance; thus, companies that fail to address nature loss may either struggle to secure capital or face higher borrowing costs. Finally, nature loss also poses **social risks** such as damage to public health and the sociocultural fabric of society, which can be significant for the operation and human capital of businesses[30].

This discussion of risk underscores the fact that economic value is not the only form of value, and moreover that the value propositions of businesses should include an account of the opportunities of generating value from nature and the costs and risks of ignoring drivers of nature loss.

Figure 4 summarises the risks that businesses in particular, and society in general, face due to nature and biodiversity loss.

Figure 4: **Categories of risks posed by nature loss** Based on 'Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy' (World Economic Forum, 2020)[25]



2.3 **Defining 'nature positive'**

The term 'nature positive' has its origins in public pollution and wetland trading policies in the USA during the 1970s, which included the terms 'no net loss' (NNL) or 'net positive impact' (NPI)[31]. The recent shift in discourse from no net loss/net positive impact to nature positive and 'regenerative' has emerged from several trends[32, 33, 34]. These include growing recognition of the economic and financial risks of biodiversity loss, as mentioned above[9], and the insufficiency of sustainability (or mitigation and/or minimisation or the 'do no harm' approach) to safeguard planetary health and restore key ecologies and ecosystems. Enough evidence now exists to demonstrate that planetary health has been degraded to such an extent that merely protecting the natural capital we have left will not be enough. There is a critical need to regenerate nature so that it can provide essential ecosystem services that humanity relies on for well-being[35]. Therefore, a paradigmatic shift is required to drive more regenerative thinking at a systemic level and embed nature positive thinking in business models at the organisational level.

Multilateral environmental agreements such as the Kunming-Montreal Global Biodiversity Framework (GBF), which sets out goals and targets for halting and reversing biodiversity loss within the coming decade, with the long-term vision of "living in harmony with nature" by 2050, have highlighted the need for nature positive approaches to be embedded within mainstream thinking. This guidance has been increasingly echoed by a major coalition of organisations, including the World Wildlife Fund (WWF) and the World Business Council for Sustainable Development (WBCSD), that argue for a 'nature-positive global goal for nature', with the ultimate aim of bending the curve of biodiversity loss by 2030 and achieving a full recovery of nature by 2050[36]. As a result, achieving 'nature positive' has become a clarion call at a global and systemic level.

Although various initiatives and resources focus on the concept of nature positive, a consistent definition is still lacking[37]. Available definitions of nature positive can be placed into three categories: process-based, outcome- or target-based, and conceptual[38]. The **process-based** definition emphasises the operational steps required without specifying explicit criteria for success[39, 40]. The **outcome-based** definition refers to specific nature positive targets or biodiversity outcomes, such as reversing biodiversity declines by 2050[36, 41, 42, 43]. The **conceptual** definition draws upon aspirational and theoretical concepts such as a 'regenerative' economy. These definitions include those developed by the Science Based Targets Network and European Commission[44, 45].

For the purposes of this working paper, nature positive is defined as a global goal to halt and reverse nature loss by 2030 so that nature is being restored and regenerated rather than declining. It refers to outcomes which are net positive for biodiversity, directly and measurably increasing the health, abundance, diversity and resilience of species, ecosystems and processes. For biodiversity, the global goal is to reverse biodiversity loss by 2030; expressed as nature positive by 2030. This is defined as codified in the mission of the Kunming-Montreal Global Biodiversity Framework[46].

While conceptual and process-based definitions are useful and have made contributions to promoting the understanding of nature positive, they are not always relevant to the specificities of a business' overall interactions with (ie its impacts and dependencies on) nature. The chosen definition focuses on outcomes and can be helpful for a business looking to align with a collective goal as well as setting aspirational targets.

As the concept of nature positive is a recent development for businesses, it will likely evolve as key stakeholders adopt and operationalise it. However, if the approach remains vaguely defined and variably interpreted, there is a significant risk that it could be misused to 'neutralise' criticism of companies' environmental practices without prompting genuine action towards achieving global nature goals[37]. It is therefore essential that, when defining nature positive, businesses include outcomes not just at the organisational level but also within broader systems, thus recognising the interconnections between various nature goals (eg climate and biodiversity), and ensuring that their outcomes align with broader social and environmental goals and targets, such as the full recovery of nature by 2050.

The following ten nature positive principles are based on the 2022 thematic report on nature positivity on the EU Business and Biodiversity (B@B) Platform[47]:

1. **Collaborative effort:** Achieving a nature positive outcome requires collaboration across various sectors and levels, including sectoral, landscape and value chain levels.

2. **Comprehensive scope:** The concept of 'nature' encompasses land, freshwater, oceans and the atmosphere, with biodiversity being a crucial component. Thus, nature positive extends beyond just biodiversity conservation.

3. **Value chain impact:** It is essential to address material impacts across the entire value chain and within all spheres of influence.

4. **Positive outcomes:** Each segment of the value chain should contribute to nature positive outcomes at the landscape scale, particularly where significant negative impacts exist.

5. **Mitigation hierarchy compliance:** Nature positive actions must align with the mitigation hierarchy – avoiding new negative impacts, reducing ongoing ones, restoring ecosystems linked to company activities, and offsetting only where necessary and in a sustainable manner. Additional conservation and restoration efforts are also needed to achieve full nature recovery by 2050.

6. **Ambitious, science-based targets:** Targets and actions should be ambitious, rooted in science, integrated across operations and supported by a clear measurement framework.

7. **Transformation of business models:** Achieving a nature positive outcome may require a significant transformation of production processes or business models.

8. **Organisational commitment:** The nature positive ambition should be endorsed by the Board and integrated across the entire organisation, not just the sustainability department.

9. **Urgent action required:** Immediate action is necessary, with a recommended timeline aligned with the global goal for nature – achieving net positive by 2030 from a 2020 baseline, with conservation and restoration efforts continuing from 2030 to 2050.

10. **Transparent communication:** Companies adopting a nature positive strategy must communicate transparently about their baseline, targets, actions and progress, and the challenges that hinder further progress.

Given the comprehensive list of nature positive principles outlined above, aligning its operations with a nature positive approach is a significant ask for any business, with a number of challenges and barriers to nature positive actions. The first challenge is related to the complexity of ecosystems; understanding and managing the intricate dynamics of natural systems requires detailed knowledge that many businesses may lack. Integrating nature positive practices into existing business models involves fundamental operational changes, which can be disruptive and resource intensive. A business would need to assess every element of its value chain (which is often spread across many different geographies and jurisdictions), while also considering the scope and knock on effects of its nature impacts. The complexity of global supply chains adds an extra layer of difficulty to ensuring that all suppliers and partners adhere to nature positive practices in line with the mitigation hierarchy (as outlined below).

Furthermore, the regulatory and market environment surrounding nature positive practices is still evolving, creating uncertainty that may deter businesses from making proactive investments. The lack of standardisation for what constitutes a nature positive aligned business model adds to the challenge, making it difficult to benchmark progress and evaluate commitments around business model transformation. There is also a lack of clarity about quantification metrics; the measurement of positive impacts on nature is complex and less established compared with metrics for negative impacts, making it hard for businesses to assess their contributions effectively and leading to intentional and unintentional greenwashing.

Many businesses also face pressures to prioritise immediate financial returns over long-term sustainability benefits that nature positive practices would offer. Limited expertise and resources further complicate the transition, as upfront investments and specialised knowledge and tools are required to implement the necessary changes effectively. Balancing diverse stakeholder expectations – such as those of investors, customers and regulators – requires careful communication and negotiation. Addressing these challenges demands concerted effort, collaboration and a willingness to invest in long-term solutions.

The principle of compliance with the mitigation hierarchy becomes instrumental in this context. Academics have argued that the conceptual clarity of the framework could provide the step change needed to integrate the multiple elements of nature positive goals and interventions in order to achieve successful nature and biodiversity outcomes[48]. The mitigation hierarchy is used to guide decision-making in projects to minimise environmental harm, particularly in relation to biodiversity and ecosystems. Although it was developed for use in developments and projects at the site level, the mitigation hierarchy has formed the basis for other more action-oriented frameworks such as 'the Mitigation and Conservation Hierarchy – 4Steps4theEarth'[49] and the Science Based Target Network's Action Framework[50]. This is because business action can have impact at multiple nested scales. Site-level actions can lead to landscape level impacts with those then contributing to impacts at a value-chain, corporate and sector level respectively and aggregating at country and global levels[51]. SBTN's Action Framework (also known as AR3T) focuses on the organisation as a unit of change and systematically sets out a series of actions that businesses can take towards nature positive outcomes:

1. **Avoid:** The first and most important step is to avoid any potential negative impacts on nature and biodiversity. This involves planning and designing activities in ways that prevent damage, such as selecting alternative sites or modifying operations to steer clear of sensitive areas.

2. **Reduce:** Where avoiding impacts is not feasible, the next step is to minimise them as much as possible. This can be achieved by adopting measures to reduce the severity, extent or duration of impacts, such as using less invasive techniques or improving operational efficiency to decrease environmental harm.

3. **Restore & regenerate:** When damage to nature does occur, efforts should be made to restore or rehabilitate the affected areas. Restoration involves actively repairing degraded ecosystems to return them to their original condition, whereas rehabilitation seeks to improve the ecosystem's health and functionality, even if it cannot be fully restored.

4. **Transform:** The underlying systems in which companies are embedded can restrict the extent to which they are able to address drivers of nature loss. This final step requires system-level transformation such as supporting nature positive aligned regulatory changes that remove barriers to greater nature action.

These steps are shown in *Figure 5*.

Figure 5: **AR3T framework** Reproduced from 'Step 4: Act' (Science-based Targets Network, 2024)[50]

The mitigation hierarchy and Action Framework aim to deter businesses from expanding their nature impact and then using offsets to mitigate the damage. Rather, it compels businesses to re-evaluate their core value proposition in light of this sequential ordering, focusing on the original causes of nature impact and encouraging changes to business practices or models to minimise these impacts. It can also be used to promote and encourage further business action by illustrating the range of actions that can be taken by a business to contribute to the nature positive goal. Although there are concerns that the mitigation hierarchy leads to reduced ambition or has been incorrectly applied[52] by avoiding, reducing or compensating the loss (in that order following the mitigation hierarchy approach, we should remember that it is merely a tool and that its effectiveness depends on how stakeholders, including regulators, implement it.

2.4 Quantifying nature positive

Quantifying nature positive outcomes is essential because it provides a measurable and tangible basis for assessing, guiding and improving **environmental performance**. First, it brings clarity and accountability to business efforts towards nature positive, ensuring that goals are specific, measurable and transparent[53]. This transparency is vital for holding businesses, governments and organisations accountable for their environmental impacts and commitments, building trust with stakeholders such as investors, customers, regulators and the broader public. Second, quantification plays a crucial role in decision-making and strategy development. With quantifiable data on nature positive impacts, businesses can make informed decisions, evaluate the effectiveness of their strategies and prioritise actions and investment that deliver the most significant positive impacts. This data-driven approach helps set clear, actionable goals and track progress over time, ensuring that resources are allocated efficiently and effectively. Quantification also allows for benchmarking against industry standards, regulatory requirements and best practice. It enables businesses to compare their performance with peers, identify areas for improvement and learn from successful approaches in other organisations, fostering competition and collaboration to drive better environmental outcomes across sectors[54].

In terms of **risk management**, quantifying nature positive impacts helps businesses understand and manage environmental risks, including those related to resource depletion, climate change and biodiversity loss. These risks can have significant implications for supply chains, operational resilience and long-term sustainability. Quantitative metrics help identify vulnerabilities and develop strategies to mitigate these risks.

Regulatory compliance is another area where quantification is crucial. As governments and international bodies tighten environmental regulations, businesses need to demonstrate that they are meeting or exceeding these requirements related to biodiversity, ecosystem services and natural capital. Quantification provides the necessary evidence to show compliance and avoid potential penalties or reputational damage.

Additionally, quantifiable data on nature positive outcomes enables businesses to **communicate** their environmental efforts more effectively to stakeholders. This includes customers, who are increasingly seeking sustainable products and services, and also employees, who may be motivated by working for an environmentally responsible organisation. Clear metrics help to convey the impact of nature positive initiatives, making it easier to engage with and inspire action from various stakeholders. The case of emissions reduction targets to meet global climate change mitigation goals shows the value of quantification in driving action, however greenhouse gas emissions reduction goals benefit from a single, globally comparable metric against which all stakeholders can demonstrate progress. Nature positive impacts are much harder to quantify, with no single metric currently able to represent a business' impact on natural systems. Similarly, when it comes to attributing value to the benefits provided by nature and the risks of its degradation, the evidence is evolving and is sensitive to geographic variations.

This difficulty in quantifying and comparing nature positive impacts is a barrier to identifying and integrating nature positive aligned business models[55]. Although work is still ongoing to develop guidance, metrics and reporting standards to help businesses to quantify their nature positive journeys, tools and frameworks are beginning to emerge. Several of these are referenced in Table 7, and a new tool is also being developed as part of the A-Track project's WP3.

2.5 An overview of the literature on 'green' business models

Although nature positive business practices and strategies are gaining interest and momentum, there is still no clear definition, understanding or evidenced application of nature positive aligned business models. There is growing recognition that changes at both organisational and systemic levels are necessary to transition to a nature positive economy, for example the ACT-D framework, Business for Nature's Sector Actions Towards a Nature Positive Future[56], and the TNFD all refer to business model transformation as a necessary element of a transition to a nature positive economy. Despite this increase in interest, the concept of a nature positive aligned business model remains undefined and untested in practice. Yet it is essential to understand how transformative change can be achieved at a micro level (ie at the individual unit of a business or organisation) before we can begin to understand how such changes can be collated collectively at a macro level to make progress towards the global goal for nature.

Although a body of research and literature on sustainable business models is beginning to emerge, studies have mostly focused on circularity archetypes and net zero. Bocken *et al.* (2014) were among the first to create business model archetypes for sustainable value creation[33]. Geissdoerfer *et al.* (2018) have defined different types of business model innovation, including in a corporate business setting[57, 58]. More recently, there has also been a shift to regenerative thinking and conceptualising regenerative business models.

Table 1 provides a comparative analysis of the different types of business models that are covered by the academic literature. The key takeaway here is that some essential synergies exist between these models and nature positive outcomes. Therefore, some of the analysis and conceptualisation from these categories (sustainable, circular and regenerative) can be extrapolated from them to nature positive aligned business models. However, as key differences also exist between these concepts and some of the metrics to measure them also differ, researchers and practitioners need to be mindful of the differences when using and cross-referencing concepts, guidelines and toolkits.

Table 1: **Comparison of sustainable, circular and regenerative business models as defined in the literature**

	SUSTAINABLE	CIRCULAR	REGENERATIVE
Definition	"Business model that incorporates pro-active multi-stakeholder management, the creation of monetary and non-monetary value for a broad range of stakeholders, and which holds a long-term perspective." (Geissdoerfer 2018)[57]	"Business models that are cycling, extending, intensifying, and/or dematerialising material and energy loops to reduce the resource inputs into and the waste and emission leakage out of an organisational system. This comprises recycling measures (cycling), use phase extensions (extending), a more intense use phase (intensifying), and the substitution of products by service and software solutions (dematerialising)." (Geissdoerfer 2018)[57]	"Business models focus on planetary health and societal well-being. They create and deliver value at multiple stakeholder levels – including nature, societies, customers, suppliers and partners, shareholders and investors, and employees – through activities promoting regenerative leadership, co-creative partnerships with nature, and justice and fairness. Capturing value through multi-capital accounting, they aim for a net positive impact across all stakeholder levels." (Konietzko *et al.*, 2023)[33]
Focus	Focus on minimising harm to the environment and balancing the concerns of short- and long-term environmental viability with short- and long-term economic feasibility.	Focus on 'closing the loop' and aim to reuse, reduce and recycle resources. The primary concern is to prevent value loss from the environment by efficiently managing material flows.	Focus on actively increasing the value of the environment and aim to restore and renew natural and social systems and seek to have a positive impact on ecosystems and communities.
Positive impact on nature	May not necessarily generate a surplus of nature positive impact. While they aim to mitigate and minimise harm, they may not always produce net benefits for nature and society.	May not necessarily generate a surplus of nature positive impact. While they aim to close loops, they may not always produce net benefits for nature and society.	Are associated with being nature positive and generating a surplus of positive impact. Their focus is on giving back to nature and communities, creating a surplus of value.
Relationship with customers	Try to provide superior customer value through increased incorporation of environmental value with economic value and some aspects of social value.	May focus on efficient resource use and value delivery to customers. Their emphasis is on the relationship with customers and delivering value through resource management.	In addition to focusing on customers, they take a broader perspective by incorporating environmental, social and community considerations in their purpose-driven approach.

	SUSTAINABLE	CIRCULAR	REGENERATIVE
Sources	A literature and practice review to develop sustainable business model archetypes - ScienceDirect[i] Sustainable business model innovation: A review – ScienceDirect[ii] Sustainable business models: Components, drivers and barriers - ScienceDirect[iii] Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities - ScienceDirect[iv] Business Models for Sustainability From a System Dynamics Perspective - Nizar Abdelkafi, Karl Täuscher, 2016 (sagepub.com)[v] Transforming sustainability challenges into competitive advantage: Multiple case studies kaleidoscope converging into sustainable business models – ScienceDirect[vi] Helping Business Contribute to a Sustainability Transition: Archetypes of Business Models for Sustainability | SpringerLink[vii] Business Model Innovation for Sustainability: Towards a Unified Perspective for Creation of Sustainable Business Models – Steve Evans *et al.,* 2017 - Business Strategy and the Environment – Wiley Online Library[viii] Sustainability-Related Strategic Evaluation of Business Models (mdpi.com)[ix]	Towards Circular Business Models: A systematic literature review on classification frameworks and archetypes – ScienceDirect[x] Towards a Circular Solar Power Sector: Experience with a Support Framework for Business Model Innovation | Circular Economy and Sustainability (springer.com)[xi] Designing the Business Models for Circular Economy – Towards the Conceptual Framework (mdpi.com)[xii] Drivers and barriers of circular economy business models: Where we are now, and where we are heading – ScienceDirect[xiii] Experimenting with a circular business model: Lessons from eight cases – ScienceDirect[xiv] Circular business models: A review (dtu.dk)[xv]	Towards regenerative business models: A necessary shift? – ScienceDirect[xvi] A Compass for Just and Regenerative Business (forumforthefuture.org)[xvii] How to create regenerative businesses? An integrated mindset and business model design approach – ThinkPlace (thinkplaceglobal.com)[xviii] Exploring Characteristics of Regenerative Business Models through a Delphi-Inspired Approach (mdpi.com)[xix] Moving Beyond Business as Usual Toward Regenerative Business Practice in Small and Medium-Sized Enterprises (frontiersin.org)[xx] How regeneration is redefining business (ssir.org)[xxi]

Despite this interest from academics, archetypes or typologies that have a targeted focus on nature positive outcomes are a key gap in the literature. The concepts of *net positive* and *regeneration* have key alignments and similarities, but regeneration is more expansive and incorporates the wider considerations of social justice and fairness[33]. In other respects, regeneration as a concept is more restrictive as it is harder to apply to sectors and industries that are not highly reliant on nature and embedded in the biosphere/bioeconomy such as agriculture[59]. Therefore, although most businesses should be aspiring to shift to a regenerative business model, some enterprises may find it more challenging given their organisational, technological and social context. In these cases, defining a more focused transition towards nature positive outcomes in line with the mitigation hierarchy would be more useful[60, 61, 62, 63].

2.6 What is a nature positive aligned business model?

Based on our analysis in the previous sections, we have arrived at **a working definition for a nature positive aligned business model:** a financially viable business entity whose value proposition and rationale are centred around nature positive principles. This model captures, creates and delivers value in harmony with natural, economic and social capital within given landscapes, seascapes, ecologies or ecosystems. It aims, in the first instance, to avoid, minimise, restore and offset its impact on nature in line with the mitigation hierarchy, but must work towards ultimately contributing positively to nature conservation and restoration at both organisational and systemic levels while ensuring equitable benefits for shareholders and other stakeholders where possible.

3 Typology of business models

Based on the conceptual framework developed in the previous section, this section lays out the typology of nature positive aligned business models, and the methodology used to develop it. A typology of nature positive aligned business models can benefit businesses, policymakers and other stakeholders by helping them to categorise and understand the various ways to integrate nature positive strategies into operations and business practices, as well as to transform their business models. To help make this typology easier to understand, we use a set of anonymised/fictionalised examples to illustrate what different nature positive aligned business models may look like in practice, and how they align with the mitigation hierarchy and the Action Framework.

3.1 Why would a typology be useful?

For businesses, a typology of nature positive aligned business models provides strategic direction by offering a framework that aligns with their industry, resources and goals. This guidance helps companies to make informed decisions about incorporating nature positive practices into their operations and understand how these building blocks of business practices could coalesce into a more nature positive aligned business model. Additionally, it facilitates the sharing of best practices, allowing businesses to learn from others in similar sectors that have successfully implemented nature positive strategies. This exchange of knowledge can accelerate the adoption of effective approaches across industries. The presence of a clear typology can also facilitate and encourage innovation by inspiring businesses to explore new ways of achieving nature positive outcomes, and ultimately highlight areas where new models or hybrid approaches could be developed. The identification of new types of business model fosters creativity and experimentation in business practices, allowing companies to adapt and evolve their methods over time in response to emerging opportunities or challenges.

Different business models carry varying levels of risk related to nature positive initiatives. By categorising these models, businesses can better identify the risks and opportunities that are relevant to them, allowing them to manage challenges effectively while capitalising on potential opportunities. Moreover, adopting nature positive aligned business models helps companies to build resilience against environmental risks, such as climate change or resource scarcity, by aligning their operations with the sustainable use of natural resources.

In terms of measurement and benchmarking, a typology will allow for the standardisation of metrics and performance indicators across different business models, making it easier to measure and compare the effectiveness of nature positive strategies both within and across industries. Companies can use the typology in combination with standardised measures to assess their performance (as discussed in ***Section 2.4***) and benchmark it against others employing similar models, driving continuous improvement and fostering healthy competition.

For policymakers, a typology can inform the development of regulations and incentives by providing a deeper understanding of the range of nature positive aligned business models. In the future, this typology could be evaluated to indicate which business model archetypes could have the most nature positive impact, for example based on their scalability or the sectors they best apply to. This understanding aids the design of supportive policies and programmes that are aligned with the specific needs of different business models. Targeted funding programmes, subsidies or tax incentives can be crafted to encourage the broader adoption of nature positive practices.

A typology can also enhance communication and collaboration by providing a common language and framework for discussing nature positive strategies, facilitating better communication between businesses, investors, NGOs and governments, and fostering collaboration across sectors. Businesses can identify potential partners with complementary strengths, leading to synergistic partnerships that enhance their nature positive impact.

Finally, a typology of nature positive aligned business models could support long-term sustainability and profitability. It helps businesses to understand how to achieve sustainable growth by integrating nature positive practices and principles, reducing reliance on depleting natural resources. By doing so, companies can create new forms of value, such as ecosystem restoration, carbon credits or biodiversity offsets, which contribute not only to their financial performance but also to broader environmental goals.

In summary, a typology of nature positive aligned business models can be a critical tool to guide businesses, policymakers and other stakeholders towards more nature positive, sustainable and resilient practices. It structures the complex relationship between business models, business activities/practices and environmental impact, promoting strategies that not only mitigate harm but also actively contribute to the restoration and enhancement of natural capital and ecosystems.

3.2 **Methodology and limitations**

After defining the conceptual framework through a non-systematic literature review, the project team collated case studies from its own network, project partner databases, publicly available grey literature and other Horizon Europe funded projects (see ***Annex 1***, for sources, a list of the businesses reviewed and an explanation of how they were categorised based on the archetypes). Based on these case studies, a 'grounded theory' approach was adopted to inform the analysis.

Each business was assessed using the business model canvas as far as possible based on publicly available information about that business: an assessment was made of each business' key activities and whether they modulated value creation, capture and/or delivery. Patterns were manually identified based on frequency of occurrence. Taking a grounded theory/inductive reasoning approach, this analysis culminated in the draft archetypes presented below, consisting of seven business model archetypes.

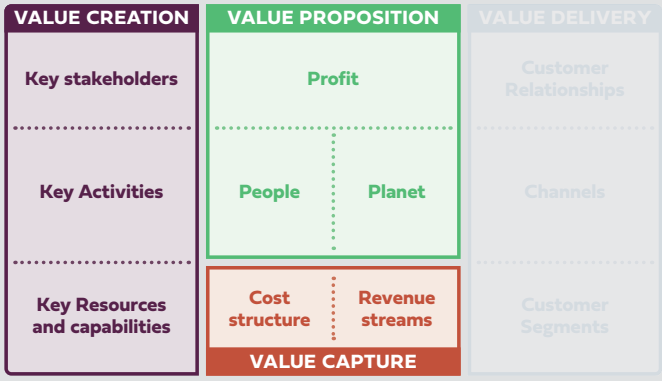
A key limitation of this analysis is that the set of businesses analysed was selected purposefully rather than through a systematic or random sampling process. This was in part due to a limitation of scope and time, as well as access constraints. The people selecting the businesses were only able to make a qualitative assessment of whether the businesses qualified as working towards a nature positive goal. Another limitation was that businesses were assessed based on their self-presented and publicly available information, allowing for a degree of bias in both the sampling and the subsequent analysis. However, as the aim was to create *archetypes* (or *ideal* types), which can be based on theory and hypothesis rather than actuality, the presumed veracity of information was sufficient for the purposes of this analysis. These archetypes will be refined and iterated during the next phases of the research project, which will involve testing them with actual businesses in real-world scenarios. It should also be possible to incorporate quantitative tools that are already available (eg Natural Capital Protocol, Life Cycle Assessment, Life Cycle Benefit Assessment), as well as those being developed by project partners (WP2 and WP3), into assessments of the development or operationalisation of business model archetypes to obtain a more robust understanding of their nature impact.

3.3 The typology

The typology consists of seven archetypes, which are structured along the three key elements of the business model canvas: value creation, value capture and value delivery. As discussed earlier in this report, the value proposition of a nature positive aligned business model must be rooted in nature positive principles. One key principle stipulates that businesses must adhere to the 'mitigation hierarchy', which means that they must avoid, minimise, restore and offset (in that order). It is also possible for businesses to institute hybrids of the following archetypes.

A1 Products and services to minimise nature impact:

This archetype focuses on value creation and/or capture through (re)developing goods and services to have a relatively lower impact on nature. As some economic activities are essential for the maintenance of human life (eg agriculture and vaccine development), some activities that minimise harm to nature are included in the overall systemic push for nature positivity. A key feature of the businesses in this category is that they reconceptualise essential products and services from a 'purposeful' lens and mitigate and reduce harm (although this could also be applied to *'non-essential'* products and services as long as the business aligns with the mitigation hierarchy). The mitigation of impact(s) could be through means that are technological (eg circular redesign, materials innovation), organisational (eg adoption of new manufacturing technologies) and/or social.

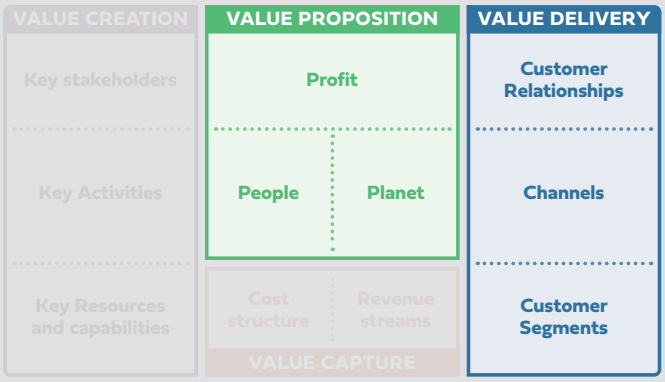


The areas shown highlighted in the Business Model Canvas above relate to: **Archetype 1 – Products and services to minimise nature impact.**

	Company A1
Overview	Low carbon, permeable concrete that allows stormwater to drain away, mitigating flooding, and thus recharging groundwater.
Key activities	• **Production of permeable concrete:** The company produces low carbon, permeable concrete that allows rainwater to pass through, which helps to mitigate flooding in urban areas while also recharging groundwater. • **Stormwater management systems:** It develops and implements systems that use its permeable concrete, improving urban stormwater management. • **Collaborations:** Works with urban planners, municipalities and environmental organisations to integrate its products into city infrastructure projects.
Nature impact	• **Flood mitigation:** By allowing water to permeate through surfaces, this new type of concrete reduces surface runoff and urban flooding. • **Groundwater recharge:** The products help to recharge aquifers, which supports local water cycles and healthier ecosystems. • **Carbon footprint reduction:** The concrete is manufactured using a new catalytic concrete technology that uses industrial by-products instead of traditional cement. The company estimates that this emits about 500 lbs *less* CO_2 per cubic yard of finished concrete.

A2 Service models to minimise nature impact:

This model focuses on value delivery through a service model to reduce the impact of goods and services on the environment and nature. This can be done through creating environmental and societal impact by influencing the product or service usage cycle from cradle to grave or expanding the environmental and societal value of products and services (eg maximising the use of one product by sharing it between multiple users) and by capturing value in pricing, market share and loyalty. Therefore, the focus is on customer channels, segments and relationships. **Product-as-a-service models, such as car sharing schemes**, would also fall under this category.

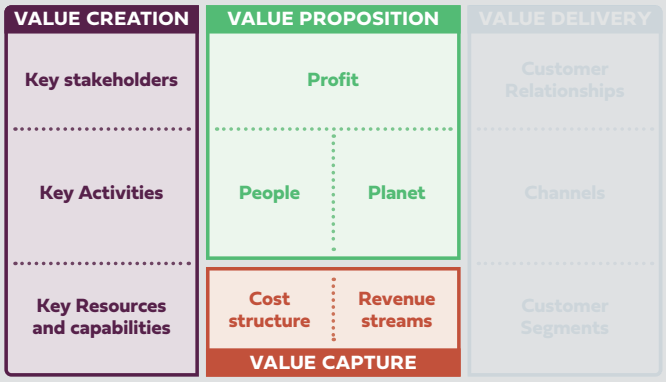


The areas shown highlighted in the Business Model Canvas above relate to: **Archetype 2 – Products and services to minimise nature impact.**

	Company A2
Overview	A logistics company that provides eco-friendly last-mile delivery services for e-commerce businesses and local retailers. The company is committed to minimising its environmental impact by embedding sustainable practices at every stage of its operations and its service model, while also providing a less polluting alternative to last-mile deliveries using traditional internal combustion engine vehicles (ICEs).
Key activities	• **Electric vehicle fleet:** The company exclusively uses electric vehicles (EVs) for deliveries, significantly reducing carbon emissions compared with traditional fuel-powered trucks. It also integrates renewable energy sources, such as solar panels at its charging stations, to power its EV fleet, further minimising its impact. • **Carbon-neutral warehousing:** The company's warehouses are designed with energy efficiency in mind, using renewable energy sources such as wind and solar power to operate. • **Packaging minimisation programme:** To further reduce its environmental impact, the company offers a 'minimal packaging' option to customers, encouraging businesses to use reusable or biodegradable packaging materials. The company also provides collection services for packaging waste, ensuring that it is recycled or properly disposed of to avoid contributing to landfill or pollution. • **Circular economy support as a service:** The company offers reverse logistic services to businesses to adopt a circular economy model. This allows customers to return used goods, which the company collects for recycling, refurbishing or proper disposal, reducing the need for new resource extraction and embedding minimisation of nature impact within its service model.
Nature impact	• **Reduced carbon footprint:** By using EVs powered by renewable energy, it reduces greenhouse gas emissions. EVs are less material intensive with fewer embedded emissions than ICEs. • **Resource conservation:** The sharing of vehicles minimises the overall societal consumption of vehicles. The company's efforts to minimise packaging and support circular economy practices further decrease resource extraction and waste generation.

A3 Regenerative products and services:

This business model focuses on value creation and/or capture directly through restorative and regenerative activities. Therefore, the core products or services of the businesses would deliver a net positive impact on nature and biodiversity.



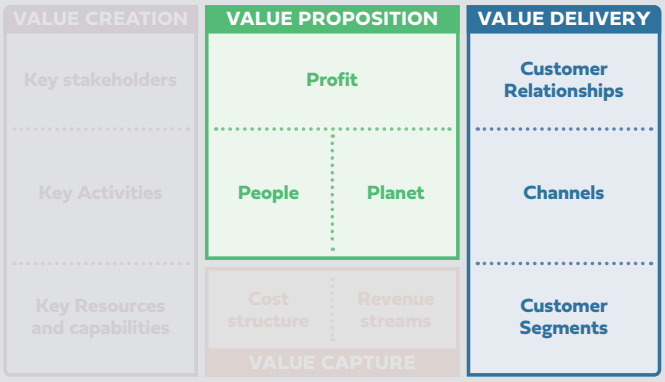
The areas shown highlighted in the Business Model Canvas above relate to: **Archetype 3 – Products and services to minimise nature impact.**

	Company A3
Overview	A direct-to-consumer (D2C) sustainable clothing brand that designs and produces clothing made from regenerative organic materials and natural dyes. Beyond just reducing its negative environmental footprint, it aims to create a net positive impact on nature by ensuring that every piece of clothing sold directly contributes to ecosystem restoration and biodiversity enhancement. Its business model aligns with circular economy principles and nature positive goals by integrating regenerative farming, zero-waste manufacturing and eco-conscious logistics.
Key activities	• **Regenerative sourcing of materials:** Sources cotton, hemp and bamboo from regenerative farms that restore soil, sequester carbon and enhance biodiversity. Using techniques such as crop rotation and agroforestry, these farms improve the environment. Customers can track the origin of their garments and learn about the regenerative practices behind them. • **Carbon-negative manufacturing:** Powered by renewable energy, the company uses closed-loop water systems and non-toxic dyes. Innovative techniques such as 3D knitting minimise waste, and leftover materials are repurposed or recycled. The manufacturing process absorbs more CO_2 than it emits, thanks to regenerative farming support. • **Product as a Service (PaaS):** The company offers a subscription-based clothing rental service, reducing resource use by reusing garments. Returned items are upcycled, recycled or refurbished, ensuring minimal environmental impact. • **Buy-back and recycling programme:** The buy-back programme refurbishes, recycles or composts returned garments. Customers earn credits for returned items, reinforcing a circular economy that ensures no clothing ends up in landfills. • **Ecosystem restoration with every purchase:** For every item sold or rented, it plants trees and restores ecosystems, linking each purchase to specific restoration projects. This approach integrates nature recovery directly into the pricing model, creating measurable positive environmental impacts.
Nature impact	• Carbon sequestration from regenerative farming and reforestation. • Water usage and conservation. • Biodiversity enhancement.

A4 Regenerative service models:

This archetype develops a service model for regenerative products, activities and services that have a net positive impact on nature and biodiversity. It ensures that these products and services retain their nature net positive characteristics even as they are scaled to reach a wider audience through innovative customer channels.

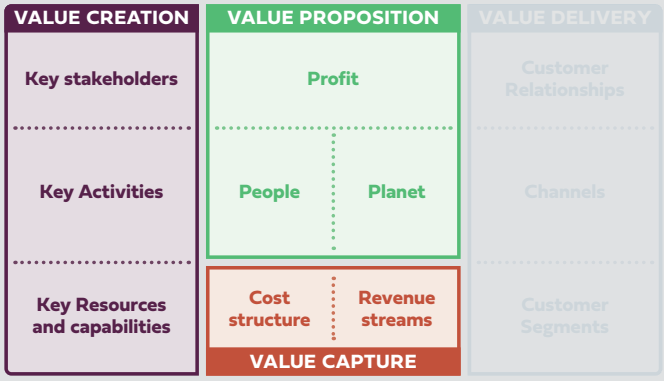
The areas shown highlighted in the Business Model Canvas below relate to: **Archetype 4 – Products and services to minimise nature impact.**



	Company A4
Overview	The company offers a subscription-based waste collection, recycling and resource regeneration service for businesses, households and municipalities. Its focus is on creating a nature positive system whereby waste is not just recycled but used to actively restore and regenerate ecosystems. This business model aims to go beyond 'zero waste' by ensuring that every unit of waste collected contributes to a measurable positive impact on nature.
Key activities	• **Closed-loop waste management for regenerative outcomes:** Organic, recyclable and hazardous waste is collected from clients using a zero-emissions vehicle fleet. Waste is sorted at a central facility, where materials that can be repurposed (eg plastics, metals and glass) are recycled. However, the key difference from traditional waste management is that all organic waste (eg food scraps, garden waste) is converted into bio-compost and natural fertilizers that are then used for ecosystem restoration projects. This service model actively enhances soil health and biodiversity in local forests, parks or urban gardens. • **Nature credits for regenerative projects:** Each client accumulates 'nature credits' based on the amount of waste they contribute to the composting system. These credits represent the positive impact that the company's services has on local ecosystems. For example, businesses or municipalities that subscribe to this service can receive detailed reports showing how many acres of land have been restored, how much carbon has been sequestered or how many new trees have been planted as a result of their waste contributions. • **On-demand eco-recycling consultations:** Beyond waste collection, the company offers consultative services to help businesses design closed-loop systems within their operations. It provides solutions for reducing plastic packaging, optimising supply chains for recyclability and incorporating circular economy principles into product designs. It works with industries such as retail, hospitality and construction, providing them with tailored eco-audits and reports to help transition their waste management processes into net positive systems. • **Community Ecosystem Restoration as a Service (CERaaS):** The company offers a unique service whereby businesses and individuals can directly fund or participate in community-led ecosystem restoration projects, including tree planting, wetland regeneration and river clean-ups. It organises these events, and participants can engage directly with the process, and thus help to create a tangible nature positive impact in their communities.
Nature impact	• Waste diverted from landfills. • Compost produced and used in ecosystem restoration. • Carbon sequestration achieved through restored ecosystems. • Increase in local biodiversity (eg wildlife return and plant species diversity). • Reduction in overall resource extraction (eg raw materials replaced by recycled products).

A5 Value chain reconfiguration:

This archetype focuses on changes or innovations in how value is created across key activities, stakeholders, resources and capabilities along a value chain in a manner that leads to nature positive outcomes (it could also include operational redesign, vertical and horizontal integrations, regionalising or onshoring global supply chains).

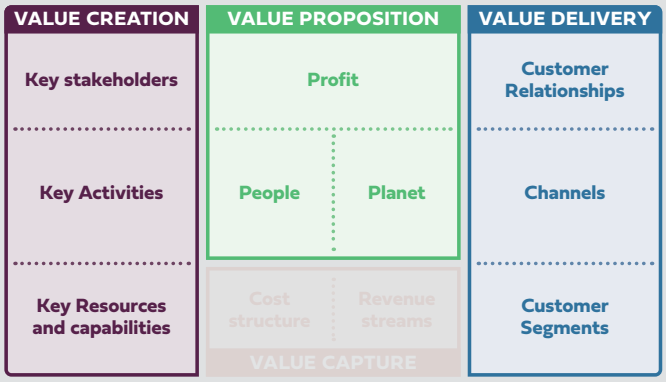


The areas shown highlighted in the Business Model Canvas above relate to: **Archetype 5 – Products and services to minimise nature impact.**

	Company A5
Overview	**Location of operations:** Mexico Develops household and industrial cleaning products, with a focus on sustainability and eco-friendly practices.
Key activities	• **Eco-friendly products:** The company develops household and industrial cleaning products that are formulated to be less harmful to the environment. • **Sustainable manufacturing:** It implements sustainable practices in its manufacturing processes, such as energy-efficient technologies and waste reduction measures. • **Recycling initiatives:** Runs recycling programmes to collect and process post-consumer products, turning waste into new products.
Nature impact	• **Water use:** Aims to recycle 100 per cent of the water used in its operations. • **Waste reduction:** Its recycling initiatives help to reduce landfill waste and promote circular economy principles. Additionally, all its containers contain zero virgin plastic and are 100 per cent recyclable. • **Regenerative agriculture:** Looking to source 100 per cent of its raw materials from regenerative agricultural practices.

A6 Supplementary service provision:

This archetype focuses on value creation, capture and/or delivery through providing goods and services that enable nature positive functionality and efficiencies (eg data analytics, natural capital accounting, knowledge management, change management).

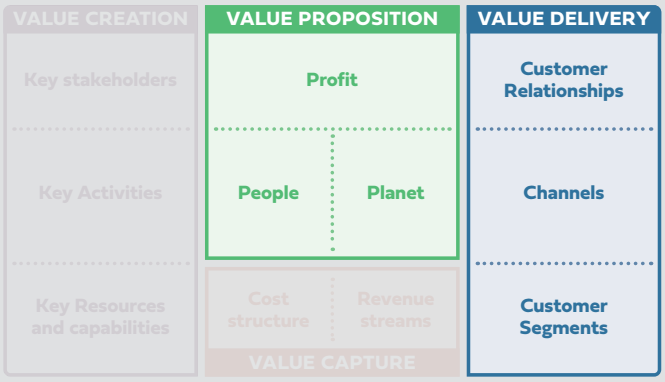


The areas shown highlighted in the Business Model Canvas above relate to: **Archetype 6 – Products and services to minimise nature impact.**

	Company A6
Overview	Uses advanced satellite imagery and AI to automate mapping, measuring and monitoring of habitats, in combination with an online platform for assessment and reporting.
Key activities	• **Habitat surveys and mapping:** Uses aerial and satellite imagery to measure and monitor changes in land use, vegetation cover and urban green spaces. • **Urban biodiversity support:** Provides data to support policies for urban climate resilience and biodiversity restoration, including green roofs and private gardens. • **Biodiversity net gain (BNG) assessments:** Conducts baseline and follow-up assessments for new building projects to ensure compliance with UK regulations. • **TNFD reporting:** Supports Taskforce on Nature-related Financial Disclosures (TNFD) reporting with data on priority sites, baseline mapping, biodiversity units, connectivity and trend analysis.
Nature impact	• Identifies and promotes the integration of green spaces in urban planning. • Helps clients to achieve biodiversity net gain, ensuring new developments positively impact local ecosystems. • Tracks changes over time to support long-term biodiversity and habitat conservation.

A7 Purposeful stewardship:

This archetype focuses on value creation, capture and/or delivery through education, awareness raising, and activities directed at individuals, groups and/or communities with an intention to reduce the impact of their activities on nature, or to positively impact nature.

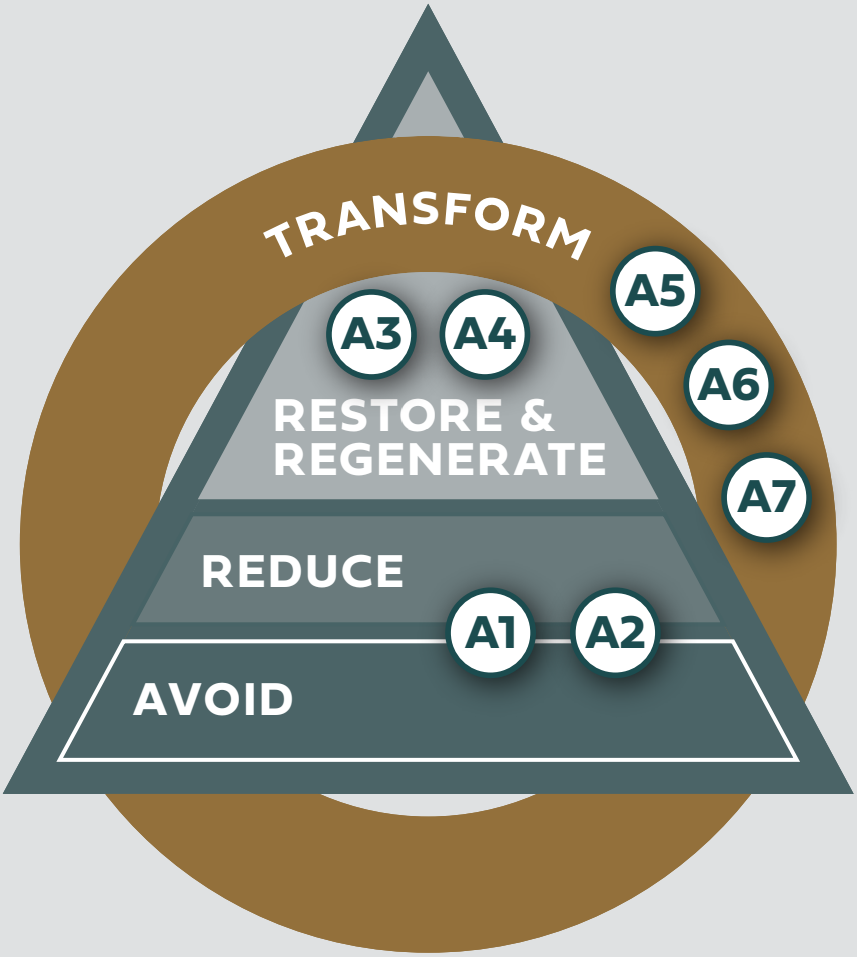


The areas shown highlighted in the Business Model Canvas above relate to: **Archetype 7 – Products and services to minimise nature impact.**

	Company A7
Overview	An app that allows users to plant trees worldwide by engaging with partner brands, promoting reforestation and carbon offsetting.
Key activities	• **Tree planting:** The company partners with reforestation projects to plant trees in various parts of the world, funded by user interactions with eco-friendly brands. • **Reforestation projects:** Collaborates with local communities and environmental organisations to ensure that trees are planted in areas where they can have the most beneficial impact. • **Transparency, longevity and no double counting:** Key guiding principles that are supported by community contracts and open-source online platforms.
Nature impact	• **Reforestation:** Contributes to global efforts to restore forests, which are crucial for biodiversity and carbon sequestration. • **Carbon sequestration:** Trees absorb CO_2, helping to mitigate climate change. • **Habitat restoration:** Planting trees restores habitats for wildlife and supports biodiversity.

Some of these archetypes are conceptualised as avoiding or minimising nature impact *(Archetypes 1 and 2)*, while others as restorative or regenerative ie generating net positive outcomes *(Archetypes 3 and 4)* or as providing the underpinning *(Archetype 5)* or enabling *(Archetype 6 and 7)* architecture. However, they will all need to be operationalised across all sectors for the economy to shift towards a nature positive future. *Figure 6* demonstrates how these archetypes can collectively work to shift the curve.

Figure 6: **Business models' relational contribution to the nature positive goal**



3.4 Key boundary conditions

Although the above typology aims to be sector-agnostic and without hierarchical ordering, some key boundary conditions will affect its operationalisation. These boundary conditions are defined as relevant factors that will impact the accuracy of the theoretical framework, and its applicability and generalisability across contexts[64]. Within the scope of this report, they are critical factors or constraints that define the limits within which the business or a business model operates[65, 66]. Accurately identifying and assessing these conditions will help to ensure that the strategies and actions taken by businesses align with the overarching goal of achieving nature positive outcomes. We identified six key boundary conditions (based on the academic literature, a focus group with industry, business representatives and subject matter experts, and preliminary consultations with businesses). It is important to note that this is a *proposed* list that will be triangulated and iterated based on direct engagement with real-world businesses during subsequent stages of this work package and the wider work of the A-Track project.

1. Size, scale and maturity of business

The size, scale and maturity of a business significantly influence how it can operationalise a nature positive aligned business model[67].

For small businesses, size provides flexibility and the potential for rapid innovation and adoption. Small businesses can integrate nature positive practices quickly and adapt to new environmental insights or regulatory requirements with relative ease. They might adopt the use of more sustainable materials, minimise waste or design eco-friendly products without the constraints faced by larger organisations. However, small businesses often have limited financial and human resources, making it crucial to prioritise nature positive initiatives that offer the highest return on investment. External partnerships and support can be valuable in overcoming these resource constraints.

Large businesses have significant resources and can undertake extensive nature positive projects, such as large-scale renewable energy installations or corporation-wide sustainability programmes. However, because of the complexity of operations and supply chains, consistent implementation across all areas is challenging, especially for companies that produce a variety of different products. Large organisations need robust systems and management strategies to co-ordinate efforts and ensure compliance throughout various departments and geographies.

For businesses operating within one specific locality, nature positive initiatives can be tailored to address specific environmental issues pertinent to their immediate area.

Such initiatives could include local conservation projects, regional supply chain improvements or community-based sustainability programmes. Small and medium-sized local businesses often have close ties with their communities, which can be leveraged to promote nature positive practices and gain local support. In contrast, businesses with national- or international-scale operations must manage a broader scope of environmental impacts. The successful integration of nature positive principles requires co-ordination across multiple regions and regulatory jurisdictions, necessitating the development of standardised practices that align with diverse regulations and cultural expectations. For multi-national businesses, there is the potential for a larger environmental impact but this requires sophisticated monitoring and reporting systems to track progress and manage impacts across different regions.

As far as the maturity of businesses is concerned, start-ups have an opportunity to integrate nature positive principles into their business models from the beginning. This allows them to design operations, products and services with sustainability or nature positivity at their core. By incorporating sustainability from the outset, start-ups can use their nature commitments as a differentiator in the market, attracting customers and investors who value environmental responsibility. Established businesses, on the other hand, face the challenge of transitioning from legacy systems and established practices to a new and different way of doing things, including changes in suppliers, material feedstocks, products or systems – or, indeed, all of these. Implementing nature positive changes may require substantial modifications to existing processes, technologies and supply chains. In established companies, the shift towards a nature positive aligned model involves overcoming resistance and fostering buy-in from all levels of the organisation.

Comprehensive change management strategies are essential to align the organisation's practices with its sustainability goals and to ensure that incremental changes are strategically applied across all operations.

Evolving businesses that are undergoing transformation or strategic change may find it easier to incorporate nature positive principles as part of their broader strategic shifts. Businesses in a phase of evolution have an opportunity to continuously refine and enhance nature positive strategies, adapting to new insights, technologies and regulatory requirements. For these businesses, the transition to a nature positive aligned model can be integrated into their ongoing efforts to innovate and adapt.

2. **Dependency on nature**

The extent to which businesses rely on natural capital depends on their core activities and the sectors in which they operate. A business' dependency on natural capital creates a boundary condition and companies would benefit from recognising and quantifying their reliance on both natural capital stocks (the available natural resources) and flows (the ongoing ecosystem services provided by nature).

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has identified five key direct drivers of nature loss[68]: climate change, land- and sea-use change, pollution, invasive alien species and natural resource extraction. Businesses that have activities, dependencies and risks associated with these drivers will have to adjust their transformation strategies accordingly.

Implications for business models:

- **Stock management:** A business must ensure that its operations do not deplete natural stocks (eg forests, fisheries, freshwater) beyond their ability to conserve and regenerate. This involves implementing sustainable sourcing practices, investing in resource conservation, and considering the full life-cycle impact of products and services[69] yet their interdependencies are generally under-recognized; consequently, they are often treated independently[4,5]. Here, we use modelling and literature assessment to quantify safe and just Earth system boundaries (ESBs. Businesses need to be mindful of their impact well in advance of hitting tipping points to avoid and minimise damage to nature, additionally, they also need to reverse, restore and regenerate it.
- **Flow optimisation:** A business should aim to optimise the flows of the ecosystem services that it relies on. For example, maintaining or enhancing ecosystem health to ensure the continuous provision of services such as fertile soil or clean water. This might involve practices such as agroforestry, wetland restoration or investment in biodiversity conservation.
- **Resilience building:** As identified earlier in this report, nature loss poses a great risk to economic activity and therefore resilience needs to be built against nature-related disruptions. Climate change, habitat destruction and biodiversity loss can all impact the availability of natural resources. As a result, business models must include adaptation and risk mitigation strategies.

3. Sectoral positioning

Business model innovation literature identifies the industry a company operates in as a significant boundary condition[67]. It is particularly relevant for nature-related business model transformations as different sectors have varying levels of impact on and dependency on nature. For example, agriculture, forestry and fisheries are directly dependent on natural ecosystems, whereas sectors such as manufacturing and technology may have indirect dependencies through their supply chains[51].

Implications for business models:

- **Sector-specific strategies:** The business model must be tailored to the specific sector's interaction with nature. In high-impact sectors such as agriculture, the focus might be on regenerative practices and sustainable land use. In contrast, sectors such as technology or finance might focus on enabling or financing nature positive projects.
- **Industry standards and regulations:** The sector in which a business operates dictates certain regulatory requirements and industry standards. Compliance with these will shape how nature positive practices can be integrated. For example, the energy sector may need to adhere to carbon emissions regulations, whereas the food sector may be subject to sustainable sourcing certification requirements.
- **Value chain considerations:** Sectoral positioning also influences the nature of the supply chain. A business must consider how to engage its suppliers and customers in its nature positive journey, particularly in sectors with complex global supply chains. This may require sector-specific partnerships, certification programmes or sustainability commitments from key suppliers.

4. Availability and accessibility of capital and finance

Transitioning to a nature positive aligned business model often requires significant upfront investment. This might include capital for technology upgrades, land restoration, sustainable sourcing practices or even the restructuring of the entire business model.

Implications for business models:

- **Access to finance:** The availability of capital to fund nature positive initiatives is a boundary condition. Businesses must identify appropriate financial instruments, such as green bonds, sustainability-linked loans or impact investing, to support their transformation. The business model must be designed to attract such financing by demonstrating the long-term value and risk mitigation benefits of nature positive practices.
- **Return on investment (ROI) considerations:** The business model should account for the ROI of nature positive investments. This includes not only financial returns but also social and environmental returns, which may attract different types of investors, including those focused on environmental, social and governance (ESG) criteria.
- **Cost management:** Transitioning to nature positive practices may involve high upfront costs, but these can be offset by long-term savings or value creation, such as reduced resource dependency, lower risk of fines or enhanced brand reputation. The business model should include strategies for managing these costs and communicating the value proposition to stakeholders.

5. Innovation and the availability of technological solutions

Nature positive aligned business models often rely on new technologies and innovative approaches to minimise environmental impact. This might involve adopting cleaner production methods, developing circular economy practices, adopting new material feedstocks, or using digital tools for monitoring and managing environmental impacts. Although the technologies to mitigate or modify impacts may be available for some business practices and sectors, in others they currently may not be readily accessible or at a technology readiness level for adoption and/or scale-up (eg e-fuels for aviation, hydrogen for manufacturing in foundation industries).

Implications for business models:

- **Technology adoption:** The business model must include a plan for adopting and integrating new technologies that support nature positive outcomes. These technologies could range from renewable energy solutions to advanced data analytics for tracking biodiversity impacts and adopting new methods to maximise environmental benefits. The boundary condition here is the cost, availability and accessibility of these technologies, and also the company's capacity to deploy them effectively.
- **Innovation and research and development (R&D):** The business model should allocate resources for R&D to explore new nature positive solutions, such as biodegradable materials, regenerative agricultural practices or waste-to-resource technologies. The capacity to innovate will determine the business' ability to remain competitive while advancing nature positive goals.

- **Scalability and flexibility:** Technologies and innovations should ideally be scalable and adaptable to different contexts. The business model should consider how new technologies can be deployed (or adapted to work) across various geographies or product lines, and how they can evolve as new needs and challenges arise.

6. The nature of the drivers for change

The transition to a nature positive aligned business model is influenced by various drivers (motivating factors) and barriers (challenges). These can be internal, such as corporate values and leadership, or external, such as market demand, regulatory pressures or societal expectations. The extent and effectiveness of the change can be directly affected by the nature of the underlying push for change[70]. For instance, if the only motivation for change is compliance with a new regulation, a business is likely to seek the minimum change possible to their operations and strategy. If business leadership or stakeholders are pushing for substantive change, however, the business will be more motivated to implement wide-ranging changes.

Implications for business models:

- **Identifying key drivers:** The business model should be designed to leverage key drivers for change. For example, growing consumer demand for sustainable products can be a powerful driver, encouraging businesses to innovate and differentiate their offerings. Regulatory incentives, such as tax breaks for green initiatives, can also drive change by making nature positive practices more economically viable.
- **Change management:** Effective change management is a boundary condition for successfully implementing nature positive aligned business models. The business must have the capacity to manage the transition, including communicating the need for change, engaging stakeholders and ensuring that all parts of the organisation are aligned with the new goals.

4. Developing a change methodology

Business model change and innovation can be a significant undertaking for a business (regardless of its size, scale and maturity) and its stakeholders, with effects rippling throughout the value network. Because of uncertainties surrounding the processes and outcomes of business model change and innovation, businesses are often reticent to implement these changes in real-world settings[71]. However, several authors argue that experimentation, trial and error, and continuous learning are essential for discovering new business models and understanding the business model as a unit of analysis[72]. These methods, while necessary, require substantial resources (eg financial capital) and come with considerable risks (eg potential failure, loss of market share, which affect economic viability).

It is important to make the distinction between a business incorporating a nature *strategy* and a business embarking on a nature *transition plan/change methodology*. A **nature strategy** (for examples, see ***Section 2.1***, footnote 1) provides a high-level, vision and roadmap for organisations aiming to contribute to a nature positive world. It helps businesses and financial institutions to understand their relationship with nature, set science-based targets, and outline broad goals for addressing material impacts and dependencies on ecosystems. However, although a strategy sets the ambition and direction, it often lacks the specific, operational details required for execution. Without a concrete action plan, even the most well-designed nature strategies may remain aspirational rather than transformative.

This is where a **nature transition plan** becomes essential (eg those being developed by WWF, Transition Plan Taskforce and TNFD)[73, 74, 75].

Building on the foundation of the strategy, it provides a structured and detailed approach for achieving the targets set, shifting business models, and embedding sustainable practices throughout operations and value chains.
A transition plan is critical for turning ambition into action, ensuring that science-based targets are met, biodiversity loss is addressed and governance mechanisms are implemented. By focusing on execution, a nature transition plan enables businesses to make tangible progress, ensuring that nature positive goals are realised in a practical, accountable and measurable way. Nature transition plans can be seen as an evolution of nature strategies that are built on the same principles but provide detailed descriptions of how targets based on materiality assessments are going to be implemented within business operations.

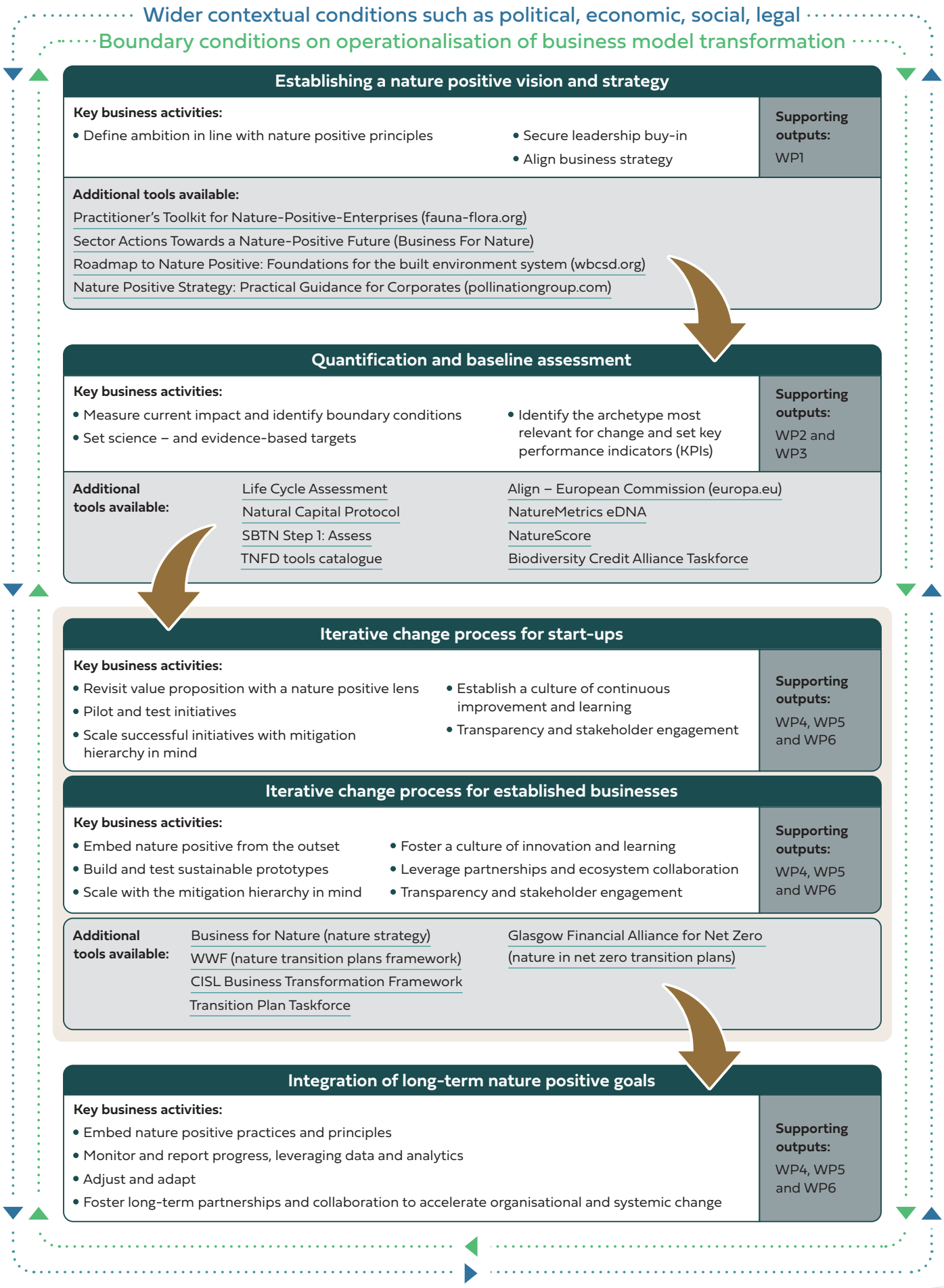
Transforming a business model to become nature positive aligned involves a systematic approach that integrates environmental stewardship into the core operations of the organisation[76]. The following change methodology outlines a comprehensive process to guide businesses in transitioning towards a nature positive aligned model, focusing on the incorporation of nature positive principles, the use of quantification metrics and the application of iterative change processes. This methodology is indicative and will be refined based on business engagement during subsequent stages of this work package. It aligns with the ACT-D framework (which stands for assess, commit, transform and disclose), and borrows from generic business model innovation frameworks and also those focused on sustainability, circularity and regeneration[57, 61, 77, 78].

The first step would involve setting an ambitious nature positive vision, securing leadership buy-in and aligning business strategies with environmental objectives. The next step would be conducting a baseline assessment of a business' environmental impact, using tools such as biodiversity accounting and natural capital assessments to quantify its impacts on ecosystems and the natural environment. Based on these insights, businesses could set measurable, science-based targets that align with global goals for nature, such as achieving net positive impact by 2030. These targets would drive the re-evaluation of supply chains, product offerings and overall business operations to minimise harm and maximise positive environmental contributions.

For established businesses, the transformation process is typically iterative, involving the piloting of nature positive initiatives in selected areas of the business before upscaling them across all activities. During this process, successful initiatives can be identified and refined through adaptive management to ensure ongoing alignment with nature positive principles. For start-ups, embedding nature positive principles can begin at the design stage, integrating sustainability into products and services from the outset. Both approaches emphasise continuous improvement, stakeholder engagement and transparent communication of progress. Long-term success hinges on the business' ability to adjust to shifting environmental and regulatory landscapes, monitor impact through data-driven insights, and collaborate with partners and stakeholders to drive collective action towards a more sustainable future.

The visualisation of this change methodology (which will be further developed during subsequent stages of this work package) is presented in ***Figure 7***.

Figure 7: **Change methodology for nature positive aligned business models**



5 Conclusion

Achieving a nature positive future requires a fundamental transformation of our economic system, moving beyond sustainability towards regeneration and restoration of ecosystems. Such a transformation must include changing the business models that form the building blocks of the system, both because unsustainable, nature harming business models need to be phased out, and to capitaliseon the commercial opportunities from developing new, nature positive aligned business models. This report, as part of the A-Track project, highlights the urgent need for businesses to adopt nature positive practices that contribute to global efforts to halt and reverse nature degradation and biodiversity loss. The proposed typology and framework offer pathways for businesses to reimagine value (and its capture, creation and delivery) in ways that not only avoid, minimise and offset negative impacts but also work towards actively fostering positive outcomes for nature.

Reimagining businesses from the core outwards, starting with an examination of how they aim to make money from their activities, will help deliver alignment between the market-focused, commercial aspects of a business and its ability to deliver other forms of social and environmental value. This has the potential to overcome real or perceived tensions between competing objectives, which are highlighted when an unsustainable business model is accompanied by nature positive actions that fail to address the underlying problems.

However, significant challenges remain to the wider adoption of nature positive aligned business models, including the lack of clear guidance and scalable models. To overcome these barriers, collaboration among policymakers, financial institutions and the private sector will be essential. By aligning business strategies and business models with nature positive principles, companies can reduce their exposure to nature-related risks while also unlocking substantial economic opportunities in the green economy. An increase in nature positive aligned business models could also help to deliver broader and deeper shifts to economic systems, not least because it would result in a group of businesses unafraid to advocate for more ambitious nature policy, safe in the knowledge that their business model would not be threatened. Ultimately, mainstreaming nature positive aligned business models is critical to ensuring ecological, economic and social resilience, supporting the global goals of the Kunming-Montreal Global Biodiversity Framework, and fostering a more sustainable and equitable future for all.

The A-Track project hopes to address these challenges in the future phases of the project. This will include drawing on the work of other work packages to show how data, biodiversity information, natural capital accounting and life cycle assessment can help to deliver business model innovation. As the A-Track project develops the results of this work will feed into an expanded change methodology and provide additional insights as to how the challenges to business model change and integration can be overcome.

Annex 1: List of businesses examined to inform this report

This list is designed to give readers an insight into the types of businesses examined as this report was prepared. It is not a reflection of particular businesses that the authors consider leaders in their field, nor is it intended that these businesses are considered 'model examples' for the archetypes proposed. Even within archetypes, it is recognised that some businesses will be generating more nature positive outcomes than others with similar models; the boundary conditions outlined in ***Section 3.4*** should be considered when examining this list.

In addition to the list of businesses and initiatives identified by CISL's project team in the table, we also looked at the following:

1. Initiatives by established corporations of various sizes and scales, which are available at the sources provided below:
    - Engaging industry in conserving nature: Case studies of biodiversity actions on non-operational lands and seas of companies (IUCN, 2023).
    - ACT-D case studies: Demonstrating Business Action for Nature (Capitals Coalition 2023).
    - Corporate case studies: Leveraging the Roadmap to Nature Positive (WBCSD 2023).
    - Business Case Studies on Integrated on Climate and Nature Action (Business for Nature).
    - NbS in action around the world (Nature4Climate).
2. Entrants and winners from the following innovation challenges from the World Economic Forum's Uplink platform (a technology-driven platform that surfaces early-stage entrepreneurs and enables an innovation ecosystem that seeks to drive systemic change for people and planet):
    - Biodiversity Challenge
    - Regenerative Blue Economy Challenge

COMPANY NAME	DESCRIPTION OF ACTIVITY	PRELIMINARY ARCHETYPE ASSIGNED
Agricool	Uses shipping containers for high-efficiency urban farming	Products and services to minimise nature impact
AgriSound	Offers technology solutions to improve sustainable agriculture practices	Service models to minimise nature impacts
Algenesis	Innovates with fully biodegradable plastics derived from algae	Service models to minimise nature impacts
Akdeniz Koruma Derneği Mediterranean Conservation Society (AKD)	Founded in Izmir, Turkey, in 2012, AKD's mission is to work with local communities to promote sustainable practices and to use science-based approaches to protect this Mediterranean ecosystem	Supplementary service provision
AquiPor Technologies	Develops permeable concrete technology to manage stormwater and reduce urban flooding	Products and services to minimise nature impact
Beaver Trust	Focuses on ecosystem restoration through the reintroduction of native species	Regenerative products and services
Biome Algae	Innovates with algae to create sustainable alternatives for carbon capture	Regenerative products and services
Biome Makers	AgTech company that integrates soil microbiology into agricultural decision-making to optimise farming practices	Supplementary service provision
Bowery Farming	Integrates advanced technologies for sustainable indoor farming	Products and services to minimise nature impact
Bulgarian Society for the Protection of Birds (BSBP)	BSBP owns and operates one of the few nature conservation and information centres in Bulgaria	Purposeful stewardship
Cafédirect	Coffee retailer with a farmer-first and sustainability focus	Products and services to minimise nature impact
Coral Vita	Develops land-based coral farms for large-scale reef restoration projects	Regenerative products and services

COMPANY NAME	DESCRIPTION OF ACTIVITY	PRELIMINARY ARCHETYPE ASSIGNED
Earthly	Works on enhancing carbon sequestration through natural methods	Regenerative products and services
Entomo Farms	Produces food products from crickets, offering sustainable protein alternatives	Products and services to minimise nature impact
Ethio Wetlands and Natural Resources Association (EWNRA)	Established in 2000, EWNRA is a local non-governmental organisation whose environmental and development objectives specifically focus on natural resources and wetlands	Supplementary service provision
Eosta	Distributes organic fruit and vegetables	Products and services to minimise nature impact
Forest Stewardship Council	Certifies sustainable forestry products	Service models to minimise nature impacts
Gentian	A start up proving rural and urban biodiversity mapping	Supplementary service provision
GlaxoSmithKline	Engages in environmental sustainability projects such as reforestation	
Green Estate	Integrates ecological enhancements into urban development	Products and services to minimise nature impact
Grow a Wish	Integrates seeds into greeting cards, which when planted germinate and grow into plants	Products and services to minimise nature impact
Hempitecture	Offers hemp-based insulation products, promoting sustainable building practices	Products and services to minimise nature impact
Holcim	Leading construction industry corporate with wide-ranging nature strategy	Products and services to minimise nature impact
I Say Organic	Offers an extensive range of certified organic products to promote sustainable agriculture	Products and services to minimise nature impact

COMPANY NAME	DESCRIPTION OF ACTIVITY	PRELIMINARY ARCHETYPE ASSIGNED
Interface	Carpet tile manufacturer with a strong sustainability focus (particularly around, for example, water use)	Products and services to minimise nature impact
Intrinsic Exchange Group	Generates revenue by developing financial products that value natural capital	Supplementary service provision
Inversa Leathers	Develops sustainable alternatives to traditional leather materials	Products and services to minimise nature impact
Istituto Oikos	A non-profit organisation operating in Europe and the Global South to safeguard biodiversity and promote the widespread adoption of more sustainable lifestyles	Purposeful stewardship
Jiminy's	Pet food brand that uses cricket protein to reduce environmental impact	Products and services to minimise nature impact
Krill Design	Transforms organic waste into functional and compostable products	Products and services to minimise nature impact
Leon	Generates revenue through a focus on healthy, sustainably sourced fast food	Products and services to minimise nature impact
LettUs Grow	Reduces the environmental impacts of traditional agriculture	Products and services to minimise nature impact
Loam Bio	Uses microbial insights for carbon sequestration and enhanced agriculture	Supplementary service provision
Local Honey Man	Dedicated to bee conservation and sustainable honey production	Products and services to minimise nature impact
Lush Cosmetics	Generates revenue through a circular business model focused on handmade cosmetics	Value chain reconfiguration
Marks & Spencer	Uses sustainable practices in forestry and agriculture within its supply chains	Products and services to minimise nature impact

COMPANY NAME	DESCRIPTION OF ACTIVITY	PRELIMINARY ARCHETYPE ASSIGNED
Metsä Group	Produces wood, pulp and forest products using regenerative practices and funds nature projects	Products and services to minimise nature impact
NatureDots	Combines AI with nature-based systems to enhance sustainable fisheries	Supplementary service provision
NatureMetrics	Directly involved in biodiversity monitoring and enhancement	Supplementary service provision
Network Rail	Engages in habitat restoration and biodiversity enhancement along rail corridors	Regenerative service models
OCEANIUM	Develops biodegradable materials from marine plants	Products and services to minimise nature impact
ProPark Foundation	Romania's primary capacity-building provider for protected areas and conservation; it develops projects and offers consultancy and mentoring services locally, across Europe and globally through networks that aim to develop the capacity of Protected Areas and nature conservation professionals	Supplementary service provision
RSK Group	Generates revenue directly from regenerative activities, restoration and protection of biodiversity	Supplementary service provision
Salesforce	Cloud-based software multinational committed to nature positive outcomes	Products and services to minimise nature impact
SEKEM	Egyptian social entrepreneurship organisation	Purposeful stewardship
Smart Microfarms	Develops scalable microalgae systems for local high-value food production	Products and services to minimise nature impact
SSE	Protects and enhances biodiversity around renewable energy installations	Products and services to minimise nature impact

COMPANY NAME	DESCRIPTION OF ACTIVITY	PRELIMINARY ARCHETYPE ASSIGNED
The Bug Factory	Provides rapidly deployable modular insect farms to turn organic waste into useable protein	Products and services to minimise nature impact
The Eden Project	Generates direct revenue from activities that enhance biodiversity and nature conservation	Regenerative products and services
The Urban Greening Company	Enhances urban biodiversity through infrastructure solutions	Products and services to minimise nature impact
The Wildlife Trusts	Generates revenue from membership fees and donations, which directly funds conservation activities	Regenerative products and services
Three Mushketeers	Converts waste from mushroom production into a flavour-enhancing powder	Service models to minimise nature impacts
Treeapp	Facilitates tree planting and carbon footprint offsetting via a mobile app	Regenerative service models
Unilever	Plans for net zero emissions from products by 2039 and fights against deforestation	Products and services to minimise nature impact
Viva Maris	Focuses on incorporating seaweed sustainably into everyday foods	Products and services to minimise nature impact
Vodafone	Implements eco-friendly site designs in its network infrastructure	Products and services to minimise nature impact
Wildflower Turf	Promotes biodiversity through specialised horticultural products	Products and services to minimise nature impact
World Resources Institute (WRI)	Engages in promoting nature-based solutions through financial instruments	Supplementary service provision
WSP	Generates revenue by developing infrastructure that has a lower impact on nature and the environment	Products and services to minimise nature impact

Bibliography

1 A. Osterwalder and Y. Pigneur, *Business Model Generation: A Handbook for Visionaries, Game Changers and Challengers.* 2010.

2 The Biodiversity Consultancy, 'Mitigation Hierarchy', Net positive and the Mitigation Hierarchy. Accessed: Sep. 12, 2024. [Online]. Available: https://www.thebiodiversityconsultancy.com/our-work/our-expertise/strategy/mitigation-hierarchy/

3 Natural Capital Coalition, 'The path towards the Natural Capital Protocol: a primer for business', 2016. Accessed: Sep. 13, 2024. [Online].

4 Nature Positive Initiative, 'The Definition of Nature Positive', 2023. Accessed: Sep. 24, 2024. [Online]. Available: https://www.naturepositive.org/what-is-nature-positive/

5 T. Begum, 'What is mass extinction and are we facing a sixth one?' Accessed: Sep. 05, 2023. [Online]. Available: https://www.nhm.ac.uk/discover/what-is-mass-extinction-and-are-we-facing-a-sixth-one.html

6 World Economic Forum, 'The Global Risks Report 2024', 14th edition, 2024.

7 World Economic Forum, 'The Global Risks Report 2023', 2023.

8 Taskforce on Nature-related Financial Disclosures, 'Recommendations of the Taskforce on Nature-related Financial Disclosures', 2023.

9 World Economic Forum and AlphaBeta, 'The Future of Nature and Business', 2020.

10 D. Aminetzah *et al.*, 'Nature in the balance: What companies can do to restore natural capital', McKinsey & Company, 2022. [Online]. Available: https://www.mckinsey.com/capabilities/sustainability/our-insights/nature-in-the-balance-what-companies-can-do-to-restore-natural-capital#/

11 United Nations Environment Programme, 'State of Finance for Nature: The Big Nature Turnaround – Repurposing $7 trillion to combat nature loss. Summary for Decision-makers', Nairobi, 2023.

12 S. O. S. E. zu Ermgassen and S. Löfqvist, 'Financing ecosystem restoration', *Current Biology,* vol. 34, no. 9, pp. R412–R417, May 2024, doi: 10.1016/j.cub.2024.02.031.

13 Forum for the Future and WBCSD, 'A Compass for Just and Regenerative Business', 2021.

14 United Nations Convention on Biological Diversity, 'Kunming-Montreal Global Biodiversity Framework', in *Decision adopted by the conference of the parties to the convention on biological diversity,* Montreal, 2022.

15 Diane Holdorf, Akanksha Khatri, and Eva Zabey, 'Every sector must play their part in contributing towards a nature-positive future. Here's how'. Accessed: Sep. 24, 2024. [Online]. Available: https://www.wbcsd.org/news/sector-part-contributing-towards-nature-positive-future/

16 N. M. P. Bocken, C. S. C. Schuit, and C. Kraaijenhagen, 'Experimenting with a circular business model: Lessons from eight cases', *Environmental Innovation and Societal Transitions,* vol. 28, pp. 79–95, Sep. 2018, doi: 10.1016/j.eist.2018.02.001.

17 University of Cambridge Institute for Sustainability Leadership (CISL), 'Net Zero Business Transformation: A framework for accelerating change in an era of turbulence and complexity', Cambridge, UK, 2022.

18 Capitals Coalition, 'Natural Capital Protocol', 2016. Accessed: Sep. 24, 2024. [Online]. Available: https://capitalscoalition.org/capitals-approach/%20natural-capital-protocol/?fwp_filter_tabs=guide_supplement

19 Forum for the Future, 'The Five Capitals - a framework for sustainability'. Accessed: Sep. 24, 2024. [Online]. Available: https://www.forumforthefuture.org/the-five-capitals

20 J. Elkington, 'Accounting for the Triple Bottom Line', *Measuring Business Excellence,* vol. 2, no. 3, pp. 18–22, Jan. 1998, doi: 10.1108/eb025539.

21 A. Joyce and R. L. Paquin, 'The triple layered business model canvas: A tool to design more sustainable business models', *Journal of Cleaner Production,* vol. 135, pp. 1474–1486, Nov. 2016, doi: 10.1016/j.jclepro.2016.06.067.

22 H. Daly, *Towards a steady-state economy*. 1973.

23 D. Meadows, 'Indicators and information systems for sustainable development', 1998.

24 Association for Consultancy and Engineering, 'Measures for successful outcomes: the five capitals approach - a discussion paper'. Accessed: Sep. 24, 2024. [Online]. Available: https://www.acenet.co.uk/media/5151/ace-five-capitals-report-2020.pdf

25 World Economic Forum, 'Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy', 2020.

26 Partha Dasgupta, 'The Economics of Biodiversity: The Dasgupta Review', 2021. Accessed: Sep. 24, 2024. [Online]. Available: https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review

28 UNEP-WCMC, 'New tool allows financial institutions to see their exposure to natural capital risk'. Accessed: Sep. 05, 2024. [Online]. Available: https://www.unep-wcmc.org/en/news/groundbreaking-new-tool-allows-financial-institutions-to-see-their-exposure-to-natural-capital-risk

29 W. Evison, L. Ping Low, and D. O'Brien, 'Managing nature risks: From understanding to action'. Accessed: Sep. 05, 2024. [Online]. Available: https://www.pwc.com/gx/en/issues/esg/nature-and-biodiversity/managing-nature-risks-from-understanding-to-action.html

30 Business for Nature, 'The Business Case for Nature'. Accessed: Sep. 12, 2024. [Online]. Available: https://www.businessfornature.org/businesscase

31 G. C. de Silva, E. C. Regan, E. H. B. Pollard, and P. F. E. Addison, 'The evolution of corporate no net loss and net positive impact biodiversity commitments: Understanding appetite and addressing challenges', *Business Strategy and the Environment,* vol. 28, no. 7, pp. 1481–1495, Nov. 2019, doi: 10.1002/bse.2379.

32 O. Dudok van Heel, 'Let's talk about "regenerative business" not sustainability'. Accessed: Sep. 05, 2024. [Online]. Available: https://www.weforum.org/agenda/2023/03/regenerative-business-sustainability/

33 J. Konietzko, A. Das, and N. Bocken, 'Towards regenerative business models: A necessary shift?', *Sustainable Production and Consumption,* vol. 38, pp. 372–388, Jun. 2023, doi: 10.1016/j.spc.2023.04.014.

34 M. Cerecina, 'Nature Positive Strategy: Practical Guidance for Corporates', *April 2024.*

35 H. Locke *et al.,* 'Three global conditions for biodiversity conservation and sustainable use: an implementation framework', National Science Review, vol. 6, no. 6, pp. 1080–1082, Nov. 2019, doi: 10.1093/nsr/nwz136.

36 Harvey Locke *et al.,* 'A Nature-positive world: The Global Goal for Nature', 2021.

37 E. J. Milner-Gulland, 'Don't dilute the term Nature Positive', Nature Ecology & Evolution, vol. 6, no. 9, pp. 1243–1244, Sep. 2022, doi: 10.1038/s41559-022-01845-5.

38 S. O. S. E. Zu Ermgassen *et al.,* 'Are corporate biodiversity commitments consistent with delivering "nature-positive" outcomes? A review of "nature-positive" definitions, company progress and challenges', *Journal of Cleaner Production,* vol. 379, p. 134798, Dec. 2022, doi: 10.1016/j.jclepro.2022.134798.

39 Business for Nature *et al.,* 'How business and finance can contribute to a nature positive future now', 2022. Accessed: Sep. 06, 2024. [Online]. Available: https://www.businessfornature.org/news/nature-positive-discussion-paper

40 World Business Council for Sustainable Development, 'What does nature-positive mean for business?' Accessed: Sep. 06, 2024. [Online]. Available: https://www.wbcsd.org/resources/what-does-nature-positive-mean-for-business/

41 E. J. Milner-Gulland, 'Everyone's going Nature Positive – but what does it mean?' Accessed: Sep. 06, 2024. [Online]. Available: https://iccs.org.uk/everyones-going-nature-positive-but-what-does-it-mean/

42 IUCN, 'Nature-Positive'. Accessed: Sep. 06, 2024. [Online]. Available: https://iucn.org/our-work/biodiversity/nature-positive

44 Science-based Targets Network, 'SBTN Glossary of Terms', 2023.

45 UNDP, SCBD, and UNEP-WCMC, 'Creating a Nature-Positive Future: The contribution of protected areas and other effective area-based conservation measures', 2021.

46 Nature Positive Initiative, 'What is nature positive'. Accessed: Sep. 06, 2024. [Online]. Available: https://www.naturepositive.org/what-is-nature-positive/

47 J. Lammerant and J. Verhelst, 'Nature positive in a business context: current working definition', EU Business and Biodiversity Platform, 2022. Accessed: Sep. 06, 2024. [Online]. Available: https://circabc.europa.eu/ui/group/da655eff-acfa-4b21-a366-2795d0e7de39/library/e758f73e-c2bb-4b53-92ec-34c5af804a1e/details

48 W. N. S. Arlidge *et al.,* 'A Global Mitigation Hierarchy for Nature Conservation', *BioScience,* vol. 68, no. 5, pp. 336–347, May 2018, doi: 10.1093/biosci/biy029.

49 Hollie Booth, Joe W Bull, and EJ Milner-Gulland, 'Four Steps for the Earth: mainstreaming the post-2020 Global Biodiversity Framework', n.d. Accessed: Sep. 25, 2024. [Online]. Available: https://iccs.org.uk/wp-content/uploads/2023/08/Four-Steps-for-the-Earth_briefing-note_Jan2021.pdf

50 Science-based Targets Network (SBTN), 'Step 4: Act'. Accessed: Sep. 24, 2024. [Online]. Available: https://sciencebasedtargetsnetwork.org/companies/take-action/act/

51 Johan Lammerant, Yann Verstraeten, Jacob Bedford, Annelisa Grigg, and Sharon Brooks, 'Exploring measurement solutions for Nature Positive commitments: a discussion paper from the Align project', forthcoming.

52 R. A. Cares, A. M. A. Franco, and A. Bond, 'Investigating the implementation of the mitigation hierarchy approach in environmental impact assessment in relation to biodiversity impacts', *Environmental Impact Assessment Review,* vol. 102, p. 107214, Sep. 2023, doi: 10.1016/j.eiar.2023.107214.

53 IUCN, 'Measuring Nature-Positive: Setting and implementing verified, robust targets for species and ecosystems (consultation draft)', 2023.

54 World Economic Forum, 'Measuring Nature-positive Outcomes from Business Actions', 2022. Accessed: Sep. 06, 2024. [Online]. Available: https://www3.weforum.org/docs/WEF_Measuring_Nature_positive_Outcomes_from_Business_Actions_2022.pdf

55 Simon Webber, 'How can your business become nature positive?' Accessed: Sep. 12, 2024. [Online]. Available: https://www.creatingtomorrowsforests.co.uk/blog/how-can-your-business-become-nature-positive

56 Business for Nature, 'Sector Actions Towards a Nature-Positive Future'. Accessed: Sep. 24, 2024. [Online]. Available: https://www.businessfornature.org/sector-actions#:~:text=These%20sector%20actions%20are%20built,to%20a%20nature-positive%20world

57 M. Geissdoerfer, D. Vladimirova, and S. Evans, 'Sustainable business model innovation: A review', *Journal of Cleaner Production,* vol. 198, pp. 401–416, Oct. 2018, doi: 10.1016/j.jclepro.2018.06.240.

58 M. Geissdoerfer, S. N. Morioka, M. M. de Carvalho, and S. Evans, 'Business models and supply chains for the circular economy', *Journal of Cleaner Production,* vol. 190, pp. 712–721, Jul. 2018, doi: 10.1016/j.jclepro.2018.04.159.

59 Forum for the Future, 'Growing our future - scaling regenerative agriculture in the UK: accelerating change through collaboration', 2023. Accessed: Sep. 12, 2024. [Online]. Available: https://www.forumforthefuture.org

60 F. Boons, C. Montalvo, J. Quist, and M. Wagner, 'Sustainable innovation, business models and economic performance: an overview', *Journal of Cleaner Production,* vol. 45, pp. 1–8, Apr. 2013, doi: 10.1016/j.jclepro.2012.08.013.

61 S. Evans *et al.,* 'Business Model Innovation for Sustainability: Towards a Unified Perspective for Creation of Sustainable Business Models', *Business Strategy and the Environment,* vol. 26, no. 5, pp. 597–608, Jul. 2017, doi: 10.1002/bse.1939.

62 L. Massa, C. L. Tucci, and A. Afuah, 'A Critical Assessment of Business Model Research', *ANNALS,* vol. 11, no. 1, pp. 73–104, Jan. 2017, doi: 10.5465/annals.2014.0072.

63 M. Lewandowski, 'Designing the Business Models for Circular Economy—Towards the Conceptual Framework', *Sustainability,* vol. 8, no. 1, p. 43, Jan. 2016, doi: 10.3390/su8010043.

64 C. Busse, A. P. Kach, and S. M. Wagner, 'Boundary Conditions: What They Are, How to Explore Them, Why We Need Them, and When to Consider Them', *Organizational Research Methods,* vol. 20, no. 4, pp. 574–609, Oct. 2017, doi: 10.1177/1094428116641191.

65 Darek. M. Haftor and R. Climent Costa, 'Five dimensions of business model innovation: A multi-case exploration of industrial incumbent firm's business model transformations', *Journal of Business Research,* vol. 154, p. 113352, Jan. 2023, doi: 10.1016/j.jbusres.2022.113352.

66 T. K. Bjartmarz and N. M. P. Bocken, 'Sustainable business models and organizational boundaries—A literature review', *Business Strategy and the Environment,* vol. n/a, no. n/a, Jun. 2024, doi: 10.1002/bse.3837.

67 J. V. White, E. Markin, D. Marshall, and V. K. Gupta, 'Exploring the boundaries of business model innovation and firm performance: A meta-analysis', *Long Range Planning,* vol. 55, no. 5, p. 102242, Oct. 2022, doi: 10.1016/j.lrp.2022.102242.

68 IPBES, 'Models of drivers of biodiversity and ecosystem change'. Accessed: Sep. 06, 2024. [Online]. Available: https://www.ipbes.net/models-drivers-biodiversity-ecosystem-change#:~:text=Examples%20of%20direct%20drivers%20of,and%20exploitation%2C%20and%20invasive%20species

69 J. Rockström *et al.,* 'Safe and just Earth system boundaries', Nature, vol. 619, no. 7968, pp. 102–111, Jul. 2023, doi: 10.1038/s41586-023-06083-8.

70 N. M. P. Bocken and T. H. J. Geradts, 'Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities', *Long Range Planning,* vol. 53, no. 4, p. 101950, Aug. 2020, doi: 10.1016/j.lrp.2019.101950.

71 J. D. Thompson and I. C. MacMillan, 'Business Models: Creating New Markets and Societal Wealth', Long Range Planning, vol. 43, no. 2, pp. 291–307, Apr. 2010, doi: 10.1016/j.lrp.2009.11.002.

72 C. Baden-Fuller and M. S. Morgan, 'Business Models as Models', *Long Range Planning,* vol. 43, no. 2, pp. 156–171, Apr. 2010, doi: 10.1016/j.lrp.2010.02.005.

73 WWF-UK, 'Nature in transition plans: why and how?', 2023. Accessed: Sep. 12, 2024. [Online].

74 Transition Plan Taskforce, 'The Future for Nature in Transition Planning – an advisory paper from the TPT's Nature Working Group', 2024. Accessed: Sep. 12, 2024. [Online]. Available: https://transitiontaskforce.net/wp-content/uploads/2024/04/The-Future-for-Nature.pdf

75 Gina Gambetta, 'TNFD forming working group on nature in transition plans'. Accessed: Sep. 12, 2024. [Online]. Available: https://www.responsible-investor.com/tnfd-forming-working-group-on-nature-in-transition-plans/

76 H. Booth, E. J. Milner-Gulland, N. McCormick, and M. Starkey, 'Operationalizing transformative change for business in the context of nature positive', Open Science Framework, preprint, Jun. 2023. doi: 10.31219/osf.io/vk2hq.

77 Y. Snihur and N. Bocken, 'A call for action: The impact of business model innovation on business ecosystems, society and planet', *Long Range Planning,* vol. 55, no. 6, p. 102182, Dec. 2022, doi: 10.1016/j.lrp.2022.102182.

78 P. Spieth, D. Schneckenberg, and J. E. Ricart, 'Business model innovation – state of the art and future challenges for the field', *R&D Management,* vol. 44, no. 3, pp. 237–247, Jun. 2014, doi: 10.1111/radm.12071.

Additional references from Table 1

i N. M. P. Bocken, S. W. Short, P. Rana, and S. Evans, 'A literature and practice review to develop sustainable business model archetypes', *Journal of Cleaner Production,* vol. 65, pp. 42–56, Feb. 2014, doi: 10.1016/j.jclepro.2013.11.039.

ii M. Geissdoerfer, D. Vladimirova, and S. Evans, 'Sustainable business model innovation: A review', *Journal of Cleaner Production,* vol. 198, pp. 401–416, Oct. 2018, doi: 10.1016/j.jclepro.2018.06.240.

iii J. Malinauskaite and H. Jouhara, 'Chapter 3 - Sustainable business models: Components, drivers and barriers', in *Sustainable Energy Technology, Business Models, and Policies,* J. Malinauskaite and H. Jouhara, Eds., Elsevier, 2024, pp. 67–97. doi: 10.1016/B978-0-443-18454-3.00008-4.

iv N. M. P. Bocken and T. H. J. Geradts, 'Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities', *Long Range Planning,* vol. 53, no. 4, p. 101950, Aug. 2020, doi: 10.1016/j.lrp.2019.101950.

v N. Abdelkafi and K. Täuscher, 'Business Models for Sustainability From a System Dynamics Perspective', *Organization & Environment,* vol. 29, no. 1, pp. 74–96, Mar. 2016, doi: 10.1177/1086026615592930.

vi S. N. Morioka, I. Bolis, S. Evans, and M. M. Carvalho, 'Transforming sustainability challenges into competitive advantage: Multiple case studies kaleidoscope converging into sustainable business models', *Journal of Cleaner Production,* vol. 167, pp. 723–738, Nov. 2017, doi: 10.1016/j.jclepro.2017.08.118.

vii H. Knudson and M. Keitsch, 'Helping Business Contribute to a Sustainability Transition: Archetypes of Business Models for Sustainability', in *Business Transitions: A Path to Sustainability: The CapSEM Model,* A. M. Fet, Ed., Cham: Springer International Publishing, 2023, pp. 223–237. doi: 10.1007/978-3-031-22245-0_22.

viii S. Evans *et al.,* 'Business Model Innovation for Sustainability: Towards a Unified Perspective for Creation of Sustainable Business Models', *Business Strategy and the Environment,* vol. 26, no. 5, pp. 597–608, Jul. 2017, doi: 10.1002/bse.1939.

ix K. Höse, A. Süß, and U. Götze, 'Sustainability-Related Strategic Evaluation of Business Models', *Sustainability,* vol. 14, no. 12, 2022, doi: 10.3390/su14127285.

x P. Rosa, C. Sassanelli, and S. Terzi, 'Towards Circular Business Models: A systematic literature review on classification frameworks and archetypes', *Journal of Cleaner Production,* vol. 236, p. 117696, Nov. 2019, doi: 10.1016/j.jclepro.2019.117696.

xi L. Strupeit, N. Bocken, and W. Van Opstal, 'Towards a Circular Solar Power Sector: Experience with a Support Framework for Business Model Innovation', *Circular Economy and Sustainability,* vol. 4, no. 3, pp. 2093–2118, Sep. 2024, doi: 10.1007/s43615-024-00377-3.

xii M. Lewandowski, 'Designing the Business Models for Circular Economy—Towards the Conceptual Framework', *Sustainability,* vol. 8, no. 1, p. 43, Jan. 2016, doi: 10.3390/su8010043.

xiii M. Hina, C. Chauhan, P. Kaur, S. Kraus, and A. Dhir, 'Drivers and barriers of circular economy business models: Where we are now, and where we are heading', *Journal of Cleaner Production,* vol. 333, p. 130049, Jan. 2022, doi: 10.1016/j.jclepro.2021.130049.

xiv N. M. P. Bocken, C. S. C. Schuit, and C. Kraaijenhagen, 'Experimenting with a circular business model: Lessons from eight cases', *Environmental Innovation and Societal Transitions,* vol. 28, pp. 79–95, Sep. 2018, doi: 10.1016/j.eist.2018.02.001.

xv M. Geissdoerfer, M. P. P. Pieroni, D. C. A. Pigosso, and K. Soufani, 'Circular business models: A review', *Journal of Cleaner Production,* vol. 277, p. 123741, Dec. 2020, doi: 10.1016/j.jclepro.2020.123741.

xvi J. Konietzko, A. Das, and N. Bocken, 'Towards regenerative business models: A necessary shift?', *Sustainable Production and Consumption,* vol. 38, pp. 372–388, Jun. 2023, doi: 10.1016/j.spc.2023.04.014.

xvii Forum for the Future and WBCSD, 'A Compass for Just and Regenerative Business', 2021.

xviii N. Terrey, 'How to create regenerative businesses? An integrated mindset and business model design approach'. Accessed: Oct. 04, 2024. [Online]. Available: https://www.thinkplaceglobal.com/articles/how-to-create-regenerative-businesses-an-integrated-mindset-and-business-model-design-approach/

xix L. Drupsteen and I. Wakkee, 'Exploring Characteristics of Regenerative Business Models through a Delphi-Inspired Approach', *Sustainability,* vol. 16, no. 7, 2024, doi: 10.3390/su16073062.

xx S. Caldera, S. Hayes, L. Dawes, and C. Desha, 'Moving Beyond Business as Usual Toward Regenerative Business Practice in Small and Medium-Sized Enterprises', *Frontiers in Sustainability,* vol. 3, 2022, doi: 10.3389/frsus.2022.799359.

xxi C. Marquis, 'How Regeneration Is Redefining Business', *Stanford Social Innovation Review,* vol. 22, no. 3, pp. 58–66, 2024, doi: 10.48558/D7PY-Q475.

A-Track

A-Track is a four-year, €11 million project that will accelerate action for nature by business, financial institutions and government.

A-Track brings together leading thought leaders and practitioners who have been driving change in the measurement and valuation of natural capital and biodiversity in business, finance and government.

Partners have led the development or implementation of guidelines and standards for measurement of nature impacts and dependencies for improved decision-making, including: biodiversity footprinting, natural capital assessment and accounting, and business models and finance that contribute to nature positive outcomes.

Find out more at: **a-track.info**

Project partners:

vito

CAPITALS COALITION

tecnalia
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

oppla

Fraunhofer

IDEEA Group

University of Stuttgart
Institute for Acoustics and Building Physics
Life Cycle Engineering GaBi

UN environment programme WCMC

UNIVERSITY OF CAMBRIDGE
CISL Cambridge Institute for Sustainability Leadership

ICAEW

WBCSD World Business Council for Sustainable Development

Project funded by:

Co-funded by the European Union

This project has received funding from the European Union's Horizon Europe research and innovation programme under the grant agreement number 101082268.

UK Research and Innovation

This work was funded by UK Research and Innovation (UKRI) under the UK government's Horizon Europe funding guarantee [101082268].

Project funded by

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Education, Research and Innovation SERI