STUDY FOR 2050NOW

If you destroy nature, you destroy the economy [i]

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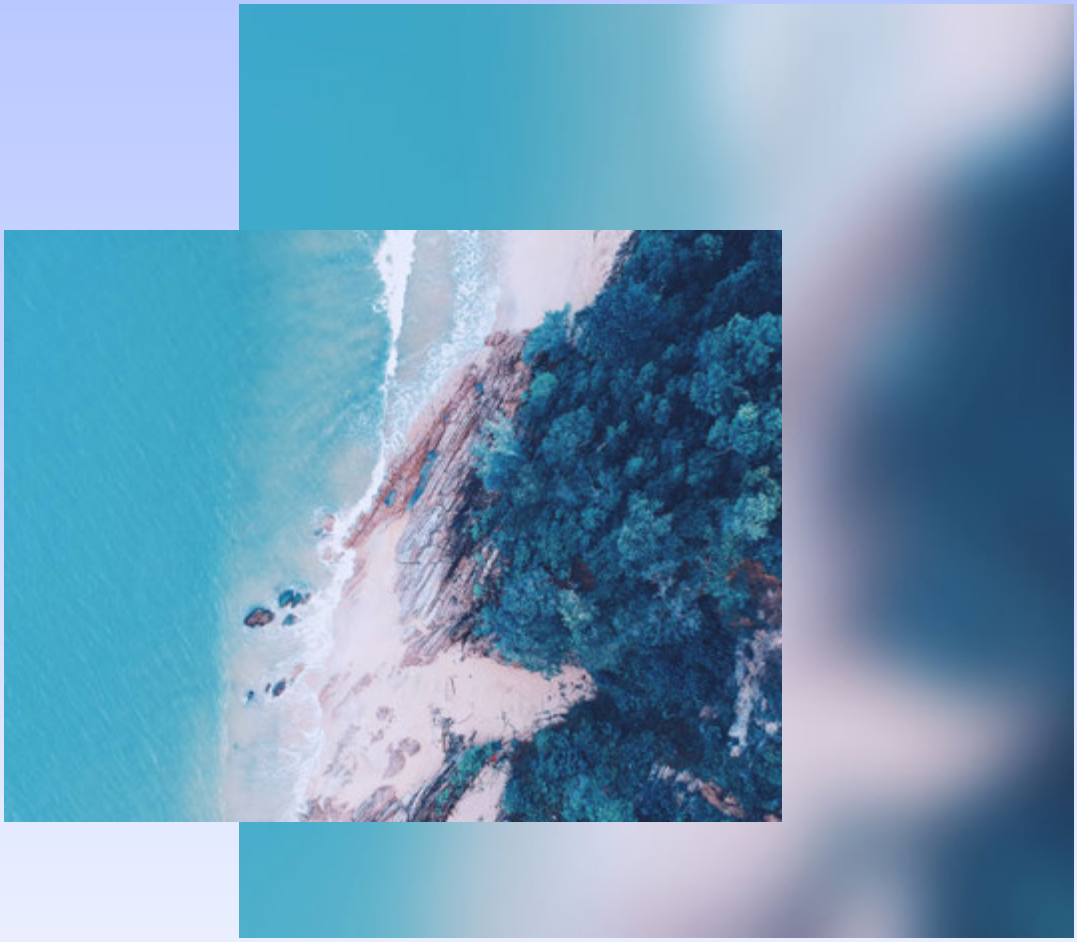


JANUARY 6TH, 2024

Summary

If you destroy nature, you destroy the economy[ii]

> *"What is man in nature? A nothingness in relation to the infinite, a whole in relation to nothingness, a middle point between nothing and everything, infinitely far from understanding the extremes. The end of things and their principles are invincibly hidden from him in an impenetrable secret, equally incapable of seeing the nothingness from which he was drawn and the infinity in which he is engulfed.[iii]"*
>
> — **Blaise Pascal**

Introduction: starting from experience on the ground

The six founding companies of the 2050NOW initiative have made **significant progress over several years in addressing the degradation of nature and its impact on their operations**[iv]**.** We found it valuable to start with their experiences, made richer by the diverse range of industries involved, even within each company[v]. While these experiences do not cover every aspect of the issue, nor all companies (small and medium size businesses are not included), we can extract useful lessons while also drawing from a wide range of sources[vi].

Firstly, **scientific research,** particularly from IPBES[vii] – which, for nature, is akin to the IPCC for climate – has helped these companies understand the seriousness of the challenge and act systematically, recognising that **both biodiversity and climate change deserve equal attention** (Section 1 – What does the science say?).

Secondly, businesses have recognised the **strategic importance of biodiversity, considering the risks to their business models and the opportunities for sustainable transformation** (Section 2 – *Why act*?).

Finally, these companies have **begun implementing efforts across various aspects of their organisations**, including leadership involvement, employee engagement and training, innovation, and product transformation. They have also tackled specific issues, such as water management, soils or deforestation, and **collaborate with many external partners**. These experiences can help answer the question, "*How do we meet the challenge?"* (Section 3).

Much, of course, is still to be done. **Biodiversity generally receives less attention than climate**. Warnings from scientists, echoed by insurers or the European Central Bank, often go unheard. Under different pressures, public authorities sometimes lack coherence and consistency. Globally, strict environmental laws are rare, which contributes to the view that European standards are overly stringent. Certain harms to nature continue to be tolerated, or even encouraged by harmful subsidies, as if these actions had no impact on public health or the planet. This has led us to consider the need to examine the *evolving context* (Section 4).

What does the science say about the state of nature?

Scientific research, and the political conclusions drawn from it by organisations like the tions, indicate that **we are already living in an overexploited world where it is urgent to reduce our carbon and environmental footprints**. Science calls for humility, given our incomplete understanding of life on Earth, and urges an ethical approach.

1. Limited, overexploited natural resources

For too long, we have extracted natural resources, polluted soils and oceans, and produced waste without considering future consequences. According to scientists, the planet is experiencing its **6th known mass extinction**, driven by human activity.

The founding partners of 2050NOW refer, in particular, to:

- The United Nations' **Sustainable Development Goals** (SDG) (Veolia ESG report 2024, Engie, BNPP).
- The above-mentioned **IPBES** reports, in particular two analytical tools that they contain:
  - **Ecosystem services** (such as supplies, regulation, cultural benefits, and all the forms of support that nature provides for life);
  - The **five main human-driven pressures**: land and sea use change, overexploitation of natural resources, climate warming, pollution, and the spread of invasive species. This serves as a valuable "analysis filter" (BNPP, Engie, Bouygues);
- The "**Planetary Boundaries**" framework[viii] by the Stockholm Resilience Centre (Professor Rockström). This approach highlights that climate is just one aspect of nature's transformation, alongside soil degradation, water scarcity, and air pollution;
- The **OREE CGDD** report on *"Strategic adoption of sufficiency by businesses*[ix] (May 2024);

The circularity of natural cycles (SNCF) and regeneration (LVMH, Engie) are also highlighted. These concepts underline the unsustainable nature of the exponential consumption of fossil fuels and resources in extractive (or predatory) economies.

Other studies align with the research referenced by the companies in the 2050NOW initiative. In the 1960s, American scientist Rachel Carson sounded the alarm on the dangers of pesticides for birds and humans in her bestseller **Silent Spring**[x]. We can also mention the **Dasgupta Review on the Economics of Biodiversity,** written in 2021 by Sir Partha Dasgupta, Emeritus Professor at the University of Cambridge, for the UK Treasury[xi]. This in-depth review highlighted that we are demanding more from nature than it can sustainably provide.

The latest WWF report is objectively alarming.

WWF Living Planet report 2024[xii] A system in peril

One sentence in this report sums up the severity of the issue: "*It is no exaggeration to say that what happens **in the next five years** will determine the future of life on Earth.*"

The report also states,

> *"Nature is being lost – with huge implications for us all. Biodiversity sustains human life and underpins our societies. Yet every indicator that tracks the state of nature on a global scale shows a decline. Over the past 50 years (1970–2020), the average size of monitored wildlife populations has shrunk by 73%, as measured by the Living Planet Index (LPI). This is based on almost 35,000 population trends and 5,495 species of amphibians, birds, fish, mammals and reptiles. Freshwater populations have suffered the heaviest declines, falling by 85 %, followed by terrestrial (69 %) and marine populations (56 %)". "Globally, over half of GDP (55 %) – or an estimated US$58 trillion – is moderately or highly dependent on nature and its services".*

Some scientists refer to a new era. **We may have left the Holocene and entered the "Anthropocene," where human activity endangers the conditions necessary for life on Earth**. This concept, introduced by Nobel Prize-winning chemist Paul Crutzen in 2002, is now widely recognised. Professor Dasgupta, mentioned earlier, speaks of a "*global economy in the Anthropocene*."[xiii] Will Steffen and his co-authors have stated, "*the impact of humans on key planetary processes has become so profound that it has moved the Earth out of the Holocene – the period that allowed agriculture, settlement, and the social and technological development of complex human societies*[xiv]."

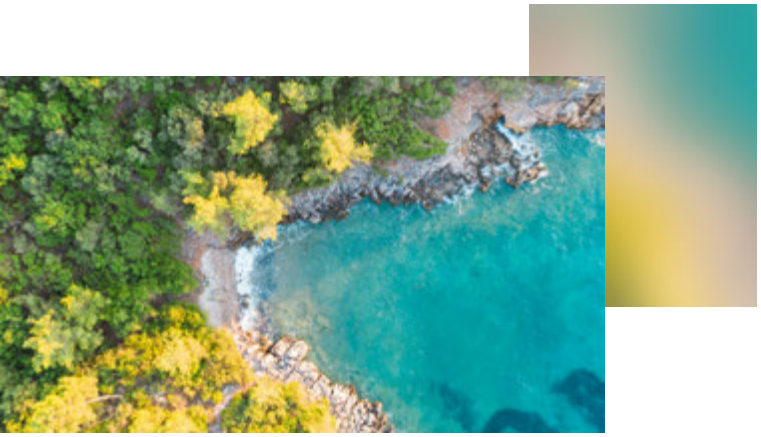
In 2019, a group of 15,000 scientists issued a "warning to humanity" to remind us that the unchecked consumption of a growing global population, on a planet with limited resources and capacity to absorb pollution, now poses an existential threat.[xv]

Finally, as the COVID-19 pandemic demonstrated, the economy can suffer from a deterioration in health conditions. H**uman health depends on preserving nature**, as several treatments are based on plants. The destruction of natural habitats can also cause viruses to spread by crossing species barriers. Among the many reasons to protect nature, preventing health risks is a significant one; this has been highlighted by several of 2050NOW's partner companies.

These businesses all highlight a key point: **the connection between tackling climate change and preserving biodiversity**. "*Biodiversity loss and climate change must be addressed together to meet international climate and environmental ambitions*" (BNPP). "*The issue of biodiversity is identified as strategic for the Group, on a par with climate*" (Bouygues). "***Biodiversity, water, climate: everything is interconnected***" (LVMH). A document from Vivae[xvi], a company supported by Veolia, refers to the "***twin crises of climate and biodiversity***."

2. Preserving both climate and nature

It is essential to work on both fronts, considering both synergies and potential trade-offs. Natural areas (soils, mangroves, forests as well as oceans) serve as carbon sinks as well as reservoirs of biodiversity. However, these two issues are not always systematically linked, as jointly advocated by the IPCC and IPBES. As Philippe Grandcolas (CNRS) points out, some awareness-raising tools overlook nature altogether (for example, the film *Don't Look Up*). Although this separation cannot be justified, several factors explain it.



Political awareness has been slow to develop. The Paris Agreement on climate (following the Kyoto Protocol) dates back to 2015. It was not until 2022 that the Kunming-Montreal Global Biodiversity Framework was adopted, which is somewhat equivalent to the Paris Agreement for biodiversity. We will return to this in Part III.

In general, there is **greater awareness of the "net zero" transition than for nature preservation.** For example, authorities highlighted the role of finance in the fight against climate change as early as 2015, notably through a speech by Mark Carney[xvii], then Governor of the Bank of England, followed by efforts at the One Planet Summit in December 2017. However, with a few exceptions, they remain more reluctant to tackle the issue of biodiversity head-on[xviii]. For example, neither the report drafted by Enrico Letta for the European Council on the European internal market[xix] nor the one Mario Draghi submitted to the President of the EU Commission on Competitiveness[xx] in September 2024—both studies of very high quality—address issues of nature and biodiversity, even though decarbonisation is central to their thinking.

Moreover, **the complexity of the issue can be off-putting**. Climate change appears, at least on the surface, easier to measure thanks to the tonne of CO^2—a unit that is globally applicable. In contrast, biodiversity indicators are necessarily varied, local, and specific, even though we must not forget that nature also provides services on a global scale: for instance, trees and soils sequester CO^2 produced worldwide. Nature is a global common good expressed in many forms at the local level. The interactions between nature and climate, as well as between different ecosystems and species, are complex and often challenging to grasp. It is precisely this multifaceted nature of life that underpins both the magnificence and the challenges of conservation. **However, complexity should not become an excuse for inaction. Both harm to nature and biodiversity gains can indeed be measured.**

How can the living world be measured?

In the format of this study, we do not aim to catalogue all available methodologies or delve into excessive technical detail. However, it is important to note that **such methodologies exist and are gradually being refined**.

The **Global Biodiversity Score (GBS) by CDC Biodiversité**[xxi]. is one such tool. The GBS establishes a link between economic activities and the main pressures exerted on biodiversity. Calculating the biodiversity footprint of a company or financial actor using the GBS involves quantitatively linking their direct activities and/or value chain to impacts on biodiversity. The footprint is calculated in two steps: evaluating the contribution of economic activity to these pressures, and analysing the impact of these pressures on biodiversity, quantified in MSA.km² (Mean Species Abundance per square kilometre). This GBS metric describes ecosystem integrity and the affected area. Several of the companies studied, along with other French businesses, have utilised it. This is the case with LVMH, for example, through its LIFE 360 programme. The group's many *maisons* (houses) aim to improve the annual measurement of their impact and contribute to enhancing methodologies by sharing their results with the scientific community.

The group also supports the **Science-Based Targets for Nature (SBTN**) initiative, which is still under development but offers promising prospects, such as testing phases for cashmere in Mongolia and viticulture in Cognac. It is noteworthy that companies are actively participating in the creation and improvement of such tools.

The **Task Force on Nature-related Financial Disclosures (TNFD)** [xxii], in which several founding members of 2050NOW took part, has developed a methodology called **LEAP**. This framework allows organisations to *locate* their interaction with nature, *evaluate* dependencies and impacts, *assess* risks and opportunities, and *prepare* to address these issues, including by publishing disclosures on the materiality of their connection with nature.

As previously mentioned, several companies also use the "five pressures" and the eighteen ecosystem services identified by IPBES as their analytical framework.

In the absence of a universally applicable method, the key is to **ensure that any methodology for measuring biodiversity adheres to rigorous criteria**, such as transparency, data accessibility, and third-party verification. This principle underpins the approach taken by the International Panel for Biodiversity Credits (IAPB). Co-chaired by Dame Amelia Fawcett and Sylvie Goulard, the panel produced a governance framework for biodiversity credit generation in October 2024.[xxiii]

Nature will not wait for us to solve the climate issue. On the contrary, rising temperatures are severely damaging life on Earth. They risk accelerating the degradation of ecosystems, with forests weakened by heat, for example, playing less of their role as carbon sinks, while defending nature (such as preserving natural floodplains near rivers) can help mitigate the effects of climate events. Ursula von der Leyen, a physician, has often used the metaphor of fever, is a sign of illness for humans, to emphasise how much climate change entails suffering for nature.

That is why, **despite the complexity, action must be taken as soon as possible, with measurable targets that can be refined through experience.** There is no point in striving for perfection in such a new field that lacks relevant precedents.

The approach can be **both pragmatic and rigorous**. For example, the companies involved in 2050NOW set short-term goals related to water consumption, recycling materials, cutting plastic use in packaging, or reducing noise from their activities. It is still necessary for the timeframes to be clear, the results to be monitored, and for suppliers to be willing to follow suit. Indeed, nature protection cannot be the sole responsibility of large groups like those that founded 2050NOW. Action must involve society as a whole. Many SMEs and mid-sized companies are already making remarkable efforts, though these are rarely highlighted in the media, as the most impactful actions are not always spectacular. In France, 15,000 of these businesses are united under **Impact France**, a network of entrepreneurs spread across the country. Its mission is "*to realign the economic interests of businesses with the common good in order to build a robust, just economy that respects planetary limits.*"[xxiv]

Impact France

A manifesto with 4 pillars.

Sobriety:

Impact France supports "*measures that encourage businesses to reduce their resource consumption, focus on products with high social and ecological value, and direct their innovations towards meeting needs rather than creating new ones, in order to integrate planetary limits into business models.*"

Common good:

For "*budgetary and fiscal policies that guarantee funding for solidarity, public services, and common goods, while encouraging businesses to engage in ecological and social transition through the conditionality of public aid, calls for tenders, and behavioural taxation.*"

Sharing:

The promotion of "*diversity, parity, equity, and inclusion at the heart of their operations,*" as well as "*ethical and shared governance,*" including "*a fair and transparent distribution of value with all their stakeholders.*"

Transparency:

Through both "*intelligible product and service labelling*" and reliable, accessible, auditable, and comparable non-financial information, enabling consumers, employees, public authorities, investors, and businesses to make informed choices.

An initiative of this kind is crucial not only for the message of responsibility it conveys but also for the network of territories that only SMEs are able to ensure.

In public debate, phrases like "it's not realistic" or "we can't move that fast" are often heard. These reservations are understandable, but the actions of companies of all sizes, alongside NGOs, local authorities, and citizens, show that progress is possible and … indispensable as **no one can grant humanity more time, or more comfort, to complete the transformation.** We have already wasted decades since the Earth Summit in Rio in 1992. It is uncertain whether the time requested would be used wisely.

Our behaviours must change, as **the longer we wait, the higher the cost of trans-formation,** both for the climate and for nature, as pointed out in the afore-mentioned study by Sir Partha Dasgupta and confirmed by the European Central Bank[xxv]. **Insurers are also issuing warnings that the business world, like politicians, should take more seriously.** In 2015, Henri de Castries, then head of Axa, had already warned: "

> ***A two-degree increase in global temperature may still be insurable, but (…) a four-degree rise is not.***[xxvi]"

Yet, based on IPCC scenarios, French authorities have chosen, for adaptation planning, to consider a temperature trajectory that could reach four degrees by 2100[xxvii]. His successor, Thomas Buberl, reiterated this warning at the Aix-en-Provence economic forum in July 2024. For him, the model underpinning our abundance is no longer sustainable, and natural disasters are now more frequent and closer to home. Similarly, Oliver Bäte, CEO of Allianz, distinguishes between accidental risks, which can still be insured, and systemic risks that insurers can no longer cover: *"For example, if you assume a flood occurs every hundred years, you can adjust the insurance premium to keep it affordable. However, if that risk materialises every ten years, the premium becomes unsustainable (…). A large part of climate change-related risk raises the question of insurability, unless we drastically change our way of life."* He concluded: *"We need a discussion with policymakers on the cost of risk for society*[xxviii]*."* In a technical paper, the European Insurance and Occupational Pensions Authority (EIOPA) also began to address issues related to nature-related risks to see how insurers can invest in prevention and calculate their own risks[xxix].

We are entering a world that, due to human action (and inaction), is already partly uninsurable. Tax-funded natural disaster schemes will not be enough to compensate for the failure of the private sector if nothing is done to halt climate change and biodiversity loss. **Being "realistic" means recognising the urgency and scale of the transformation that must take place. Solutions already exist that must be "effective and economically viable"**[xxx] ; others may emerge from collective mobilisation, from the global level down to the local scale.

Transformation requires, in particular, greater transparency regarding the available data on the impact on nature and our dependence on it. It is crucial that both financial and non-financial companies systematically and diligently publish their data, as required by CSRD legislation, as this issue is "material". The implementation of the CSRD directive in the European Union is not always straightforward, but reducing it to a bureaucratic exercise would be disastrous. In a market economy, transparency is essential. It enables investors and managers to make informed decisions and helps clients and consumers find their way.

Simply publishing climate data not only falls short but also ignores the **challenging trade-offs** that may exist. For example, the production of electric batteries requires minerals whose extraction causes environmental damage; or the installation of wind turbines can alter land areas, change landscapes, or impact marine natural spaces. **Fortunately, synergies also exist.** For instance, maintaining a living ecosystem (soil, wetland, forest, ocean) ensures it remains a more effective carbon sink. To those tempted to plant hectares of trees of the same species to capture CO^2, scientists remind us that the poorest ecosystems are the most fragile. They are less capable of playing the expected role[xxxi]. Regenerative agriculture, defined as *"an agriculture capable of regenerating soil health and ecosystem functions (biodiversity, water cycle) while ensuring socio-economic stability for stakeholders (farmers, communities) and producing quality raw materials"* (LVMH), not only prevents soil warming and degradation but also reduces fuel consumption on farms due to the cessation of spreading practices, thereby lowering CO2 emissions.[xxxii]. It is rare for solutions that are good for biodiversity not to be good for the climate. The opposite is less often true.

3. Science and awareness

Warnings from scientists, although clear on the severity of biodiversity loss, are not always heeded. This is all the more concerning because the limits of our knowledge should encourage humanity to adopt cautious behaviour. Ultimately, however valuable science may be, it cannot absolve us of our ethical responsibilities.

Science ignored

Ignorance and disinformation, often driven by political agendas or the pursuit of maximum profit, tend to undermine scientists' messages, a topic we will revisit. Just as anti-vax movements challenge medical expertise, others (or sometimes the same groups) deny the seriousness of environmental damage, thereby misleading the public. **It is easy to caricature necessary reforms that disrupt established habits or entitlements.** For example, "zero soil artificialisation" policies are understandably challenging for local authorities to implement. But how can we deny that floods are increasing due to erosion linked to urban sprawl, deforestation, and building homes in flood-prone areas? The disaster near Valencia, Spain, in late October 2024 is a tragic reminder that artificialisation, combined with extreme weather events, can have severe consequences.

Similarly, the transformation of the agricultural model to make it less intensive is sometimes portrayed, even in serious publications, as posing a risk of "starving the planet"[xxxiii]. Instead, it is the risk of declining yields due to the disappearance of pollinators and the degradation of soils—consequences of intensive agriculture—that should be raising alarm.

The ground is especially receptive since mistakes may have been made in the past.

In developing countries, there is a widespread sentiment that the plundering of the planet was driven by Westerners with their contempt for ancestral knowledge and their predatory behaviour. Indigenous peoples, who see themselves as an integral part of nature, view it not as a source of profit but as a nurturing mother ("Mother Earth"). They attend the "university of the forest," as stated by Amazonian Chief Almir Surui (a member of the IAPB panel). This vision of a "spontaneous balance" in nature is not unanimously accepted among scientists[xxxiv]. Nevertheless, it regularly resurfaces in North-South discussions.

Even in developed countries, perspectives are shifting. **Some traditional practices, previously abandoned, are now being encouraged again**. For example, in France, for several decades, hedgerow removal was promoted to support land consolidation for mechanisation. Their role in protecting crops from certain diseases is now better understood. Hedgerow preservation and replanting are recommended, as seen in the French national 2030 biodiversity strategy adopted in 2023. Yet their destruction is till ongoing.

The limits of knowledge

The challenge lies in **the need to listen to scientists while recognising the limits of human knowledge**. Science provides evaluations; it calculates probabilities and incentivizes us to behave in a reasonable way; it does not predict the future. The best scientists are often modest.

Alex Antonelli, Director of Science at the prestigious Royal Botanic Gardens, Kew, describes biodiversity as a "hidden universe," as vast as the cosmic galaxies revealed by the Hubble telescope[xxxv]. his perspective echoes Blaise Pascal's vision of humanity positioned between the universe and the infinitely small, emphasising our limited understanding of the world around us[xxxvi] (see epigraph).

According to Philippe Grandcolas (CNRS), **we must avoid focusing solely on the most appealing or familiar species**, which, unfortunately, attract the majority of research attention. **Life encompasses a vast array of creatures**, including insects (which are essential for pollination), fungi (crucial allies of trees), earthworms (vital for sustainable agriculture), and thousands of terrestrial and marine organisms nestled in plankton and the ocean depths. For Professor Dasgupta, too, biodiversity is largely "invisible and silent."

We struggle to grasp biodiversity's true value, partly because **it has an "*intrinsic value*" that is independent of any value assigned by humans,** and partly because the state of our knowledge

restricts our vision. Some species, for instance, may one day prove more valuable to the pharmaceutical industry than we realise today. According to Grandcolas, if we attempt to assess biodiversity's worth, we distinguish between the value of services already provided and the so-called "option value." However, not all current or potential services are known.

Companies face similar challenges: "It is difficult to act on an issue without all the information," as stated in one of our discussions. While this is true, **despite any doubts the urgency of the situation demands a response.** For years, an NGO has been calculating an "Earth Overshoot Day" that highlights the extent to which we are "living on credit" at the planet's expense. The calculation methodology—which combines diverse elements—faces criticism. Certainly, we should not take the details of the calculations literally. Nevertheless, the central message about the overconsumption of natural resources remains accurate. Whether flawed or not, it provides a time-based comparison that confirms the increasingly rapid depletion of resources[xxxvii].

To use terms that are more familiar to investors, a pioneering economist like Professor David Pearce established in the 1980s that **we had started to deplete the fabulous capital that is nature, rather than, like many generations before us, simply harvesting its fruits**. This distinction between capital and dividends is probably easier to understand[xxxviii].

Essential awareness: business in nature

Some people bet on **technology**. Innovation certainly offers possibilities, such as enabling more precise agronomy, more efficient irrigation, or better logistical management. However, technology alone will not be enough if humanity continues to consume more than the planet can provide[xxxix].

Humans cannot believe they are stronger than nature "in which it is embedded"[xl]. Scientific uncertainties largely concern potential "tipping points" we may cross, triggering unknown phenomena (such as the melting of the polar ice caps or the transformation of tropical forests into savannahs). Too many technological advancements continue to contribute to the pollution of land and seas with potentially long-lasting harmful effects (e.g., the production of plastic, pesticides, PFAS materials classified as polluting "forever chemicals," endocrine disruptors, nuclear waste, and drifting nets). **While faith in technology is justified, it must not lead to the illusion of a miraculous cure that spares us from making efforts, especially as harmful behaviours persist.**

The challenge is therefore twofold. On one hand, it involves **changing our conception of the economy and business management**, which professors Pogutz and Sardà refer to as the shift to "**business in nature**": "*a conceptual framework which aims to guide business toward a deep and extended rethinking of its value chains, with the ultimate goal of increasing the resilience of social-ecological system*"[xli]. On the other hand, it involves working on **demand management**, which requires "*public policies and infrastructure that make low environmental impact lifestyles accessible, including through 'sufficiency'*"[xlii]. For Jean Pisani-Ferry and Selma Mahfouz, energy sufficiency is defined as "***the reduction in energy consumption that does not result from energy efficiency gains***"[xliii].

The term "sobriety" came up several times in discussions with many of the companies in 2050NOW that contributed to the OREE report on energy sufficiency, mobility, and material use. As already mentioned, it is one of the pillars of Impact France's advocacy. Reducing consumption is a matter of individual responsibility ("*buy less stuff*," "*eat less meat, or none at all*" as Alex Antonelli writes), but also of collective choices. Businesses, individuals and public authorities all have a role to play in these choices, whether tackling food wastage, which currently accounts for about a third of all food produced or reducing water and plastic consumption. The paradox is that we pollute the soil and overexploit water resources to produce food, a portion of which ends up in the bin (losses at the production stage, the pursuit of perfectly calibrated fruit, poorly managed stocks by large retailers, or waste at home or in collective catering). The WWF highlights this absurdity: an overexploited planet that fails to feed the entire population while contributing to a rise in obesity. Here again, seemingly modest actions matter. Large corporations, often employing tens of thousands of people, can make a difference in their cafeterias by offering vegetarian menus, sourcing locally, or reducing waste.

II. Why is biodiversity a strategic issue for businesses?

It is crucial to depoliticise and remove the emotion from the subject. "***Nothing is more wrong than thinking that biodiversity is only the concern of environmentalists***," as one of the participants in our discussions summarised. For businesses, it is primarily a matter of risk and of business model, which should be viewed as such, hence the need to change mindsets in order to find new, sustainable opportunities.

The deterioration of natural ecosystems poses risks both at the scale of the economy (macro risks) and of companies (micro risks, such as on certain supply chains).

1. Risks for the economy and businesses

The **2024 Global Risks Report by the World Economic Forum** (Davos)[xliv] (Davos) cited by Bouygues among others, stated that **three of the most severe risks we face over the next ten years are the loss of biodiversity and ecosystems, alongside the risk of extreme climate events and critical changes to the Earth's system**[xlv]**.** These are not ecologists or activists saying this, but business leaders from around the world, at the highest levels.

Effects on food production are starting to appear. For example, the harvest of durum wheat, the main ingredient in pasta, decreased by 50% in Italy this year due to drought.[xlvi]. Similarly, the scarcity of fish is likely to deprive much of the world's population of an important source of protein. Finally, 80% of the fertilisation of all flowering plants depends on pollinating insects[xlvii] . In some areas, the disappearance of these insects has reached 70 to 90%, something that each of us can empirically observe on our own windshields. However, as Stéphane Foucart of *Le Monde* has written, "*the biodiversity crisis is not understood as a risk by the ruling classes*," who continue to live in a *"parallel reality*," attributing, for example, the decrease in cherry production to pesticide bans rather than to soil degradation or the disappearance of pollinators [xlviii].

Environmental financial risks were identified by central banks several years ago. In June 2020, the Central Bank of the Netherlands published the first report on financial risks related to nature[1], in which it adopted the **trilogy of financial risks already developed for climate,** i.e.:

- **Physical risks** (for 36% of the portfolios of banks, pension funds, and insurance companies examined); to give an idea of the risks related to the disappearance of pollinators, this study indicates that the global exposure of the Dutch financial sector to pollination was €28 billion.
- **Transition risks**; given the situation in the Netherlands, the report notably mentions the transition to agricultural production methods that produce less nitrogen (€81 billion lent by three Dutch banks to companies using outdated intensive production methods).
- **Reputational risks** or risks related to legal actions, especially when a financial institution has financed a company with a negative impact on biodiversity, leading to litigation.

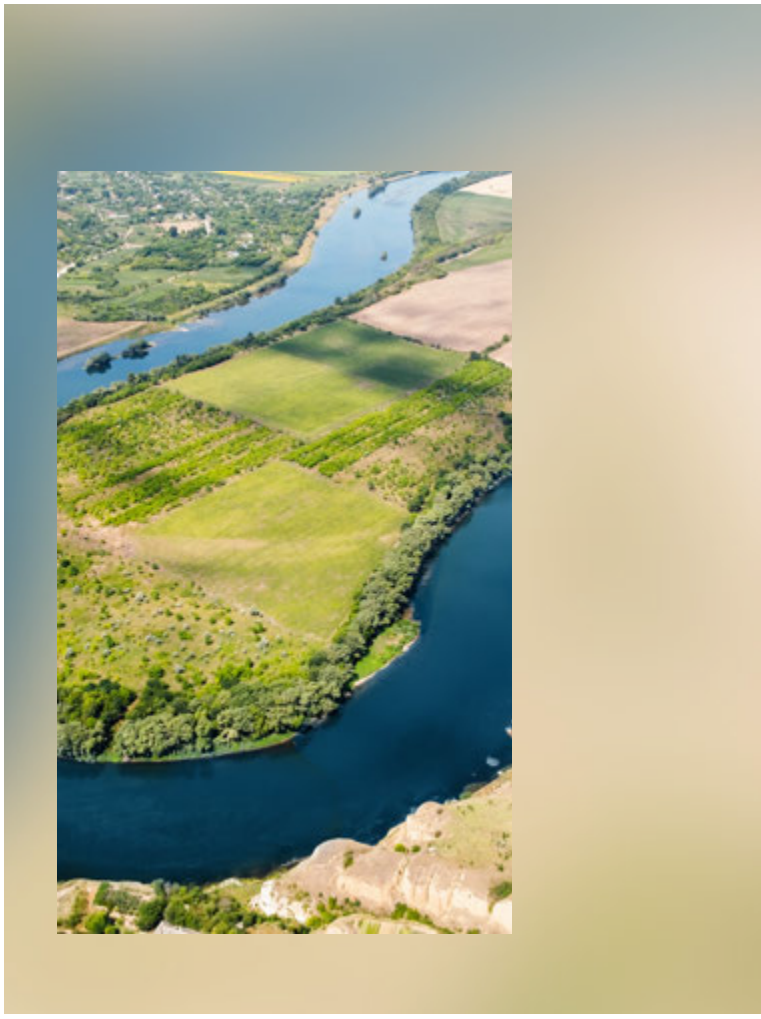
1 Indebted to nature – Exploring biodiversity risks for the Dutch financial sector – 2020 – DNB-PBL

A study by researcher Romain Svartzman (and co-authors) in 2021 demonstrated that approximately 42% of the French economy depends on at least one ecosystem service[xlix]. This led Christine Lagarde to point out these risks during the IUCN congress in Marseille the same year. Two years later, the work of the European Central Bank (ECB) confirmed that **75% of loans in the eurozone are granted to businesses that are dependent or highly dependent on nature.**

According to Frank Elderson, member of the ECB's Executive Board in charge of supervising major bank groups, "***72 % of non-financial business in the euro area would experience significant economic problems as a result of ecosystem degradation because of their dependence on ecosystem services. If these businesses run into trouble, so will the banks that finance them***". Banks under supervision of the ECB (SSM) have *"total assets over 26 trillion."*

In 2023, the NGFS (Network for Greening the Financial System, made up of over a hundred central banks) published **a conceptual framework for nature-related financial risks**, followed by various other documents. These are primarily working papers, as some central bank leaders and supervisory authorities still hesitate to consider biodiversity in their binding decisions on supervision, monetary policy, or even company rating.

Supervisors, however, play a crucial role, as they guide the sector. **The ECB (SSM) has acknowledged in its supervisory guidelines that environmental risks must be closely monitored, alongside climate-related risks.**[l] As Christine Lagarde stated, *"We also ensure as a supervisory authority, that banks integrate climate and nature-related risks into their strategy, governance and risk management. We have issued binding supervisory decisions for banks to carry out so-called materiality assessments of climate and nature-related risks. At the end of 2023 around 90 % of the banks under our supervision considered climate and environmental risks to be material*[li]*."*



2050NOW partner companies are aware of the importance of understanding and measuring their dependence on ecosystem services, as well as their own impact. They are clearly responsible for ensuring **supply chain resilience**, but also, in some cases, for avoiding contributing to the spread of invasive species (Bouygues). They all agree that failing to act means increasing costs. The measures being implemented remain gradual, probably because the systemic shift has not yet occurred.

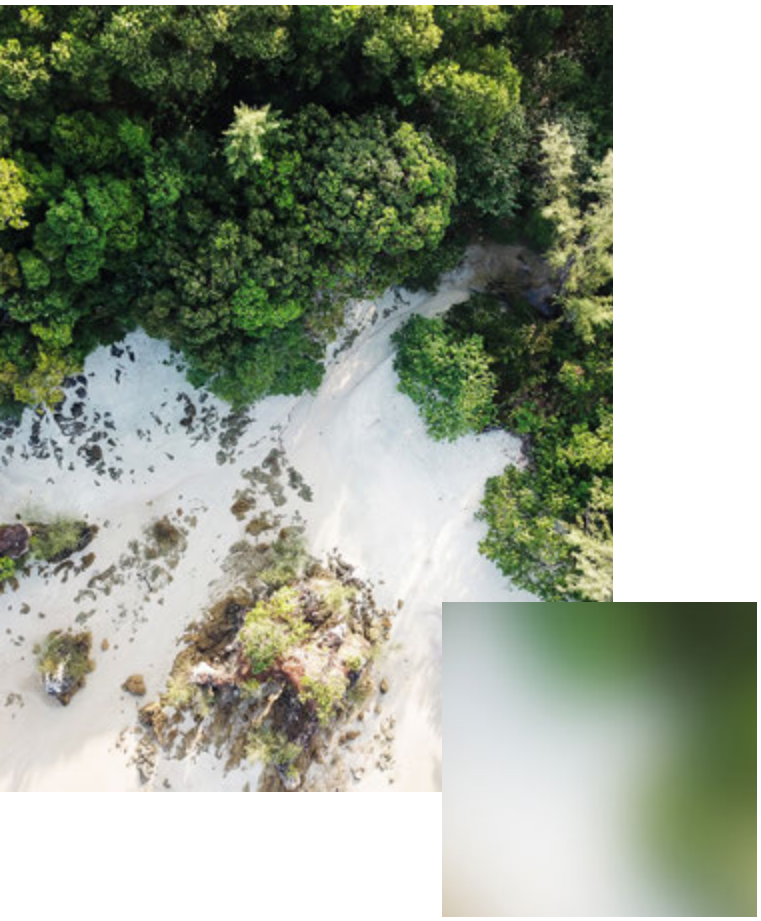
2. The wrong framework

Since the industrial revolution, **the economy has relied on a flawed framework, based on an anthropocentric view of nature**: natural resources were thought to be limitless, and humanity could exploit them without concern for their regeneration. However, in order to produce goods and services, a company uses more than just the two commonly cited factors of capital and labour. Whether consciously or unconsciously, it also employs ***natural capital***: water, natural materials (cotton, leather, fish, wood, fruits, etc.), energy (fossil fuels or wood, for example), and indirectly, everything that contributes to the health of its employees, who need breathable air, sufficient food, and healthcare to work. This natural capital should be accounted for much better than it is today. By doing so, it would be easier to understand that nature requires investments, and that these could, for example, be amortised. In 2015, the Kering Group began developing a pioneering tool to measure and quantify the environmental impacts of its activities, called Environmental Profit & Loss, or Environmental Income Statement. **By failing to measure the consequences of our activities on nature, we distort cost calculations, encourage overconsumption, and blind ourselves to its sustainability, even though its fragility could lead businesses to bankruptcy.**

Economic science has yet to transform. We largely remain within the views of Jean-Baptiste Say, who stated in his 1803 *Treatise on Political Economy*: "*Natural resources are inexhaustible, because otherwise we would not obtain them for free. Since they cannot be multiplied or exhausted, they are not the subject of economic sciences.*" While the OECD has started working on biodiversity, the macroeconomic analysis work of the International Monetary Fund (IMF), such as the World Economic Outlook, barely touches on it. Yet, the loss of biodiversity is likely to impact areas that the IMF particularly focuses on, such as inflation or growth prospects. Can we even still talk about "growth" in 2024 without specifying whether it is circular, based on regeneration, i.e. sustainable, or extractive, even predatory, i.e. unsustainable?[lii]

Challenging our mindset is a daunting task. Since the beginning of the industrial revolution, contributions to natural capital and the "negative externalities" of human activity—or in simpler terms, the cost of the damage done to living systems—have never been accounted for. The price of goods and services does not reflect the environmental harm caused in their production, nor do they account for negative social effects (such as underpaid labour, exposure to high occupational risks, child labour, etc.). The economic system we know is precariously balanced above the void it has itself created. Many businesses and public institutions seem afraid to venture further down a path that would require admitting the extent of the collective mistake. Some are waiting to see if the tide turns, others are reluctant to show their fumbling efforts to open new paths, while some are simply burying their heads in the sand. It might be useful to pose to certain politicians, economists, and managers the question posed by the Queen of England during her visit to the London School of Economics in November 2008, regarding the Great Financial Crisis: "*Why did no one see it coming?*"

Some economists have explored this idea, adapting the concept of the "black swan" — an unexpected trigger of a financial crisis — to warn of a potential systemic crisis caused by environmental damage that we refuse to see, or a "green swan"[liii]. The solution probably lies in expanding economic reflection to include other parts of society. We have already mentioned indigenous peoples, who are calling for a change in our relationship with life. Religious authorities[liv] also offer **analyses that are useful to all of society, both believers and non-believers, because they take a long-term perspective**. Moreover, the Churches are present on the ground, in contact with local realities and often among the most vulnerable. In *Laudato si'*, the encyclical on "*care for our common home*"[lv], Pope Francis dedicates a significant portion to biodiversity, emphasising the intrinsic value of nature.



> ***"Par. 36 Caring for ecosystems demands far-sightedness, since no one looking for quick and easy profit is truly interested in their preservation. But the cost of the damage caused by such selfish lack of concern is much greater than the economic benefits to be obtained. Where certain species are destroyed or seriously harmed, the values involved are incalculable. We can be silent witnesses to terrible injustices if we think that we can obtain significant benefits by making the rest of humanity, present and future, pay the extremely high costs of environmental deterioration. "***

Development, according to his terms, must be not only human but "integral," preserving human dignity and social justice, with humanity at the heart of nature. By using the familiar term "house" to refer to the planet, Pope Francis is also addressing economists, as Hélène Rey, professor at the London School of Economics, points out: "*The economy, from the ancient Greek* oikos *(house) and nomos (law), must be at the forefront in helping us manage our common habitat, the planet*"[lvi]. The Anglican Church, too, to name just one, is also concerned with the preservation of nature. It was present at the COP 16 Biodiversity in Cali in October 2024[lvii].

3. Opportunities for businesses

The readings and discussions that have informed this study suggest significant opportunities for companies addressing their impacts and dependencies on nature. Those who are the first to act may risk facing criticism, but they will be better equipped by getting ahead of the curve. Excellence today also lies in tackling these issues. Companies can develop strategies that allow them to benefit from five key advantages.

Taking nature into account is first and foremost a factor of **resilience**. **Some value chains are already under threat**. Droughts, linked to rising temperatures or the depletion of soils that require ever more pesticides and fertilisers, are threatening the sustainability of certain productions or transforming them. This is the case for wine in our regions, and for cotton, coffee, and cocoa elsewhere. **The general public does not seem to be aware of the potential short-term consequences: for example, in France and Italy, many crops tied to protected geographical designations could no longer be viable where the protection is granted**. The classification of fine wines could suffer as a result. More sparkling wine might very well be produced in England in the future, but it would not be Champagne.

There are solutions, such as the choice of more resistant plants, those that use less water, planting ground cover, or mixing diverse genetic varieties instead of standardised seeds, all serve

as protection against erosion and diseases. The leading scientists advocate for methods that return to the circularity of nature, recommending the use of cover crops, plantings that provide nitrogen to the soil, and so on[lviii]. Some companies have found, through regenerative agriculture, an improvement in product quality. This is the case with Illy Caffè, which is transforming the production threatened by climate change.

Illy Caffè

The approach of the Italian global company Illy Caffè was motivated by the desire to reduce the company's carbon footprint but also to mitigate the effects of climate change on coffee bean production. It mainly consists of gradually encouraging the transition to "regenerative" agriculture by: improving soil quality, increasing biodiversity on farms, including through the presence of wild plants; better managing water resources, particularly by preventing erosion; reducing the use of synthetic fertilisers, replacing them with compost; and diversifying the plants used to make them more resilient to climate change as well as extreme weather events.

The company works closely with agronomists in Italy and on the ground to measure the impacts of their efforts. In 2020, it created a foundation for the promotion of regenerative agriculture, The Regenerative Society Foundation, a non-profit organisation under Italian law, which stresses the importance of understanding and managing the complexity of these issues by integrating the mutual interactions between "the environment, climate, society, nutrition, health, and lifestyle." It is a "business-driven" foundation. In other words, it aims to enable sustainable production, a society truly based on regeneration rather than extraction.

(Source: 2023 annual report).

Next, it is a matter of **productivity and costs**. The scarcity of certain products can lead to cost increases, as was observed quite dramatically with cocoa in 2023-24, due to poor harvests[lix]. Will chocolate become a luxury item that no one can afford? More sustainable production methods also offer cost savings, as the focus is on returning to circularity (less input, less waste). The absence of fertiliser and pesticide spraying reduces the number of tractor runs in the fields, leading to lower fuel consumption. This is one of the reasons why economists tracking inflation should making these issues a core component of their analyses[lx].

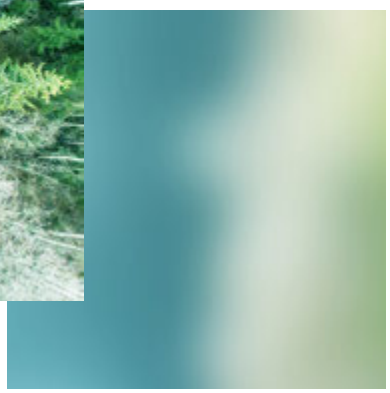
Taking into account the impacts and dependencies on nature can serve as a powerful driver of **innovation and development**. By focusing solely on constraints such as regulatory burdens, we risk overlooking the extraordinary opportunities brought about by transformation. The corporate world is well-positioned to capitalise on these, through the development of new products, new markets, and the creation of renewed value. This is the essence of the "business in nature" concept put forward by Professors Pogutz and Sardà, as previously mentioned. For example, the development of ecological engineering, a

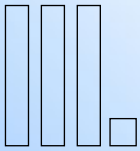
rapidly expanding sector, has been mentioned by companies such as Bouygues and Veolia. LVMH has adopted a long list of "strategic raw materials" (grape, wool, leather etc) for which it is investing in certified supply chains and other productions.

In terms of **image and reputation**, a company that shows greater care for nature does less harm to the planet and is perceived as "cleaner"—to use the terminology of Ms von der Leyen, who, at the start of her second term, opted to replace the term "green" with "clean." Naturally, the more public authorities are willing to acknowledge the urgency of action, the more progressive companies will benefit from positive recognition for their efforts. However, the rise of a narrative downplaying the seriousness of these issues does not bode well in this regard.

Finally, this is an opportunity for businesses to **integrate even more closely with their immediate environment**. In cases of decontamination efforts, the return of wild flora and fauna can be observed locally—within the factory and its surroundings, or on farmland plots. While not everything depends on the company (for example, issues related to an entire watershed), the stakeholders are identifiable and close at hand, unlike the situation with decarbonisation. Localised efforts provide "greater leverage" and make it easier to engage employees, as nature is closely tied to landscapes they know and cherish. The benefits are tangible, particularly when noise pollution, chemical pollution, or other disturbances are reduced.

These transformations are, of course, not simple. Including biodiversity alongside climate issues—because this is generally the sequence—sometimes creates confusion for teams. These challenges should not be denied, but field experiences show that progress can be made, and obstacles are not insurmountable. It is possible to begin addressing the challenge.





How do we meet the challenge?

From all the testimonies and documents analysed, five key lessons emerge: internal involvement; innovation in supply chains and data management; external dialogue; sector-specific approaches; and finance.

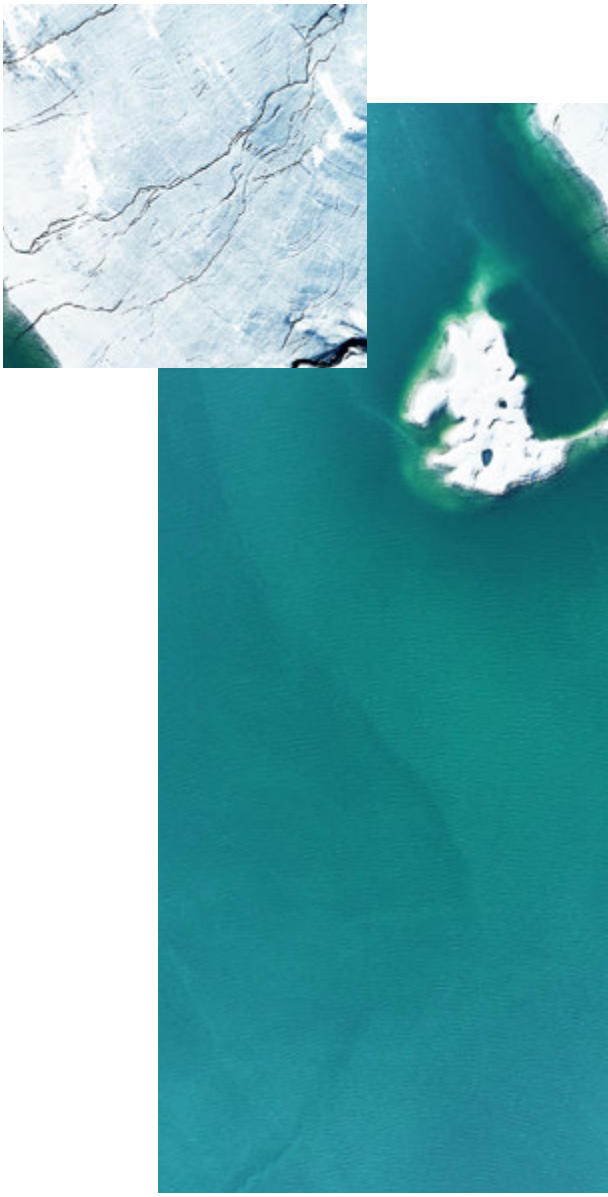
1. Organisation and employee involvement

It is generally acknowledged that **the company's commitment must be clear, and the actions to be taken must be identified and mandatory.** For Veolia, this is a "*non-negotiable corporate action*" once 160 sensitive sites have been identified using the IUCN database. SNCF Voyageurs *Act4Nature* involves strategic and practical objectives (such as phasing out glyphosate). At LVMH, all 75 of the group's *maisons* (houses) are involved in the LIFE 360 project (LVMH Initiatives for the Environment) and "*protecting natural ecosystems is an imperative.*" The line is clear and detailed, with multiple precise goals. For Engie, "*ecological transformation*" has become the company's "raison d'être" ("*acting to reconcile human progress and the environment*").

For a long time, the issue of climate change—and even more so biodiversity—rarely featured in board meetings or general assemblies[lxi]. Recent developments, such as mandatory disclosure of impacts and dependencies, offer an opportunity to highlight these issues internally.

At Bouygues, the company's governance structure enables involvement at both board level and lower organisational tiers. Beyond the 2050NOW group, **the personal commitment of leaders is seen as crucial by many French companies surveyed**[lxii]. Here again, the **need for consistency**, as previously noted, is vital. **Once a direction is chosen, leadership must stay the course.**

This does not mean that everything must come from the top. Employees have a vital role to play and can be spontaneously motivated: "*Sometimes, they didn't wait for us*," said a representative from Engie, referring to an employee-led initiative. Nature-related topics can help unify teams.



For many participants in our discussions, **the best approach combines positive incentives with rigorous monitoring of results** (a "carrot and stick" method). For Veolia, for example, a KPI representing 5% of annual bonuses is tied to an action plan for sensitive sites, implemented since 2019, based on approximately 15 financial and non-financial objectives (such as zero pesticide use and ecological site management). Of course, this requires defining a more nuanced KPI than just carbon emissions in tonnes. At Bouygues, part of variable compensation is linked to biodiversity.

The surveyed companies have organised themselves in a range of ways. Some have convened ad hoc committees to draft several of the reports cited in this study, involving input from all business areas (e.g., Bouygues). Engie noted "*an increased need for collective efforts*," which requires granular work. For instance, Veolia, which manages 2,000 sites—160 of them classified as sensitive—stressed the necessity of risk and degradation mapping. Internal organisation must, however, be designed for the long term. Veolia has established a Sustainability Directors' College comprising 350 members, while BNP Paribas employs 700 experts across the group. Engie has created a "biodiversity/nature network" that connects employees across France and internationally. This forward-looking approach is seen as a way to respond more effectively and robustly to new European regulatory requirements, such as the CSRD. In some cases, biodiversity strategies are reviewed by external stakeholder committees (e.g., Bouygues).

In all cases, the human dimension is crucial; it is essential to **attract young talent at the forefront of knowledge**. In biodiversity-related meetings, both in France and the Netherlands, it has been observed that biodiversity managers tend to be younger compared to those dealing with other ESG topics. **Networking** these individuals is also vital—for instance, BNP Paribas holds a quarterly review dedicated to sustainability. Training is equally important to address these **complex challenges**. LVMH has introduced the LIFE Academy for all employees, while BNP Paribas launched the Sustainability Academy. To date, 200,000 employees have participated in workshops such as the Climate Fresk, the 2-Tonne workshop, or sessions on the circular economy—though these are only initial steps.

In most cases, **in-depth training** is essential. For example, in agronomy, this involves learning about the exclusion of phytosanitary products and their replacement with crops that provide natural nourishment to the soil. Nature-based solutions

have also been highlighted, requiring new skills, such as those needed in industrial contexts. For instance, the use of permeable concrete to let water through, or the objective to address issues like noise or light pollution or the mapping of sensitive areas often necessitate advanced research. Some companies have even developed their own qualifications. For instance, Illy has created a master's degree in coffee supply chain management at the University of Trieste.

Finally, climate and biodiversity actions benefit from involving all teams at all hierarchical levels; this is essential for effectively reducing water consumption, for example.

2. Innovation in supply chains and data

Taking the issue of biodiversity seriously inherently requires a broad, systemic approach, involving internal efforts as well as collaboration with upstream suppliers and downstream clients.

For LVMH, strengthening value chains is essential, with the goal of achieving 100% certified raw materials by 2026. This entails elevating all suppliers and service providers to higher standards for traceability. The LIFE 360 programme schedules milestones in 2023, 2026, and 2030, centred on four strategic pillars: creative circularity, biodiversity, climate, and transparency.

We are aware that 2050NOW is an initiative led by large corporations. **SMEs and craftsmen have fewer resources** at their disposal. Similarly, a luxury sector company can more easily obtain certified raw materials, which are more expensive, as its products are less sensitive to price effects. Some experts on nature-related issues believe it is crucial to avoid repeating the mistake made with "organic" products, which were wrongly treated as a high-end niche market. A powerful counterexample is entire regions of India adopting regenerative agriculture for food production, not just ecological purposes[lxiii].

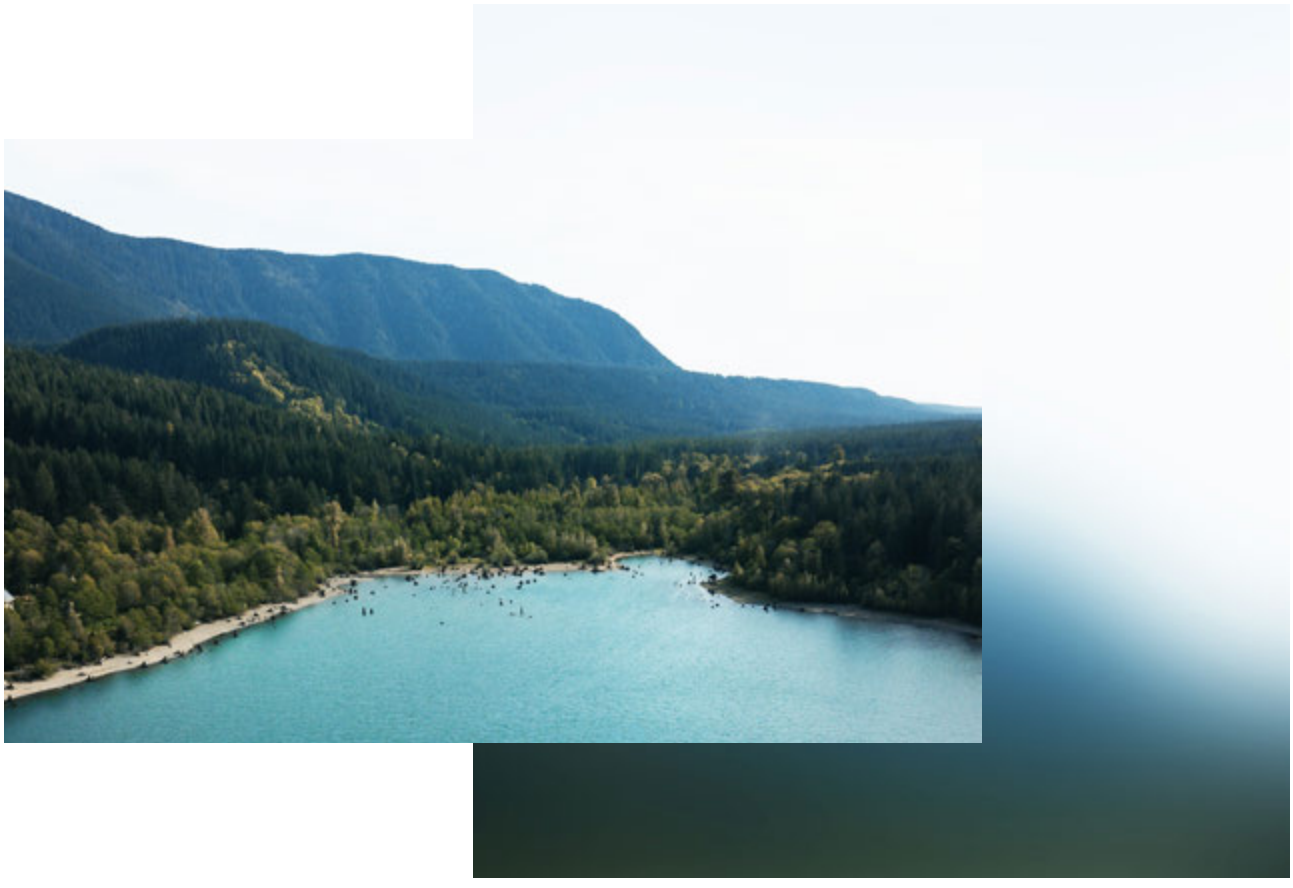
We have already highlighted the potential of these new agricultural production methods—**regenerative agriculture**—in coffee plantations, a strategy also pursued by LVMH and, outside our group of six corporations, L'Occitane en Provence, for lavender, almonds, and some aromatic plants. This approach does not involve giving up production but rather ensuring the natural regeneration of soils, the rational use of water, and the health of both farmers and consumers.

The companies in 2050NOW also referred to **significant research efforts**. For example, Bouygues has focused on minimizing impacts, preventing the spread of invasive species, and reducing water consumption (through filtration and circularity). These are real technical issues (COP 15, SNBC -low carbon certificate- for Bouygues). Similarly, the reduction of water or plastic usage also depends heavily on the behaviour of the final consumer (for instance, the quantity of hygiene products used or the frequency of washing largely determines the company's scope 3). This is a crucial issue for the retail sector, which is underrepresented in the 2050NOW panel.

Innovations are also underway in finance; BNPP has actively contributed to the IAPB panel on biodiversity credits mentioned earlier, aiming to create new financial instruments that would channel private money into nature conservation, in line with Target 19 of the Kunming-Montreal Agreements.

A conclusion drawn by one of the participants aligns with what many scientists say: to restore degraded land, sometimes no complex innovation is needed, but rather allowing nature to take its course (Veolia) at its own pace. To allow time for restoration, the Italian insurance company Generali has partnered with one of its subsidiaries, Leone Alato Group, to develop a biodiversity credit project aimed at offsetting carbon, while funding the restoration of degraded agricultural land. The initiative will take several decades, but insurers are accustomed to long-term investments.[lxiv]

Traditional knowledge (such as the use of hedgerows, as previously mentioned) holds its place alongside cutting-edge solutions, including satellite measurements, blockchain for traceability, and artificial intelligence to analyse data. Regarding the need for data, the adoption of CSRD regulations provides European companies with **a strategic tool to manage dependencies and impacts**. Since 2021, some French companies, including BNPP and LVMH, have participated in the work of the TNFD (Task Force on Nature-related Financial Disclosures). Additionally, the ISSB, the standard-setting branch of the IFRS, is chaired by Emmanuel Faber, former CEO of Danone.



3. External dialogue

Given the complexity of the subject**, interaction with experts, academics, peers, or companies from other sectors is invaluable**. It helps organisations stay informed about developments, share best practices, and refine their own strategies. In many cases, transformation does not require inventing solutions from scratch but rather drawing inspiration from what works elsewhere and tailoring it to the company or sector. This dialogue is essential if organisations are to avoid "reinventing the wheel."

For the six founding partners in 2050NOW, the following, non-exhaustive list gives a clear idea.

Bilateral collaborations with scientific institutions

(e.g., BNPP with the Natural History Museum in Paris, or *Naturalis*, a natural history museum and research centre based in the Netherlands) and with schools and expert consulting firms; Bouygues with the School of Agronomy in Angers, ESTP, and the ecologists from the ELAN consulting firm; SNCF Voyageurs with the Shift Project on climate change and biodiversity impacts.

Activities within French networks

such as OREE, *Entreprises pour l'environnement (EPE), ORSE* (*Corporate Social Responsibility Observatory*), as done by LVMH, the Les Echos Le Parisien Group, SNCF Voyageurs, Veolia (*Vivae*), or *Entreprises et Biodiversité*, a network supported by the French Office for Biodiversity (OFB) to facilitate the transfer of best practices (Veolia), and of course, 2050NOW.

Global networks

(IUCN for Bouygues, BNPP, and LVMH; the *World Business Council for Sustainable Development,* which absorbed OP2B, created by Danone; *UNESCO* and the *Foundation for Amazon Sustainability* (LVMH)).

Partnerships with NGOs

(*WWF, Reforest Action, Tara Ocean*, etc.) or NGO coalitions like *SBTN* or the *Global Fund for Coral Reefs*.

All the companies studied participate in **Act4Nature**, alongside more than 130 French companies. This is a business-driven initiative, with assistance for the French branch from the Office français pour la Biodiversité. The CEO is expected to be personally involved, and ten commitments are made, including making biodiversity part of the strategy, acting on value chains, and making relevant information public. **Philanthropic actions through foundations are also being carried out**.

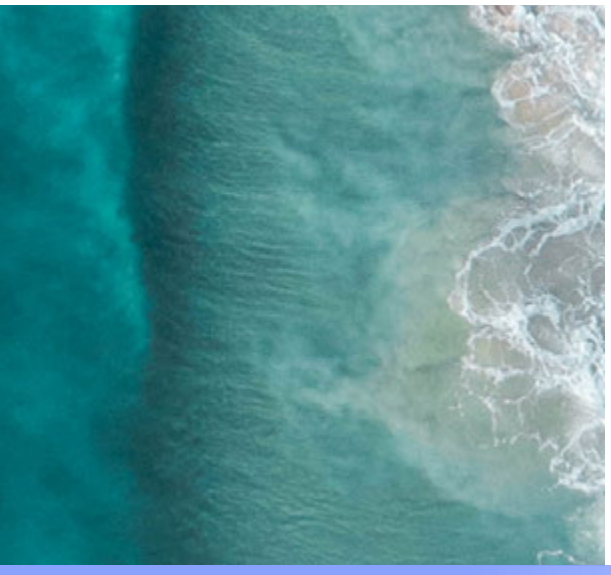
The private sector is sometimes called upon by public authorities (in France, *Roquelaure de la Biodiversité*, held in 2023, brought together dozens of groups and companies). Finally, some companies participate in major conferences such as COP Climate or Biodiversity.

Faced with this wealth of information emerging from annual reports, integrated reports, and other heavily illustrated documents, such as the "sustainability" sections on websites, what should be thought? It is difficult to say. On the one hand, the abundance of these exchanges between peers, or with experts, represents in-depth work that is essential for strategic decision-making. On the other hand, some observers see it as "communication," or even a form of activity intended to mask the continuation of practices harmful to life. The risk exists, and we must not be fooled. **The multiplication of commitments and references to networks does not always allow us to measure whether they are truly productive**, whether they create continuous and in-depth exchanges, or merely offer, at best, occasional opportunities for meetings. The exchange between academic circles and businesses deserves to be conducted with seriousness and continuity, which requires mutual listening that is not always easy. But again, the vibrancy of these commitments is a sign of growing awareness. The need for clarity is **another reason to encourage transparency and the availability of precise data** on who is really doing what. Companies that take serious action have everything to gain.

4. Sectorial actions

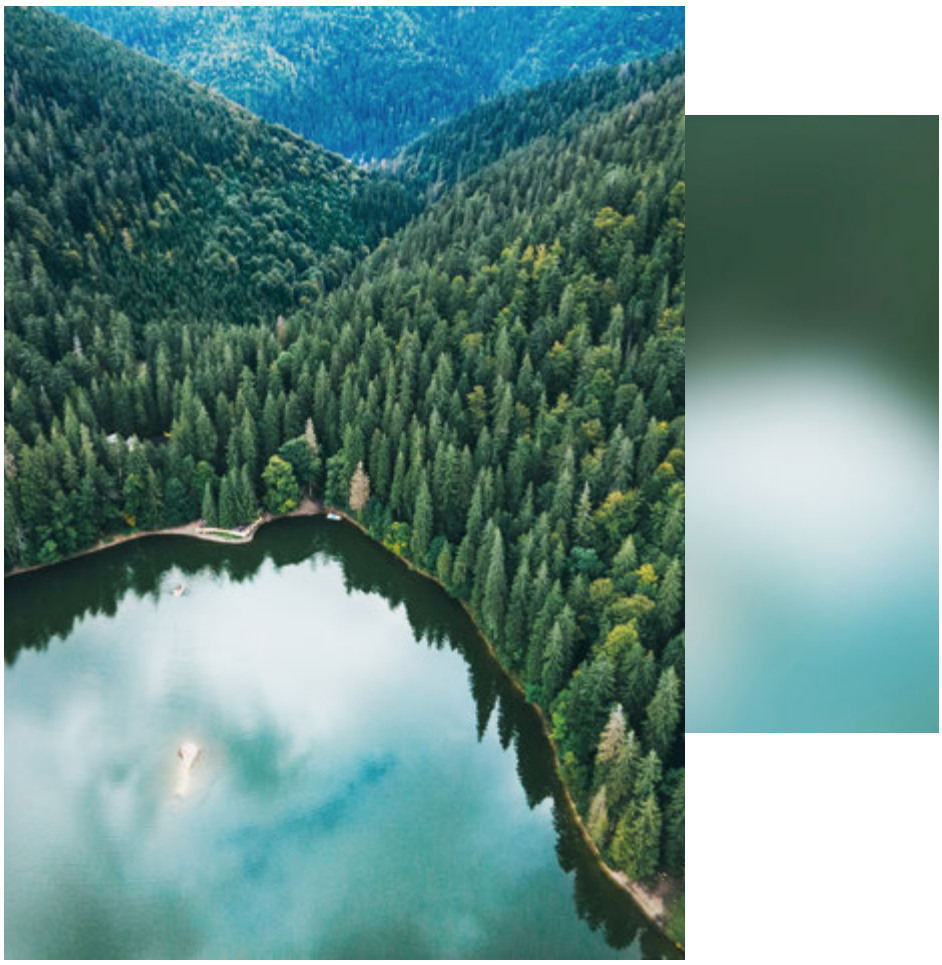
Transformation is not only about internal organisation or external relationships; it also means **changing production and management processes**. The approach may involve addressing specific issues one by one, such as water, soil, forests, the sea, and pollution.

The first issue is **water**. This crucial resource for human life is threatened by climate change and the growing global population. All the companies benefit from examining and reducing their consumption. None of the six groups surveyed have overlooked this issue, despite the diversity of approaches taken. Engie focuses on this, as "*the energy sector is a major consumer of water*." Bouygues (Colas) has developed permeable coatings to combat soil artificialisation. SNCF Voyageurs looks at the water consumption of its rolling stock. LVMH seeks to reduce the water required for tanning, while Veolia has implemented a programme called *Ecod'eau.* BNPP has been encouraged to address water due to its operations in Italy and South America. The bank estimates the total market related to water at USD 1 trillion.



When it comes to **soil**, the issue is of particular importance due to its role in human nutrition and carbon capture. LVMH is making a specific effort by committing to "*regenerate, preserve or restore the equivalent of five million hectares of wildlife and plant habitat by 2030*." The action involves rolling out regenerative agriculture programmes for key agricultural raw materials (such as cotton, wool, grapes, and leather), alongside ecosystem conservation efforts for endangered habitats. Through its Moët Hennessy house, the group organises the World Living Soil Forum[lxv]. Based on the fact that 40% of the planet's soils are degraded (UNCCD, 2022), the initiative calls for viewing soil as a "*common good*" and promoting research and action for sustainable viticulture and regenerative agriculture, focusing on how to measure soil health, promoting "nature-based solutions," addressing the challenges of financing and education, and not overlooking the societal and cultural aspects of this transition.

Another important area is **forests**. Since 2012, BNPP has introduced criteria related to deforestation and biodiversity into its investment financing policies. European regulations on imported deforestation encourage tracking the origin of raw materials (such as wood, but also soy, cocoa, rubber, etc.). SNCF aims to have a sustainable and responsible wood supply chain (it uses oak wood railway ties, 74% of which are produced in France), a policy adopted during the last European Parliament mandate. The controls they advocate are already being implemented by some players (for example, Moët Hennessy has partnered with Reforestaction



in Kenya, China, the United States, and in its vineyards). Recent developments, unfortunately, seem to challenge these regulations.

Some companies have also closely examined the challenges related to **oceans and marine biodiversity** (BNPP, Engie). The year 2025 will be dedicated to water, as the United Nations Ocean Summit will be held in Nice and Monaco in June 2025.

Other issues **include** pollution reduction (at the heart of Veolia's activities, a global leader in solid waste collection, including battery recycling), **materials** (SNCF and the recycling of railway materials), and **packaging** (LVMH, with the goal of achieving zero virgin fossil-based plastic in packaging by 2026). Finally, although not all companies are equally affected, noise reduction is also an environmental preservation challenge (mentioned by SNCF Voyageurs).

5. A word on the specific role of finance

As we have pointed out, finance plays a crucial role in **better assessing risks and channelling investments toward sustainable production methods**. Evaluations should always be approached with caution, but according to the World Economic Forum, $711 billion in funding should be redirected each year to preserve and restore nature. These amounts may seem enormous, but they are commensurate with the damage done. More importantly, they must be balanced against harmful subsidies, that is, financial support still given, using taxpayers' money, to activities that are detrimental to the planet. The scale of these subsidies is staggering.

Is all this serious?

According to a coalition of NGOs and businesses, Business for Nature, in partnership with B Team, public subsidies alone contributing to ecosystem destruction and species extinction would amount to a staggering $1.8 trillion[lxvi], with the majority going to the fossil fuel sectors, intensive agriculture, and unsustainable forestry management.

The aforementioned WWF report also highlights that significant flows continue to be directed toward activities that exacerbate the climate and nature crises.

> *Direct payments, tax incentives and subsidies that exacerbate climate change, biodiversity loss and ecosystem degradation are estimated at almost US$7 trillion per year. The positive financial flows for nature-based solutions, in comparison, are a paltry US$200 billion. By redirecting just 7.7% of the negative finance flows, we could meet the funding gap for nature-based solutions and deliver nature, climate and human well-being benefits. (…) The transition to a sustainable food system needs a huge increase in spending to US$390–455 billion annually from public and private sources – still less than governments spend each year on environmentally harmful agricultural subsidies.*

The group of founders of 2050NOW includes only one financial institution, BNPP, which, however, offers the advantage for this study of combining banking, insurance, and asset management functions. Other large financial institutions in France (such as La Banque Postale and Mirova, to name just a few) or in the Netherlands (e.g. Rabobank) have also started to take biodiversity into account.

The role of banks can begin with **supporting their clients' environmental transition**. For example, BNPP uses four of the five pressures identified by the IPBES to guide its choices. This leads to considering investments that could change land and sea use (such as excluding funding for activities involving deforestation, like meat or soybean production for livestock, or palm oil production) or excluding the funding of projects in areas designated for biodiversity protection by combining different approaches (REDD+, Cerrado Manifesto, etc.). **A bank that finances real estate loans can also influence building insulation or land artificialisation** (urbanised land has doubled since 1992, growing faster than the population). This also means **avoiding overexploitation by analyzing agricultural or sustainable fishing projects** from this perspective. In addition, actions for climate and against pollution (plastics, heavy metals, cigarette butts) are crucial. **As an asset manager, a bank can invest directly in companies, setting specific criteria** (e.g., biodiversity-focused funds or supporting innovative start-ups).

Finance became highly engaged following the Paris Agreements and the advocacy from central banks around 2015/2017. Unfortunately, a certain decline in commitment has been observed in recent years: for example, BlackRock announced a specific CSR effort in 2021, which initially gained attention but was later diluted, partly due to pressures from certain U.S. states. Similarly, the promises made at COP26 in Glasgow (the creation of the Glasgow Financial Alliance for Net Zero - GFANZ) were partly scaled back, particularly by insurance companies, who were concerned about being seen as part of a cartel.

While finance can provide solutions, it cannot, on its own, replace political power. The more public authorities (legislators, supervisory bodies, central banks) integrate nature into laws and in their control and supervision practices—perhaps even into a new concept of accounting and corporate balance sheets, which are currently somewhat blind to this issue—the faster this movement will accelerate.

IV. An ambivalent context

Political awareness of the severity of these issues has begun, both globally and in France and Europe. However, implementation remains **too slow and insufficiently intense**. Although the risks are significant, nothing comparable to the financial intervention following the collapse of Lehman Brothers in 2008 has yet occurred for nature. The difficulties in implementation may leave judges with a role that, in a democracy, should primarily fall to political decision-makers. Ultimately, the major challenge now is to **bring "people" into the fight** for sustainable development that respects nature.

1. 2022, a global step for biodiversity

In 2022, during the Conference of the Parties (COP 15 CBD), 196 signatories[lxvii] adopted the Kunming-Montreal Global Biodiversity Framework, which includes commitments to conservation and restoration[lxviii]. This framework holds the same fundamental significance for nature as the 2015 *Paris Agreement* does for climate.

The Kunming Montréal framework

Objectives (summary)

A.

Preserve the integrity, interconnectedness, and resilience of ecosystems, restore them, and increase protected areas by 2050; reduce the human footprint, curb extinctions, and safeguard the genetic diversity of both wild and domesticated species.

B.

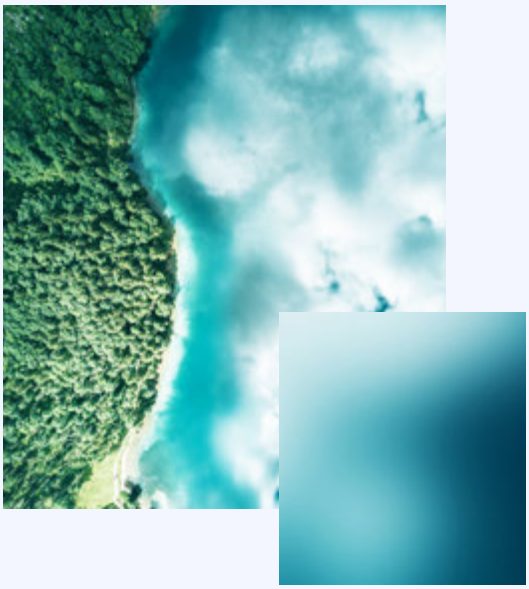
Use and manage biodiversity sustainably, value nature's contributions to humanity—including ecosystem functions and services—while maintaining ecosystems and restoring degraded ones by 2050.

C.

Share the benefits (monetary and non-monetary) arising from the use of genetic data and sequencing, with respect for the traditional knowledge of Indigenous peoples and local communities.

D.

Set up adequate means to implement this framework, including financial resources, training, and scientific and technical cooperation, as well as access to technology transfer (particularly benefiting the most vulnerable countries); the goal is to progressively close the $700 billion annual financing gap.



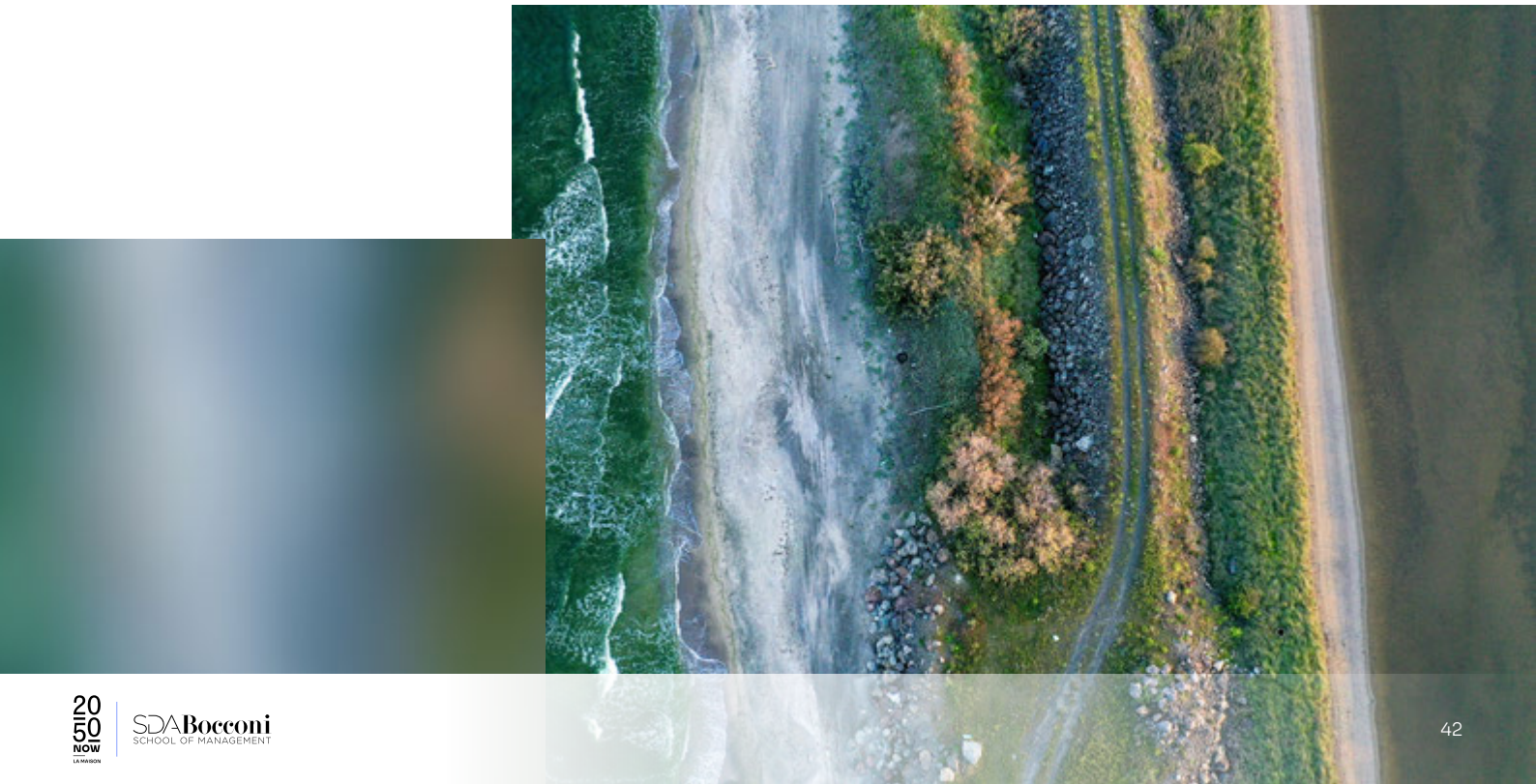
Targets (summary)

The three primary targets by 2030 are to reduce to zero the loss of areas of high importance for biodiversity, to restore at least 30% of degraded areas (terrestrial, marine, aquatic, or coastal), and to protect 30% of terrestrial and marine areas.

Additional commitments aim to combat species extinction, address pollution, and control invasive species. Measures also focus on increasing public and private funding for nature, enhancing training, and ensuring biodiversity is integrated into all policies.

To implement the framework, governments have committed to adopting national biodiversity strategies and action plans (NBSAPs).

On paper, the commitments are ambitious. Unfortunately, COP 16 on biodiversity, held in Colombia at the end of October 2024 to oversee the implementation of the Framework, ended in partial failure. While the role of Indigenous peoples was better recognised, the protection of digitalised genetic data remains largely dependent on the goodwill of private pharmaceutical and cosmetics companies. A fund of $400 million was allocated within the Global Environment Facility, but despite efforts by the Colombian presidency, negotiations on overall budgetary issues failed to reach a conclusion. A growing divide is emerging, particularly between the least developed countries and the new global powers.



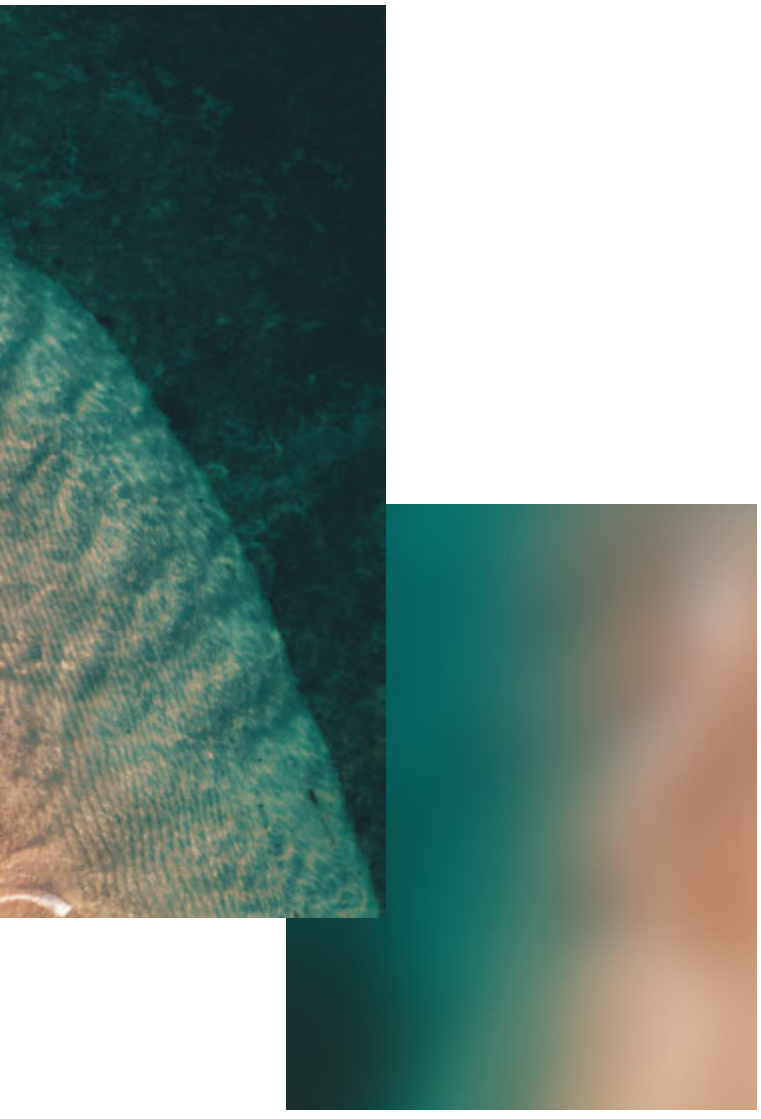
2. Europe, from the Green Deal to green-bashing?[lxix]

Since 2019, the European Union has adopted a series of stringent measures addressing both climate and nature under the "Green Deal." These include the Nature Restoration Law, a regulation that is part of the EU's Biodiversity Strategy for 2030[lxx], and the previously mentioned Regulation on Imported Deforestation[lxxi], which governs the import of goods linked to deforestation (covering the trade of livestock, cocoa, coffee, palm oil, rubber, soy, wool, and all their derivatives). Additional **cross-cutting legislation** includes the CSRD, which mandates the disclosure of corporate impacts and dependencies, as well as laws related to due diligence in value chains. Other measures aim to classify activities to promote financing for the most sustainable ones, such as the taxonomy, which now includes biodiversity.

The EU has established **a comprehensive vision to transform European economies,** which is its greatest strength, given that the Next Generation EU plan—adopted post-COVID to revitalise European economies—requires that one-third of the funds be directed toward green initiatives. However, despite all governments participating in the adoption of this framework through the ordinary legislative procedure (involving the Council of Ministers and the European Parliament), resistance to its implementation is mounting. This runs the risk of locking European businesses into outdated models that will fail to secure long-term employment and competitiveness (such as challenges to the 2035 ban on combustion engines). Taxation, which remains under the jurisdiction of member states and requires unanimous decisions, has not been reformed either. Once again, the EU has leveraged its regulatory power but finds itself constrained by a lack of fiscal and budgetary means, which remain under the control of individual member states.

Fairly fierce criticism emerged during the European elections campaign, focusing on complaints of "too many regulations," "overbearing bureaucracy," and "unfair global competition." What began as a strategic initiative is increasingly

portrayed by some—and experienced by others—as a burdensome exercise in compliance. In recent months, **the majority that championed the Green Deal has backtracked on several fronts**, diluting obligations and postponing implementation deadlines. Parts of Ursula von der Leyen's majority, particularly the European People's Party (PPE), have even aligned with far-right groups on certain votes. The EU appears to be following the United States, where a similar backlash has targeted ESG rules, with arguments denying climate change or criticising "wokeism" underpinning diversity regulations. In Europe, early 2024 saw significant watering down of commitments aimed at promoting a more sustainable agricultural model. For example, the requirement to dedicate 4% of farmland to hedgerows, ponds, and natural spaces is no longer mandatory, following protests from farmers.

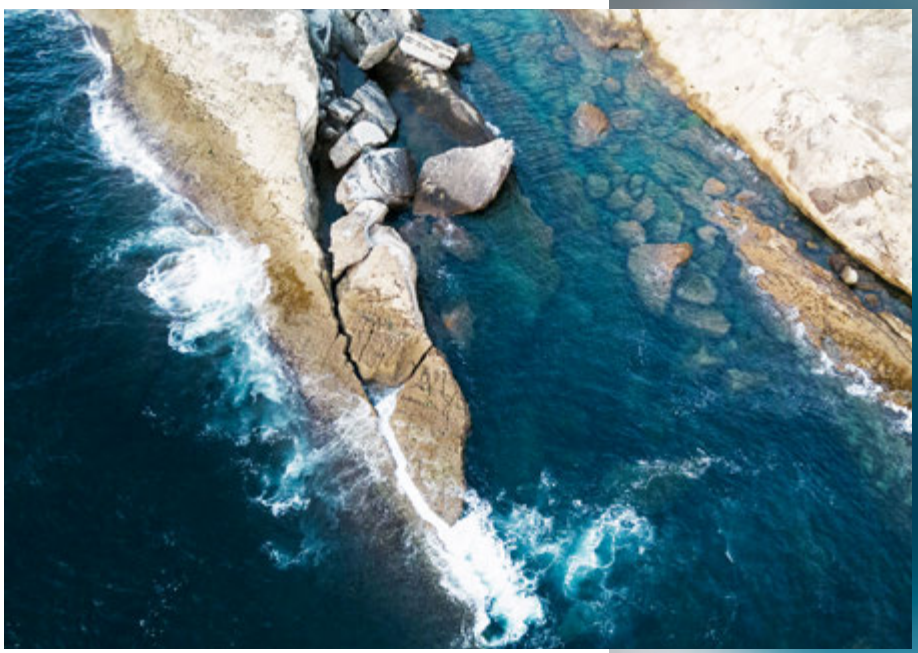


National regulations coexist with European standards. In France, several national strategies have been implemented since 2004. The most recent one, adopted in December 2023, aims to implement international commitments to biodiversity, notably the previously mentioned Kunming-Montreal Global Framework. This strategy consists of around forty measures focused on four main areas: "reducing the pressures exerted on biodiversity; restoring degraded biodiversity wherever possible; mobilising all stakeholders; and ensuring the means to achieve these ambitions."

The strategy points out several serious consequences of the pressures on nature, including the significant dependence of the economy on natural capital, which accounts for 44% of gross value added. For example, 70% of medicines and cancer treatments are directly derived from natural reserves. **National regulations are not less contested than the "Brussels" norms, such as those aimed at curbing land artificialisation, which have been challenged by some local elected officials**[lxxii].

Anti-climate/anti-nature radicalisation, in turn, fuels that of certain activists, who end up using more violent means (actions by Extinction Rebellion, ZADs, attacks in museums, etc.). The lack of dialogue creates a particularly dangerous vicious circle. **In the future, confrontations related to climate change and the transformation of nature are not to be ruled out**, both within states and between them, as the scarcity of certain resources could lead to conflicts over access to water or food, for example. Some decisions between conflicting vital imperatives can be delicate: Sweden, for example, has recently abandoned offshore wind projects in the Baltic Sea to avoid interfering with the movement of its submarines in the event of Russian attacks [lxxiii].

In his recent book, *War Ecology – A New Paradigm*[lxxiv], The philosopher Pierre Charbonnier highlights a paradox: since the creation of the European Coal and Steel Community (ECSC), peace in Europe has been based on prosperity and trade, which has encouraged carbon-intensive production and consumption as we know it. Unwittingly, **the pursuit of peace has fostered a form of economic predation**. The prosperity once believed to be blissful now contributes to the destruction of the planet. This thesis is troubling. We have already felt, in a brutal way, with Russia's invasion of Ukraine, the link between geopolitics and energy. In this case, the conflict has also driven decarbonisation. One of the advantages of regenerative agriculture is that it significantly reduces dependence on imports from third countries (fertilisers and pesticides). This is an element of strategic autonomy in the broader sense of the term, in addition to the public health and biodiversity benefits.



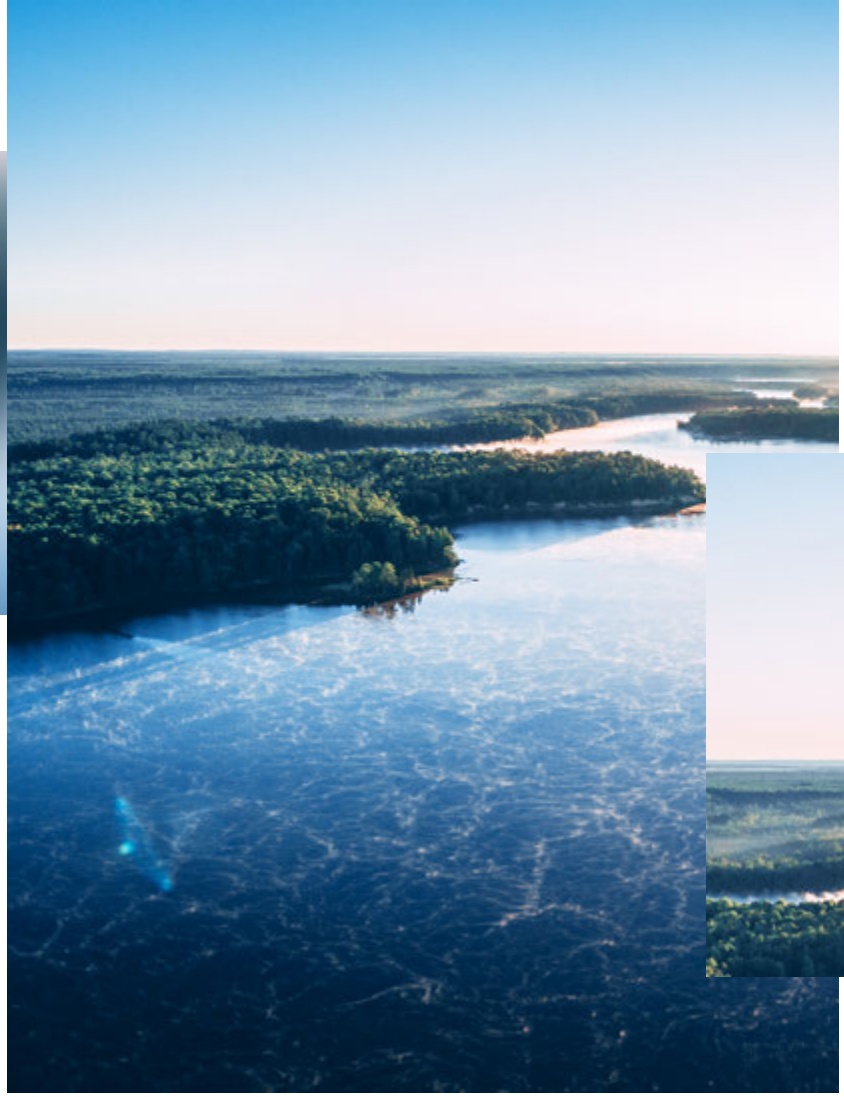
3. From parliament to court of law?

Despite efforts, in reality, **the old, productivist or even predatory model is still dominant.** The entire industrial and agricultural world does not yet seem to acknowledge the gravity of the situation, nor do most political actors and authorities. Under these conditions, it is likely that legal disputes will multiply.

Back in 2015, Mark Carney, Governor of the Bank of England, mentioned in his famous speech the risk of litigation among the three main risks that climate poses to the financial sector, alongside physical and transition risks. This is also true for biodiversity. After exploring the issue of climate-related risks, the aforementioned global network of central banks and supervisors, NGFS, published a technical document in July 2024 on the evolution of potential lawsuits related to nature[lxxv]. This document shows **an increase in legal actions against public authorities** and private non-financial and financial companies. Some of these cases are based on local populations' rights, which are increasingly being recognized at the international level. Others are based on liability claims, sometimes on the climate/nature "nexus." Several reasons suggest that legal actions will continue to increase.

Firstly, for both climate and biodiversity, and all the challenges that require global action, **multilateralism provides an ill-suited governance framework**: international law (such as the previously mentioned Montreal-Kunming framework) does not always include specific, measurable indicators that would allow verification of whether commitments are being met. Governments that disregard these commitments face no sanctions. Too often, funding promises remain unfulfilled or are delayed. Despite vital issues for the planet and humanity's survival, state sovereignty is prioritized over the future of generations to come. This situation will perpetuate the problem, create frustrations, and tempt legal action against those who fail to meet their commitments.

Even at the European or national level, where enforcement mechanisms are more extensive, the actions of public authorities and private actors still do not reflect the scientific, economic, and health urgency. The setbacks observed in early 2024 regarding pesticides, for example, are telling. Agriculture is perhaps the sector that most clearly demonstrates the difficulty in maintaining long-



term coherence. While the EU signs the Montreal-Kunming framework calling for innovative financing for biodiversity, the Common Agricultural Policy (CAP), which remains entrenched in a productivist logic, continues to account for nearly 35% of the EU's budget (around 60 billion euros per year). These inconsistencies are not only criticized by activists but also by institutions[lxxvi].

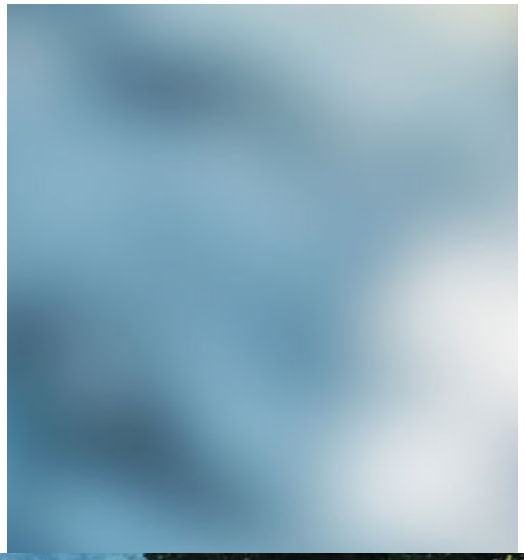
In such a context, it is likely that courts will increasingly intervene, following liability claims before civil courts (for example, in cases of pollution) or administrative law challenges for abuse of power (in cases of public authorities' inaction). **Could we one day see leaders prosecuted, as some of their predecessors were for the contaminated blood scandal, with the aggravating circumstance of denying the severity of proven risks**? Nothing can be ruled out, especially when paediatric cancers and other neuro-degenerative diseases increase near pesticide application zones or among florists handling imported flowers laden with substances that are supposed to be banned in France. At the national level in France, a compensation fund for pesticide victims (FIVP) was established in 2020, marking the recognition of the harmful effects of certain pesticides. In the case of asbestos, the compensation fund for its victims was created after its ban. In contrast, the FIVP *"normalizes the use of toxins by integrating their health damage into the functioning of the economy, at the cost of very little regard for human life"*[lxxvii].

Civil society is more organized than in the past. NGOs have professionalized their teams and, like some journalists, are increasingly using public access to documents to support reports and legal actions[lxxviii]. On the ground, **it is easier to photograph pollution or environmental damage,** while the status of whistleblowers has been strengthened.

It was a whistleblower who revealed that Nestlé Waters was using banned filtration techniques to treat its mineral water, sold at a higher price than spring or tap water[lxxix]. At the same time, social media rapidly spread emotions and indignations. A researcher from Bocconi University described this as a shift from democracy to "*emocracy*."[lxxx].

The rise of legal actions is being observed globally and is starting to be tracked. For example, in the field of climate, the British Institute for Comparative Law has developed a platform called *Global Perspectives on Corporate Climate Legal Tactics*[lxxxi]. This centre examines climate-related legal actions worldwide, having selected 17 "jurisdictions." Its aim is to contribute to the dissemination of knowledge regarding case law and legal tools used to support the Net Zero transition, and to issue recommendations. Increasingly, **law firms** are developing expertise in environmental law, biodiversity, and climate, both for advisory and preventive purposes as well as for litigation.

Some legal experts even advocate for **granting legal personhood to natural spaces, marking the end of a worldview in which humans dominate the living world** [lxxxii]. The cited article reveals that in some "Global South" countries (Ecuador, Uganda, India, and New Zealand), certain natural spaces have been granted personhood or rights. In Europe, Spain is said to have begun following this path. While criticized by some scholars, these approaches have the merit of raising the question of anthropocentrism, which is partly responsible for exploitation. Many questions remain open: How far should property rights go, when, since Roman law, they have included both use ("usus") and the right to destroy ("abusus")? And how can we convince people to change their view of what they own?



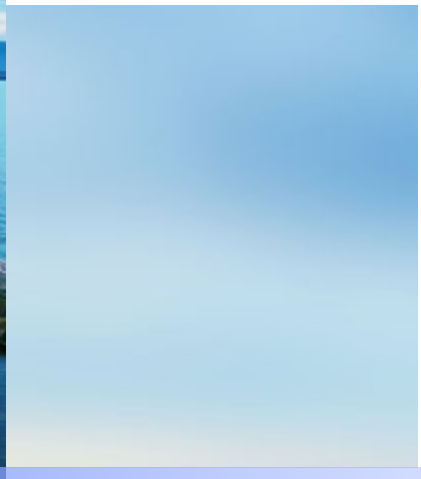
4. Involving “people”

Today, **nature is a reality that is foreign to a large part of the population, especially those in the cities of developed countries and the slums of vast urban agglomerations in poorer nations, who are cut off from natural spaces.** The former have lost the sense of the seasons and the ripening of fruits and vegetables, while the latter barely survive. For the latter, environmental issues seem secondary, even though they impact their health.

It is difficult to raise public awareness about the silent tragedy affecting a world that, especially in its invisible parts, is not very appealing. The imagination of financiers has managed to create bonds backed by well-known species (“rhino bonds” or “tiger bonds”), but it will be much harder to rally savers around bacteria, plankton, or obscure pollinating insects. The introduction of the aforementioned Dasgupta Review clearly highlights this challenge. The professor writes,

> *The reader I have in mind is the ordinary citizen concerned about the state of the world. This person has seen documentaries on television about the state of the biosphere. She has read articles in newspapers and magazines showing the extent of damage to nature and the loss of biodiversity. What she now wants is an explanation of the causes and mechanisms of this change. She also wants those explanations to lead to recommendations.*

But will she listen? In the face of climate change and massive degradation of nature, our response is minimal. Is it a matter of culture? Political courage? Costs?



Cultural biases encourage us to ignore the problem or think of false solutions. Echoing the legal tradition of Roman law that we recalled earlier, Western culture generally views the relationship between humans and nature as one of dominance over the dominated. In a famous passage from *Discours de la Méthode*, Descartes wrote that by using practical knowledge and the skills of artisans, we could "*make ourselves like the masters and possessors of nature*." Furthermore, the "like" was probably meant to avoid the accusation of trying to be God, a concern that is hardly a moral dilemma today. The unrestrained expansion of artificial intelligence, despite high energy costs and ethical uncertainties, attests to this. Humans have been to the moon, extended life expectancy, and mastered nuclear fire. They believe they are omnipotent. The fascinating book by Frédéric Samama, *Archéologie de l'inaction*, [lxxxiii] explains how the human brain replicates behaviors that we internalised as babies. It is difficult to shake off these instincts, but the author suggests some pathways.

For psychoanalysts, and greatly simplifying, human beings are driven by a "pleasure principle" that leads them to enjoy earthly pleasures (such as abundant food, air travel, driving large cars, air conditioning or heating, or even artificial snow on ski slopes), but also by a "death drive" that sometimes pushes them towards self-destruction. Some of those who refuse to make efforts for the planet are like smokers who dismiss the possibility of cancer. They avoid confronting the issue. Meanwhile, sociologist Dominique Meda points the finger at institutions, which are reluctant to take action[lxxxiv].

Some, on the other hand, dream of nature being completely preserved, but this would mean liliting human development. While it may be tempting to learn from the mistakes made by the West, developing nations will not be easily convinced. Moreover, keeping them in poverty would only create a vicious cycle. As the WWF states,

> *"over 770 million people still lack access to electricity and nearly 3 billion people still burn kerosene, coal, wood or other biomass for cooking. A lack of access to modern renewable energy solutions significantly contributes to poverty, deforestation and indoor air pollution – a major cause of premature deaths that disproportionately impacts women and children. A just energy transition will need to ensure that people have access to modern and safe sources of energy, and that the benefits and burdens are equitably shared".*

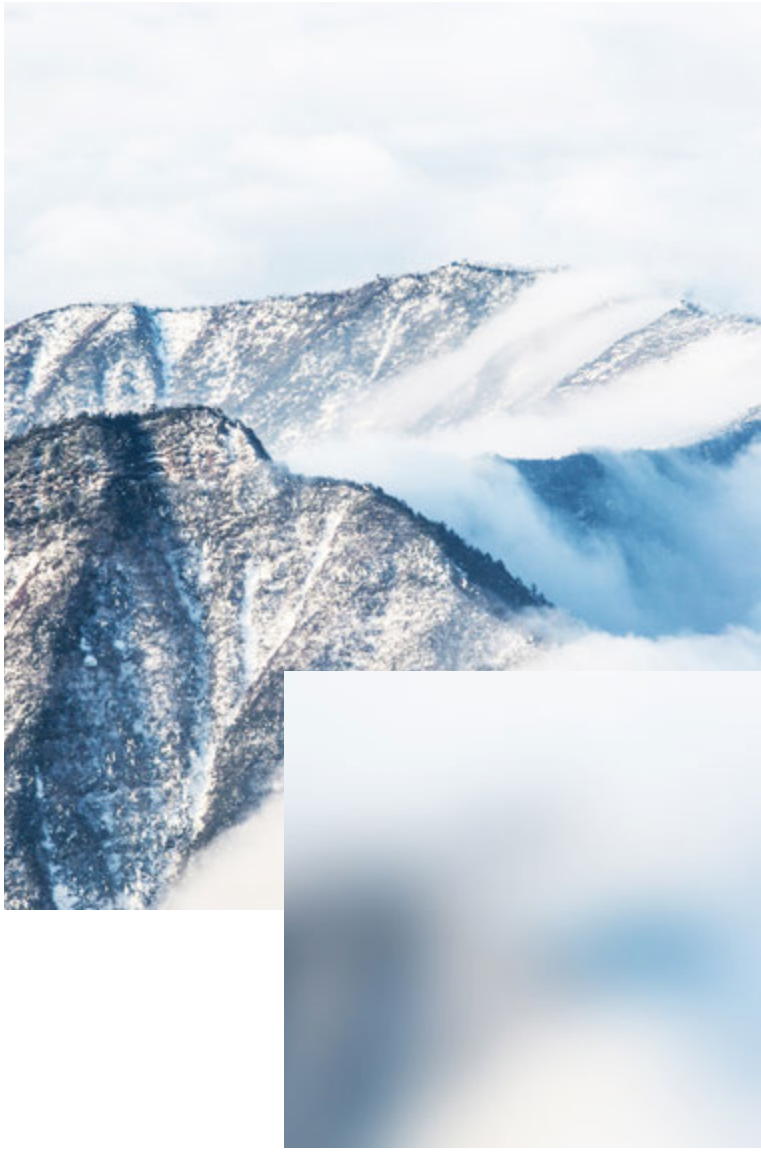
Fair and just are the keywords. Allocating costs requires political choices that are always difficult, and the proliferation of misinformation makes these choices even more challenging. As we have noted, certain political movements have chosen to ignore the warnings of science. Whether out of demagoguery or under the influence of oil-producing countries with which they have close ties, they do not hesitate to exploit fear. Resistance to change is now felt to a degree that did not exist when the Paris Agreement was signed in 2015, when Mrs. von der Leyen launched the Green Deal in 2019, or even when the Montréal-Kunming framework was adopted. In this regard, the election of Donald Trump will only make matters worse. Refusal of environmental policies seems almost to have become the latest transgressive fad. The debate no longer focuses on the various ways to transform our societies and economies—which, in a democracy, is perfectly legitimate—but instead pits those in favour of efforts against those who refuse them. Abracadabra, the problem does not exist. As if these people do not need food or drinking water and could survive in an uninhabitable world...

Some criticisms, particularly regarding the abundance of European regulations, may contain an element of truth, but we must not throw the baby out with the bathwater. The European Union uses the tools at its disposal: **lacking discretionary power and a budget of any significance, it falls back on its regulatory power**. Additionally, some ministers and Members of the European Parliament suffer from amnesia when they return to their home countries, no longer taking responsibility for what they voted for in Brussels. They forget to explain that they were happy to leave "Europe" with the responsibility of being... responsible. As with fiscal discipline, it is the EU Commission that ends up doing the "dirty work," but one day the environmental debt will catch up with us, just as financial debt is doing now.

Sometimes, it is **unfair competition from products that enter the European market without meeting our standards** that is criticised. When other regions of the world refrain from taking action, there is no fair competition. The solution would be to enforce the rules we have set. It is absurd to ban harmful

pesticides in our own countries while accepting the import of flowers, fruits, or soy that contain them. A coordinated action by European customs could put an end to these inconsistencies. However, national governments must be willing to act.

Inaction or denial risks leading to a form of radicalisation within our societies and between countries, which would be harmful to all. It would be naive to think that vital issues surrounding water or food will not escalate into conflicts, migration flows, or even wars, including civil wars. We are already seeing this with the confrontations over "water basins" in France. As scientists warn us, the situation could worsen within just **five years**, meaning the issue is not for future generations, but for us today.



Due to the evolving context and prevailing contradictions, businesses find themselves caught in a bind: on one hand, scientific analyses and international commitments call for deep, urgent transformations, which they fully recognise as necessary and even beneficial for their operations. On the other hand, reactions of rejection or denial challenge the adopted regulatory frameworks and delay action, with short-term profit pressure prevailing. While these issues require a long-term approach, with coherence and consistency, the zigzags in policies (and consumer behaviour) create uncertainty that hinders transformation.

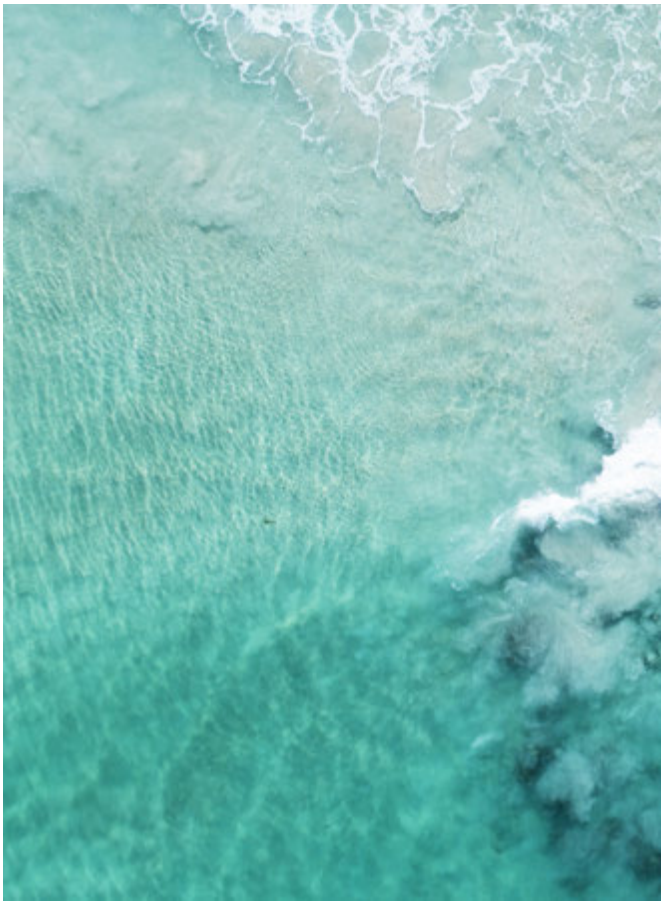
Across the group of founding companies, there is unanimous agreement on the importance of **convincing and engaging a broad audience—what are commonly referred to as "the people"—whether they are clients, employees, consumers, citizens, parents concerned about the future, or young people**.

Conclusion

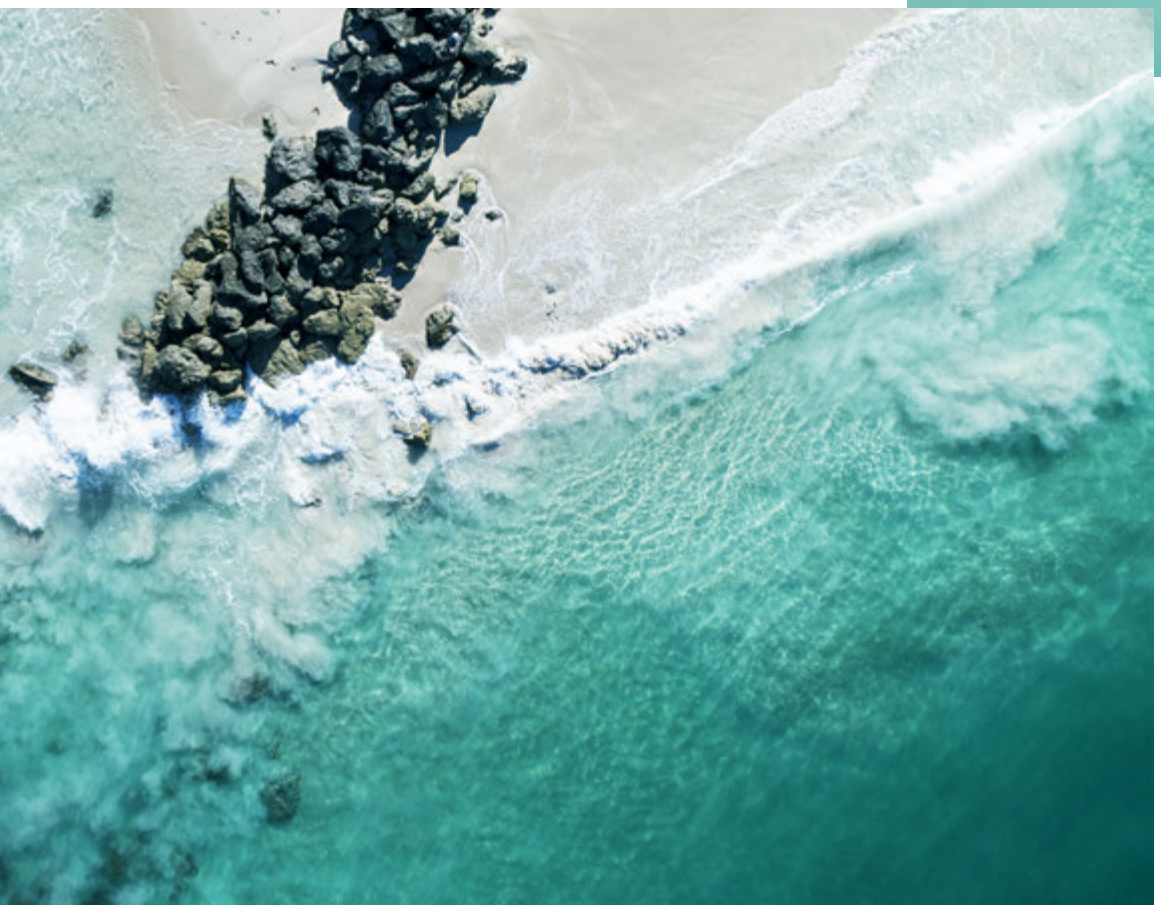
At the end of this overview, deliberately based on concrete experiences, the conclusion is twofold: **it is not too late to act, as is already happening, but we have no time to lose**. Action must be resolute, both global and local, collective, and inclusive, involving all public and private stakeholders, scientists, NGOs, businesses, media, and individuals. The aim is to **build bridges** between disciplines, to bring together specialists who are not used to interacting, and to connect worlds that are not inclined to communicate. This requires a balancing act between involving finance and non-financial businesses, the public and private sectors, "north" and "south," and experts and citizens, including the most vulnerable.

There is no alternative to transformation. Political discourse should have the courage to start from this reality and highlight the solutions that already exist, from regenerative agriculture to recycling or sobriety. It is **doable**. Harmful subsidies alone represent a substantial pool of funds that could be repurposed to finance the transition. We cannot emphasise enough that **the cost of prevention is far lower than that of restoration, with some biodiversity losses being neither repairable nor reversible**.

As important as the hard sciences (biology, botany, mathematics, physics, and chemistry) are, they are not the only ones capable of providing solutions. Innovation also requires the involvement of the **humanities**. Philippe Grandcolas stresses the need to build a motivating discourse, to highlight "positive externalities," and to convince[lxxxv],. Curiously, it is not the political circles that propose innovations, but civil society. Ahead of COP 28 in Dubai, Pope Francis, for example, published a second incisive text on the environment, titled *Laudate Deum*[lxxxvi], which calls for a reform of diplomatic methods. It is a plea for "bottom-up multilateralism" that goes beyond closed-door discussions leading to often limited results, but involves people—especially the most vulnerable, indigenous peoples, and local communities. The message is universally relevant and methodological. Books are also being published that invite personal, philosophical reflection, such as *Agro-philosophie* by Gaspard Koenig[lxxxvii].



The preservation of biodiversity, therefore, cannot be reduced to a series of good managerial decisions, no matter how important or useful. While businesses have a strategic interest, and management is key to execution, ultimately it depends on the ability to **give more meaning** to what we do, what we make and what we consume. The environment-first approach, contrary to what some may claim, is not punitive. While it may mean going without certain goods or foods, these are often superfluous or even harmful to our health. In return, there are personal benefits to be gained, including greater fulfilment and better physical well-being, not to mention the advantages for society, while sharing lays the foundation for more lasting civil harmony. The approach is difficult, but **it makes sense**, and this inherent sense is perhaps its best chance for success.



Appendix 1
References

Bouygues

Overview of biodiversity practices in the Bouygues group, 2023

BNPP

+ BNP Paribas and biodiversity preservation, May 2021
+ Natural capital and biodiversity | BNP Paribas (group.bnpparibas)
+ Water, a vital resource seeking $1,000 billion in investments (in French - group.bnpparibas)
+ Naturalis & BNP ParibaNaturalis & BNP Paribas: a new partnership and a milestone for biodiversity (group.bnpparibas)

ENGIE

2024 Integrated Report: "Acting for an Affordable Energy Transition and Desirable for All"

LVMH

Our Commitment for the Environment - LVMH

SNCF Voyageurs

+ Preserving resources and limiting waste, SNCF Group, March 2024
+ Group Circular Economy Policy, January 2024

VEOLIA

Greenup 2024 ESG Report, an impact strategy for our stakeholders

For other references, see notes at end of study.

Appendix 2
Acknowledgements

I wish to warmly thank:

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  - Engie - Elsa Favrot-Monier
  - LVMH - Hélène Valade
  - Veolia - Jean-Pierre Maugendre
  - SNCF Voyageurs - Valérie Darmaillacq

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  - Prof. Francesco Perrini, Associate Dean for sustainability, SDA Bocconi
  - Prof. Stefano Pogutz, Prof. of sustainability strategy and Green management, SDA author of Corporate Sustainability in the 21st Century (co-authored with Rafael Sardà), Routledge, 2018
  - Prof. Carlo Altomonte, Professor of Macroeconomics and International Business Environment, SDA Bocconi
  - Prof. Valentina Bosetti, Università Bocconi
  - Prof. Paola Cillo, Associate Dean for research, SDA Bocconi
  - Prof. Vitaliano Fiorello, Associate Professor of Practice (Operations & Supply Chain Management), Invernizzi Agri-Lab, SDA Bocconi
  - Romain Svartzman, researcher, Università Bocconi

Notes

i Title borrowed from Frank Elderson (member of the Executive Board, ECB) who used it in an interview with Time magazine, Time100 climate 2024, November 12, 2024.

ii Deliberately, in this note aimed primarily at businesses, we have prioritised the economic perspective. Nevertheless, we remain fully aware that humanity's responsibility towards living beings, of which it is an integral part, touches on moral and political considerations that are infinitely deeper.

iii Pascal Pensées, 72, Editions Garnier-Flammarion, page 64

iv See Appendix 1 for the list of reports studied, in addition to conversations with CSR managers.

v LVMH works with natural materials, which is obviously not the case for BNPP, which provides financial services. The Bouygues group encompasses both construction activities and a media outlet like TF1. The Veolia group offers pollution control solutions, Engie produces renewable energy, and SNCF Voyageurs provides clean mobility. However, these companies also have an impact, such as land use, soil artificialisation, or energy consumption, for example.

vi See in particular Corporate Sustainability in the 21st Century by Prof. Stefano Pogutz SDA Bocconi, co-authored with Prof. Rafael Sardà – Routledge, 2018.

vii IPBES, Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services; IPCC, Intergovernmental Panel on Climate Change.

viii Some scientists, such as Mr. Guilyardi (CNRS), dispute the use of the term "limits" as well as the concept of a "tipping point" (see Global Trends, 2050NOW La Maison, 2024). We are aware of this scientific controversy, which lies beyond the scope of this study and which we do not aim to resolve.

ix Written at the request of the French Commission on Sustainable Development Rapport_sobriete_OREE.pdf

x In French, Wild Projects Editions with a preface by Al Gore

xi Final Report - The Economics of Biodiversity: The Dasgupta Review - GOV.UK The abridged version of around 60 pages is more accessible.

xii WWF (2024) Living Planet Report 2024 – A System in Peril. WWF, Gland, Switzerland

xiii Review, page 26

xiv Steffen, W., Grinevald, J., Crutzen, P., and Mcneill, J. (2011). "The Anthropocene: Conceptual and Historical Perspectives." Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences 369 (1938): 842–67. https://doi.org/10.1098/rsta.2010.0327.

xv Ripple, W.J, Wolf, C., Newsome, T.M., Barnard, P. Moomaw, P.R. (2019). "World Scientists' Warning of a Climate Emergency." BioScience. https://doi.org/10.1093/biosci/biz088

xvi Biodiversité, les solutions pour agir, manuel de recommandation à usage des décideurs (executives' guide to biodiversity solutions)

xvii The tragedy of the horizon, Lloyd's, September 29, 2015, by the Governor of the Bank of England

xviii See, for example, a worrying overview recently conducted by the Financial Stability Board, the body linked to the G20 Finance group, bringing together Treasuries, central banks, and market supervisors: Stocktake on Nature-related Risks: Supervisory and regulatory approaches and perspectives on financial risk - Financial Stability Board (fsb.org)

xix Much more than a market (Avril 2024)

xx EU competitiveness: Looking ahead - European Commission

xxi Le Global Biodiversity Score | CDC Biodiversité

xxii Guidance on the identification and assessment of nature related issues

xxiii See, for measurement issues, the report of the working group IAPB Measurement Working Group paper.pdf - Google Drive and the final document, FRAMEWORK

xxiv Mouvement Impact France - Ensemble, changeons l'économie.

xxv Central banks in a changing world: the role of the ECB in face of climate and environmental risks, June 7, 2024, Speech by Christine Lagarde

xxvi Quoted in an opinion piece by Arthur Charpentier (mathematician) in Le Monde, "Neither insurers nor governments are prepared for the exponential increase in losses related to climate risk", July 9, 2023,

xxvii Scénarios et projections climatiques | Chiffres clés du climat 2024

xxviii Interview in the newspaper Les Echos, March 29, 2024

xxix EIOPA Staff paper on nature related risks and impacts for insurance, 23/247 Mars 2023

xxx To use the expression chosen by Valérie Masson-Delmotte in her preface to Philippe Grandcolas' book, Tout comprendre ou presque sur la biodiversité (understanding almost everything about biodiversity), CNRS Editions, 2023

xxxi see Christian de Perthuis, La vérité sur la dette écologique : focus sur la dette climatique (the truth about climate debt, February 16, 2024) – at christiandeperthuis.fr

xxxii Occitanie en Provence, Regenerative agriculture framework for fertile projects (July 2023)

xxxiii Federico Rampini, Green New Deal addio, October 5, 2024, Corriere della Sera. In a highly Orwellian manner, the author describes the interest in organic farming as "superstition" (sic) and "not scientific".

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