Addressing the climate-nature nexus in practice

A TNFD pilot study

TNFD Taskforce on Nature-related
Financial Disclosures

led by

sycomore am

in collaboration with

NEC The holistic metric guiding
environmental action

ICare by BearingPoint

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Contents

Executive summary

The present pilot study aims at:

- reviewing and assessing the ability of financial institutions, and in particular asset managers, to address some of the proposed v0.2 to v0.4 recommendations of the TNFD,
- providing feedback to the TNFD on the LEAP approach, on metrics' categorization and on metrics' operability.

This report is **focusing on the facilitating role of the Net Environmental Contribution, NEC**, in the highly demanding European (EU Action Plan for Sustainable Finance) and French (article 29 of Energy Climate Law) regulatory context. The pilot is led by **Sycomore AM** with the contribution of the **NEC Initiative** and **I Care** consultancy.

The key general learnings are:

- It is **possible to deploy the TNFD recommendations, including key elements of the LEAP approach, at asset manager level**. A set of publicly released documents - Natural Capital Strategy, ESG integration policy, annual investor report, annual mission report, financial products' monthly reports, 2030 targets – combined with the extensive use of the NEC metric are highly contributive elements to address them. The specificity of Sycomore AM, as a BCorp certified, mission-driven company, has also favored the target setting exercise.
- The **French context of Article 29 Law on Energy and Climate is favoring the preparation of financial players to some of the TNFD recommendations**, in particular the disclosure obligations on climate and biodiversity issues at financial product and entity levels.
- At financial institutions' level, relative environmental or nature-related metrics are required for target setting, piloting, risks & opportunities assessment and management, transparency and disclosure. More widely, **a common language and standard environmental accounting practices are required** to build these relative metrics and bridge the multiple gaps between local impacts, business activities and financial aggregation levels.
- Key elements of this common language are provided by **advanced metrics, such as the NEC, science-based policy tools, such as taxonomies, and robust third-party environmental certifications**.

Considering metrics:

- **Absolute metrics converted into relative metrics at the top of aggregation levels are failing to generate relevant, reliable, and useful information for investor decision making and information**. The magnitude of the required aggregations is amplifying the multiple bias of the existing relative environmental footprinting (partial scoping, double counting, robust data availability, lack of avoided impact standards, lack of localized perspectives, etc.) and by the use of a common economical denominator (introducing volatility from market price fluctuation and distortions along the value chains). They currently provide heterogeneously aggregated economical environmental scores, only usable for reporting at financial players' level.
- Nevertheless, **emerging environmental or biodiversity absolute footprints/metrics**, such as the Corporate Biodiversity Footprint, CBF, **seems to be very useful at activity, business unit and corporate levels** as soon as they are robust and exhaustive enough, and as they provide a piece of common language, e.g. with normalized Mean Species Abundance, MSA, footprint.

- Relative scores, such as alignment metrics, relative contributions and, to a lesser extent, the taxonomy-based shares, as illustrated by the EU taxonomy or Greenfin categories, provide useful and complementary elements of common language and reporting elements.
- **At the level of financial market participants** (financial products, asset managers and asset owners), the **meaningfulness, robustness, comparability, operability, and user-friendliness of methodological approaches, including aggregation method, are critical** to enable nature-related metrics to integrate and influence the investment strategies and more widely decision-making levels.
- **Most existing metrics for financial institutions are failing to support consistent decision making** and to categorize as a disclosure and response metric, as defined by the TNFD 0.2 to 0.4 versions, for they are either climate or carbon-only, either black-box E ratings of poor meaningfulness, poorly science-based or a combination of both.
- Biodiversity footprinting is recent, not yet normalized and granular enough to be used as a unique decision metric, even for the Corporate Biodiversity Footprint, CBF, which is one of the most advanced MSA-based tool. **At this early stage of development, biodiversity footprinting is a promising candidate to propose a physical, common footprinting metric**, expressed in surface unit, that has already started to be used for reporting, especially in the French regulatory context, and for analysis and engagement at corporate business level. Nevertheless, there is not yet enough granularity and discriminating power to assess the company material risks and opportunities at financial market participant level and the first observations show common limitations between aggregated carbon and biodiversity footprinting, as used by financial institutions.
- **The NEC approach is facilitating the TNFD recommendations' deployment** by **operationalizing** the **LEAP approach**, in particular **its A and P steps**, enabling investment decision making, due diligence and target setting at corporate, financial products and financial player levels. The NEC specifically enables to assess and manage nature-related risks and opportunities along the value chains, through its detailed assessment of the environmental performance of the company product & service mix. Moreover, the NEC proposes **a transparent, science-based way to address the climate-nature nexus**. In short, it is a serious candidate as a core disclosure metric, as defined by the TNFD.

Considering specific recommendations to TNFD:

- Absolute and relative nature-related metrics have different features, limitations, and usages for TNFD stakeholders. They are very complementary and useful for the most reliable ones. **Learnings and recommendations would gain in clarity and pedagogy if these two kinds of metrics are addressed separately**.
- The NEC approach and its metrics sets, from NEC feeders to NEC scores, is a **robust candidate, identified in the pilot, for the TNFD core disclosure metrics' category** for financial institutions. It addresses the multiple challenges of aggregation, standardization and transparency, bridging the double gap between the products & services and corporate's environmental impacts and between corporates and financial institutions. As a transparent, science-based way to address climate-nature nexus and to operationalize nature-related risks & opportunities assessment and management, the NEC is already used by several players.
- **Green-taxonomies and certification schemes can be helpful too**, to reach retail investors, and to provide additional metrics, as demonstrated by the Greenfin label in France or potentially by the EU green taxonomy's on-going attempt. Facing the current blooming

multiplication of national and regional taxonomies, the TNFD could be play a key role **to foster the convergence of this heterogeneous international landscape towards a reduced number of TNFD compliant global taxonomies**.

- **The recourse to forward-looking scenarios must be a limited, generally optional, illustrative approach** in both TNFD draft disclosure recommendation 'Strategy C' and TNFD LEAP approach for nature-related risk and opportunity assessment. We recommend taking into consideration not only different scenarios, but also or as an alternative, science-based frameworks. **By "science-based frameworks", we mean methodological frameworks, such as the NEC, science-based policy tools, such as taxonomies, and robust third-party environmental certifications, such as the Greenfin label**.

Acknowledgements

Introduction

Bridging the complexity gap

The French scientist Henri Poincaré[1] used to say that *"A problem well posed is half solved"*. This section is summarizing the problem to be solved.

During the last two decades of rising environmental awareness, the panorama of international frameworks has been strongly enriched up to the Kunming-Montreal Agreement and its Global Biodiversity Framework in December 2022, and as illustrated in the following scheme. The question is no longer if environmental challenges matter to investors, but how quickly the finance industry can integrate them on an efficient and reliable way.

RISKS
- Technology risk
- Policy risk
- Market risk
- Reputation risk
- Transition risk
- Physical risk
- Systemic risk

OPPORTUNITIES
- Transition
- Resilience
- Solutions
- Adaptation

SOFT AND HARD LAWS
- TCFD[(1)] and TNFD[(2)]
- Transparency on sustainability factors[(3)]
- Green deals in EU, USA, …
- Green labels[(4)] and taxonomies
- Fiduciary duty

CAPITAL REALLOCATION
- Paris Agreement
- Kunming-Montreal Agreement
- Impact investing
- Between 1 to 10 trillion US$ per year of new allocation[(5)]

(1) Taskforce on Climate-related Financial Disclosures since 2017.
(2) Taskforce on Nature-related Financial Disclosures launched in June 2021, draft recommendations issued in 2022.
(3) Sustainable Finance Disclosure Regulation, SFDR, at European level entered into force in March 2021, Article 173 of the French law on energy transition for green growth of 2015, replaced by Article 29 of French Energy Climate law of 2019.
(4) Greenfin, Towards Sustainability, FNG, Umweltzeichen, LuxFLAG Environment and Climate Finance, Nordic Swan,…
(5) Estimation range of annual new capital allocation from IEA, OECD and UN, 2019.

Figure 1 - Simplified mapping of game-changing elements in the integration of environmental issues in the finance industry, NEC initiative 2023.

Corporate and financial institutions are facing **a triple complexity challenge**:

1. Complexity of the **physical and biological reality**: multiple and intertwined environmental issues as highlighted by the TNFD, the IPCC and the IPBES,
2. Complexity of the **economical world**: diversity of the business's local and global environmental impacts and dependencies across their value chain, a business entity being a sort of very complex living organism spread out at local, regional, national or global scale with permanent interactions with natural and economic ecosystems,
3. Increasing complexity of transparency and compliance duties to **regulatory frameworks** of business and financial players, especially in Europe.

How big are those complexity challenges?

The following scheme is mapping, on a simplified way, the long value chain from the reality of nature, the physical and biological level up to the upper levels, where financial decisions take place: corporate, fund manager, asset manager and asset owner levels. **At each step, the order of magnitude of the number of elements to be aggregated is estimated by a single figure**, starting from the level where pollution or positive impacts are generated by human activities. **The 7 levels are:**

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[1] Jules Henri Poincaré (1854 – 1912) was a French mathematician, theoretical physicist, engineer, and philosopher of science. He is often described as a polymath, and in mathematics as "The Last Universalist". The original quote in French is *"Un problème bien posé est à moitié résolu »*.

0. Physical and biological reality of Nature: the 4 realms of the biosphere (land, freshwater, ocean and atmosphere), where the 5 main pressures identified by the IPBES may occur.

1. Human activity level: **n is the number of main environmental impacts of a given human activity**, positive and negative, taking into account both climate and nature dimension and the whole value chain. This is the **first aggregation step**: in a theoretical approach, n would be a high number far above 100. In the present simplified approach, focusing on main impacts, **n is typically between 5 and 10**,

2. Business unit level: the order of magnitude of the number of activities that a Business Unit is encompassing is set at **10** (geographies, types of service, types of products, …),

3. Corporate level: the order of magnitude of the number Business Units per corporate is set at **10** (from 1 for a mono-activity company to hundreds for large transnational conglomerates),

4. Portfolio level: funds, indexes and other financial products encompass from tenths to hundreds of constituents, **100** is set as the order of magnitude of the number of underlying corporates,

5. Asset Manager level: as Assets under Management, AuM, gathers tenth to thousands of financial products and their related benchmarks, **100** is set as the order of magnitude of the underlying financial products,

6. Asset Owner level: as Assets under Management, AuM, gathers numerous integrated or external asset managers, **10** is set as the order of magnitude of the different underlying Asset Managers.

The following scheme summarizes the 6 aggregations steps, from level 0 to 6, **leading to an order of magnitude of 10,000,000 x n impacts to be integrated** at the top asset owner level and **millions of impacts at asset management level**.

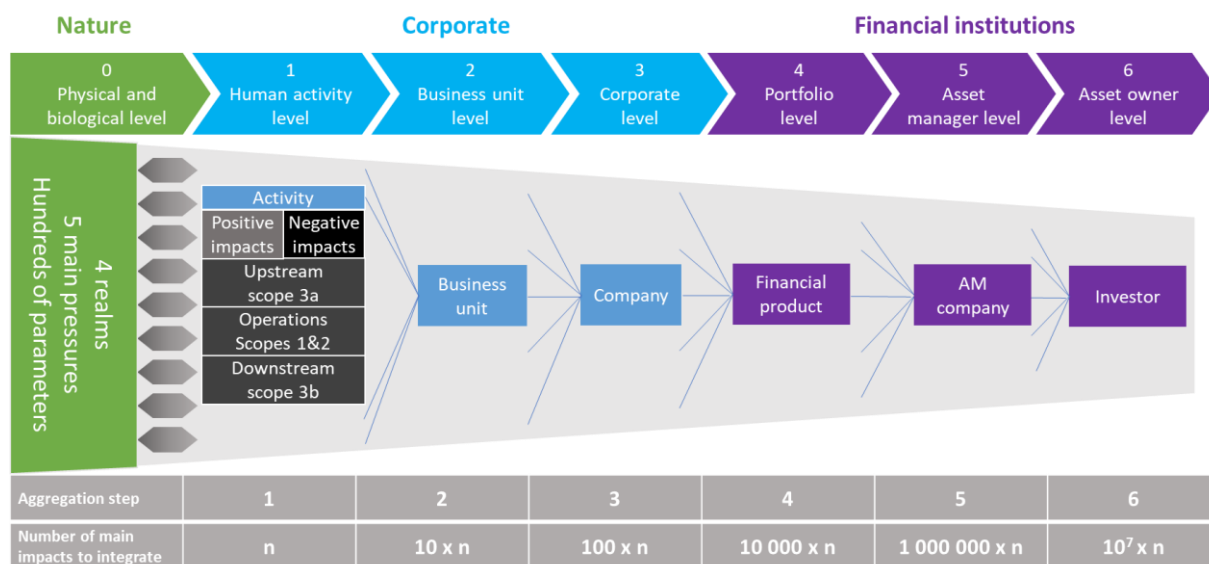| Aggregation step	1	2	3	4	5	6
Number of main impacts to integrate	n	10 x n	100 x n	10 000 x n	1 000 000 x n	10^7 x n

Figure 2 - Mapping the aggregation challenge, Sycomore AM 2023.

It clearly shows that:

- **the aggregation challenge is a central problem to address the TNFD operability at financial institutions' level**,
- the **quality of input information** at the first level determines the quality of aggregated output at the top levels ("garbage in, garbage out" as commonly said),

- transparency is required at each aggregation level to ensure **traceability and comparability**,
- the ultimate decision-making level at asset owner level **requires a common language all along the whole aggregation chain**.

This pilot explores the ability of different metrics to bridge these critical gaps and zooms on the aggregation engineering provided by the Net Environmental Contribution, NEC, as a disruptive, transparent, standardized way to aggregate impact information, turning it into a relative impact score, fully aggregable along the whole corporate and finance value chain.

Tested TNFD scope

The TNFD pilot's scope is focused on operability at asset manager level and encompasses:

- All economic activities across all sectors whatever the asset class,
- Modelling and aggregating climate and other pressures on biodiversity,
- Available metrics for financial institutions: NEC, SB2A Implied Temperature Rise, SBTi validated targets, EU taxonomy green share, Greenfin certification scheme, carbon footprint, CBF-based biodiversity footprint, and other E ratings,
- Nature-related transition risks and opportunities.

Physical risks assessment, dependency to ecosystem services assessment and non-corporate entities are out of scope of the present study.

The tested TNFD elements are:

- The high-level recommendations,
- The LEAP approach,
- The metrics categorization,
- The integration of climate and nature, i.e. addressing the climate-nature nexus,
- The use of already accessible, robust, available information and data (life-cycle-analysis libraries, independent environmental studies, and environmental certifications).

The study is structured along three main sections:

- A practitioner's general feedbacks on the TNFD, coordinated by Sycomore Asset Management,
- A focus on the NEC as a tool facilitating the TNFD deployment for financial institutions, coordinated by the NEC initiative,
- Key takeaways, enriched and reviewed by I Care consultancy.

Practitioner's feedbacks along TNFD's recommendations

TNFD along Sycomore AM investment strategy

Created in 2001, Sycomore Asset Management is an entrepreneurial asset management firm specialized in listed equities and corporate bonds. Taken over by Generali Spa in 2019, the company has been converted into a mission-led company, according to the French law, with the BCorp

certification since 2020. Since 2016, Sycomore has been disclosing and updating its Natural Capital Strategy. In 2023, Sycomore employs 75 professionals and managed €7bn. Most recent information is available on https://en.sycomore-am.com/ and in particular along Sycomore AM's Natural Capital Strategy, version 2022, and Sycomore AM's annual reports, Sycoway as an investor, and Sycoway as a company.

Since inception in 2016, Sycomore's Natural Capital Strategy is considering Nature or the biosphere as a whole, integrating climate into its nature-based approach, as one of the environmental issue and pressure on biodiversity. Since 2020, the Natural Capital Strategy has been adopting the TCFD structure (governance, strategy, risk management, metrics & targets), as illustrated below:

Figure 3 - Table of contents of 2020 update of Sycomore AM's Natural Capital Strategy.

Figure 4 - Table of contents of 2022 update of Sycomore AM's Natural Capital Strategy.

Since 2022, Sycomore AM has been a member of the TNFD forum. In December 2022, Sycomore AM attended the Biodiversity COP 15 in Montreal, where it shared its experience as an expert user of the NEC. The TNFD v0.3 and v0.4 mappings of TNFD disclosure recommendations has been used, as follows:

- v0.3

Governance		Strategy				Risk & Impact Management					Metrics and Targets			
A	B	A	B	C	D	A	B	C	D	E	A	B	C	D

- V0.4
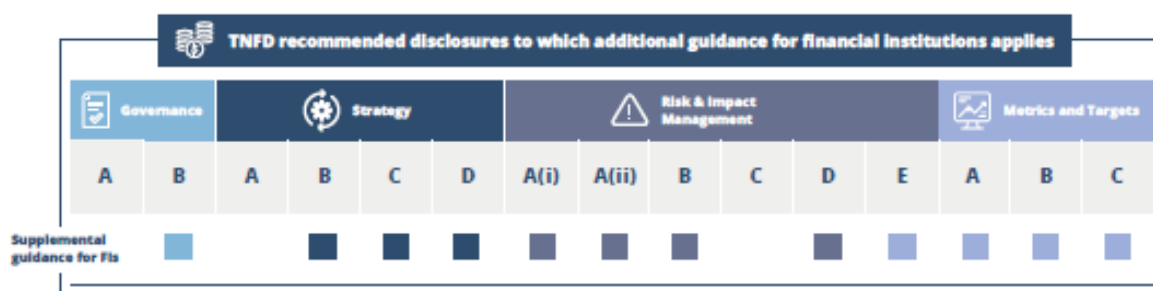
As a mission-driven company, according to the French Law, the Board and the General Assembly of Shareholders have approved Sycomore AM's mission. The first 2 items (out of 6) of Sycomore AM's mission address both environmental and societal impacts:

1. "to measure and improve the environmental and societal contribution of our investments while providing transparency and a learning experience for our clients",
2. "to continue with the development of our socially responsible fund range, aiming to deliver positive impacts combining purpose and performance".

Category	Item	Sycomore AM response	Disclosure / source
Governance	A.	The Natural Capital Strategy is reviewed by the Mission Committee and the Steering Committee. The Board and the General Assembly of shareholders have approved Sycomore AM's mission including above items 1 & 2.	Natural Capital Strategy, v 2022, p. 23; Sycoway as a company, 2022 version for 2021, p. 4-6, and 2023 version for 2022
	B.	Management is supporting the assessment and the integration of nature-related dependencies, impacts, risks and opportunities via the climate and biodiversity toolboxes and the E pillar of the internal environmental analysis (see internal ESG model). Management is accountable for reaching the main 2030 environmental goal, a +20% NEC on average across all our investments (weighted average of all managed AuM).	Natural Capital Strategy, v 2022, p. 20-22; Sycoway as a company, 2022 version for year 2021, p.51-59, and 2023 version for 2022
Strategy	A.	Nature-related impacts, risks and opportunities for Sycomore AM have been identified at issuer level in the managed portfolios. These risks and opportunities are identified over short, medium and/or long-term depending on the investees and fill in our proprietary analysis tool, SPICE. We are currently working on strengthening our approach on nature-related dependencies, assessing these at investees and portfolio level, exploring to ENCORE methodology. Systemic risk is not considered, as difficult to measure and to manage, at this stage.	Natural Capital Strategy, v 2022, p. 18-22

	B.	The main impact at business, strategy and planning level is the adoption in 2022 of an ambitious 2030 target to reduce our transition risk via a very significant NEC increase.	Natural Capital Strategy, v 2022, p. 20-22; Sycoway as a company for 2021, p. 51-52, and 2023 version for 2022
	C.	Scenario analysis can bring insightful information at issuer level. Nevertheless, scenario analysis presents some limitations at asset management level and are in practice, difficult to use as a guide for investment strategies. At fund and AM company levels, we use SBTi validated targets and SB2A ITR, Science-based 2°C Alignment Implied Temperature Rise provided by Iceberg Data Lab, to assess and report on climate alignment.	Natural Capital Strategy, v 2022, p. 6; Sycoway as a company, 2022 version for year 2021, p.51-59.
	v0.3 and v0.4 D.	As an asset manager, we are at 5 integration levels above local impacts, we thus rely on investees' analysis (disclosures, performances, dialogue…) of their interactions with low integrity ecosystems, high importance ecosystems or areas of water stress. We are not able to aggregate this localized information, but we have designed internal processes to limit our exposure to economic activities that present a threat to ecosystems per nature, for instance: - we do not invest in production and distribution of synthetic chemical pesticides as described in our exclusion policy. - We track via the NEC calculation process the wood and fiber sourced from non-certified forests, the non-certified biofuels or biofuels with weak environmental benefits, the non-RSPO-certified palm oil and the RSPO certification level and the share of organic-certified agriculture.	ESG integration and shareholder engagement policy, v2022 and exclusion policy, v2023; the following NEC 1.0 framework methodologies available on www.nec-initiative.org: Home and Personal Care, Food and Beverage, Fuel, Wood & Paper.
Risk & Impact Management	v0.3 A. and v0.4 A.(i) and A.(ii)	A. At issuer level, we mainly use the transition risk and the physical risks assessment that are embedded in our internal ESG assessment model of investees. The transition assessment is NEC-based: the more relative impact is high, the lower is the NEC and the bigger is the risk. Nature-related impacts are quantified by the Corporate Biodiversity Footprint (CBF) which can help identify which are the largest pressures on biodiversity (by pressure and scope) and some dependencies. At asset management company level, the assessment is also achieved with the same internal ESG assessment tool, named SPICE. It includes transition risk and physical assessment in the E pillar.	ESG integration and shareholder engagement policy, v2022, page 9; Natural Capital Strategy, v 2022, p. 18-19 ; Sycoway as a company, 2021, p.6 and p.54-55; Sycoway as an investor 2021 reports of the main open-end funds, and 2023 version for 2022, as well 2022

		Metrics used are extensively disclosed in annual reports, monthly reporting and summarized in the Natural Capital Strategy, "Metrics and 2030 Target" section. A.(i) For direct operations see: • At AM level in Sycoway as a company report, alias mission report since 2021, the most material impact identified is the GHG emissions that have been disclosed and monitored since 2020, • At investee/issuer level, see "Integration of environmental issues" section of the E pillar of our ESG analysis model. A.(ii) For the whole value chain scope including upstream and downstream or financed assets: • At AM level in Sycoway as an investor report, article 29-related disclosure, nature-related risks and opportunities are assessed, monitored and managed via Sycomore AM's aggregated NEC score, • At investee/issuer level, see the "Transition risk" and "Physical risks" sections of the E pillar of our ESG analysis model. The Transition risk assessment is based on the NEC score and completed with 2 elements: a trajectory analysis and an assessment of the green differentiation versus peers. • At fund level, a 2030 target NEC has been set for the most significant funds (>€500m AuM).	reports of main open-end funds.
	B.	Nature-related dependencies, impacts, risks and opportunities are managed: • At issuer level, via exclusion or, when invested via engagement and via the valuation method which is highly sensitive to our ESG rating, • At portfolio level, via a minimal NEC criteria or other minimal ESG ratings or a 2030 NEC target, depending on each portfolio's strategy, • At company level, via monitoring and 2030 target setting in term of NEC, used as a proxy of transition risk.	Natural Capital Strategy, v 2022, p. 18-22 ; Sycoway as a company, 2021, p.6 ; 2021 and 2022 annual reports of funds over €500m (French Article 29's obligation) available on Sycomore AM website
	C.	These management processes are integrated: • At issuer level: systematically, as a full ESG analysis is mandatory for any direct investment in equity or corporate bonds, • At portfolio level: systematically, as a result of the previous mandatory process. Moreover, the SPICE/ESG ratings are disclosed in monthly reporting, including the NEC (portfolio and benchmark),	Natural Capital Strategy, v 2022, p. 18-22 ; ESG integration and shareholder engagement policy, v2022; Sycoway as a company, 2021, p.51, and 2023

		• At company level, via monitoring since 2018 and annually the NEC of Sycomore AM Asset under Management, along the trajectory set by 2030.	version for 2022; monthly reports of funds available on Sycomore AM website
	V0.4 D.	Stakeholders' engagement policy is detailed in our Natural Capital Strategy (updated every 2 years). Our engagement approach and results are disclosed in our annual report. We also have guidelines in our voting policy dedicated to our votes with regards to the environmental strategy and performance of our investee companies. These votes are made public in our annual voting report. A significant share of the ESG engagement is nature-related.	Voting policy updated March 2023; 2021 proxy voting annual report; Sycomore AM proxy voting dashboard by ISS governance
Metrics & targets	A	Nature-related risks and opportunities metrics are the NEC-based Transition risk score and the physical risk scores at issuer level. At portfolio and AM company level, only the NEC is aggregated and monitored, as a proxy of the transition risk. The NEC score are extensively disclosed in annual reports, monthly reporting and in the Natural Capital Strategy.	Natural Capital Strategy, v 2022, p. 20-22 ; page 8 of ESG integration and shareholder engagement policy, v2022; 2021 and 2022 annual reports of funds over €500m (Article 29 related disclosure) and funds' monthly reports available on Sycomore AM website
	B.	Our approach of impacts and dependencies, in general (not only for nature-related issues but also for social issues) include the whole life cycle of products or services and the whole value chain of corporates, upstream and downstream. Additionally, the NEC is purpose-/final use-oriented, systematically seeking to capture the final use or purpose of the analyzed activities.	Natural Capital Strategy, v 2022, p.3 and 10-15 ; Societal Capital Strategy, 2020; NEC 1.0 methodology
	C.	NEC-based nature-related targets are set and monitored: • At issuer level: company's own nature-related targets are analyzed and may be challenged via dialogue, voting and/or engagement, transparency being the most frequent focus; • At portfolio level: systematically for all open-end funds, and not only for the ones that are under the mandatory Article 29's disclosure obligation; • At company level, via the 2030 NEC goal for Sycomore AM, as a mission-driven company.	Natural Capital Strategy, v 2022, p.3 and 10-15; 2030 targets are disclosed in 2021 and 2022 annual reports of funds over €500m (Article 29 related disclosure) available on Sycomore AM website

	V0.3 D.	Nature and climate integration is a cornerstone of our approach, as reflected by our Natural Capital Strategy since 2016. Climate, Biodiversity and Resources impacts are different, and the NEC provides us with a transparent way to aggregate them manage these very frequent trade-offs. The integration of those trade-offs is industrialized by the NEC, as explained in this TNFD (in particular, in the NEC introductive section).	Natural Capital Strategy, v 2022, p.3 and p.10-15; figure 14 of the present study, and NEC methodology

Figure 5 – Table of Sycomore AM's review along TNFD recommendations.

This review has been very useful to identify the main weaknesses of our approach along TNFD recommendations and prioritize our next improvement steps. At this stage, 5 priorities have been identified:

1. **Improve the assessment of nature-related physical risks** at issuer lever and its monitoring at portfolio level,
2. Consider a **higher physical risks' integration** in Sycomore AM ESG and risk model, e.g. by increasing the relative weight of physical risks in our internal rating system,
3. Continue to **engage investees to move from climate-only to nature-based approaches**, e.g. moving from TCFD report to TNFD report,
4. Improve **our transition risk assessment** via periodic NEC scoring update and NEC variation over time,
5. Examine how **our SFDR-related sustainable investment definition** at Sycomore AM level can better integrate both nature-related transition risks and opportunities and physical risks.

Case study on absolute footprinting and relative scoring

The case study is based on the "Climate Goal" dedicated fund, "*Objectif Climat*" in French. This listed equity fund, whose management has been awarded to Sycomore AM in 2020 after an international competitive tendering process has the following features, as of December 30th, 2022:

- Selection of 48 European stocks, listed in € in the Euro zone and included in the STOXX Europe Total Market index,
- Strategy targeting the business models that are compatible with long-term environmental objectives, including a Paris Agreement-based climate change mitigation objective, in other words, a low-transition risk strategy,
- Euro STOXX TR as a financial performance benchmark,
- €257m under management from 13 institutional investors led by *Caisse des Dépôts & Consignations*, CDC,
- Tendering selection and follow-up assisted by a scientific expert committee.

20 environmental metrics of the portfolio have been computed in comparison to the ones of the benchmark in the following table and are displayed in 4 groups:

- The NEC and the NEC-derived scores:
  - o The NEC score itself on a -100% to +100% range,
  - o The transition risk score on a 1 to 5 range, which is NEC-based. A +100% NEC is converted into a score of 5, the highest level of opportunities, and -100% NEC to a

score of 1, the highest level of riks. Then, this linear interpolation of the NEC score is adjusted with two qualitative assessments, the trajectory/alignment criteria and the green differentiation criteria.

- o For each investee, the NEC is calculated per activity, i.e. division, product or service type, or business unit, as explained in the NEC 1.0 methodological documentation. Each activity whose NEC is ≥ +10% is referenced as a NEC-based green share. Each activity whose NEC is ≤ -10% is referenced as a NEC-based brown share. The remaining activities whose NEC is scored in the]-10%;+10%[range are referenced as a NEC-based grey share. These 3 categories of activities are aggregated at corporate, portfolio and index levels.
- Taxonomy-based shares of revenues:
  - o EU-taxonomy: 2021 version based on 2 out 6 environmental objectives, climate mitigation and climate adaptation,
  - o 2022 version of Greenfin certification scheme: simplified catalog of nature-based green activities - named eco-activities - and excluded activities, that could be assimilated to a brown share.
  - o Fossil-fuel related share of revenues according to 2 different providers.
- Climate-alignment related metrics:
  - o Portfolio distribution along Science Based Targets initiative's validated targets,
  - o Implied Temperature Rise along SB2A, Science-Based 2°C Alignment, v1.2 methodology provided by Iceberg Data Lab, on a 0.5 to 6.5°C scale.
- Footprint-based relative scores:
  - o Weighted average carbon footprint in kg CO_2e GHG emissions of scopes 1+2+3 upstream per year and per k€ of Enterprise Value (EV), as provided by Trucost/S&P,
  - o Weighted average biodiversity footprint in m^2.MSA per k€ of EV, as provided by the Corporate Biodiversity Footprint, CBF, v2.11 from Iceberg Data Lab.

NEC-based scores	Portfolio	Benchmark
NEC (NEC 1.0 calculated by Sycomore AM, -100% to +100% scale)	+30%	0%
Transition risk rating (on a 1 to 5 scale, along Sycomore AM ESG model)	4.1	2.8
NEC-based green share (share of portfolio with NEC above +10%)	66%	13%
NEC-based grey share (share of portfolio with -10% ≤ NEC ≤ +10%)	32%	71%
NEC-based brown share (share of portfolio with NEC below -10%)	2%	16%
Taxonomy-based green and brown shares	Portfolio	Benchmark
Share of portfolio EU taxonomy eligible (based on sales, source MSCI)	78%	47%
Share of portfolio EU taxonomy aligned (based on sales, source MSCI)	27%	5%
Greenfin type 1 share (50% to 100% of revenues in eco-activities)	35%	4%
Greenfin type 2 share (10% to 50% of revenues in eco-activities)	32%	7%
Greenfin type 3 share (0 to 10% of revenues in eco-activities)	25%	76%
Greenfin excluded share (mainly fossil fuels and nuclear value chains)	8%	13%
Fossil share according to Factset (% of portfolio SFDR fossil PAI)	1%	6%
Fossil share of revenues (based on revenues splits from Trucost/S&P	3%	5%

Climate alignment metrics	Portfolio	Benchmark
Share of portfolio with SBTi 1.5 °C validated target	52%	na
Share of portfolio with SBTi well-below 2°C validated target	9%	na
Share of portfolio with SBTi 2°C validated target	1%	na
Share of portfolio with SBTi validated target (1.5°C to 2°C)	63%	na
Implied Temperature Rise in °C by 2100 (from Iceberg Data Lab)	1.9	3.2
Footprint-based relative scores	**Portfolio**	**Benchmark**
Weighted average carbon footprint in kg CO_2e GHG / year / k€ of EV	257	255
Weighted average biodiversity footprint in m^2.MSA / k€ of EV	-106	-53

Figure 6 - Table of "*Objectif Climat*" dedicated fund's nature-related characteristics as of Dec 30, 2022.

The figures have been computed in March 2023 with the most recent data, and portfolio and index compositions as of 30th December 2022. The coverage in weight is ranging from 96% to 100%, except for SB2A ITR at 85%. Consequently, the lack of coverage is null or very limited and results are comparable.
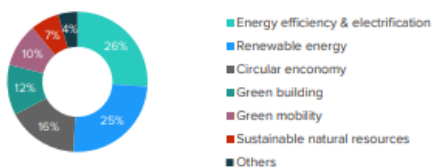
As targeted since the tendering process, the fund appears to be quite qualifiable as a green fund as measured by 18 metrics out of 20:
- The very high shares (versus the Euro Stoxx) of the estimated EU taxonomy-aligned[2] revenues, the NEC-based green share, the Greenfin-based green shares (type 1 and 2),
- The very low share of fossil-related revenues and NEC-based brown activities,
- The low share of grey activities as assessed by the NEC-based grey share and the Greenfin's type 3 share,
- The higher scores in terms of weighted average NEC and a lower transition risk,
- The climate-only metrics with low SB2A ITR, high SBTi coverage and low fossil shares.

Nevertheless, both weighted average carbon and biodiversity footprints are suggesting an opposite interpretation with an equal carbon footprint and a twice worse biodiversity footprint for the fund versus its benchmark. This observation has been made for all 5 financial products of the Sycomore AM's green range gathering €1bn AuM. The lion's share of this range is coming from Sycomore Europe Eco Solutions, an open-end listed equity fund launched in 2015 and Greenfin certified since 2016. Its monthly reporting dashboard is displaying many of the previously listed metrics, as illustrated below:

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[2] Both sources, MSCI and Sycomore AM, gave an aggregated figure of 27-28%, even if line-by-line results are generally very different between MSCI and Sycomore AM estimates.
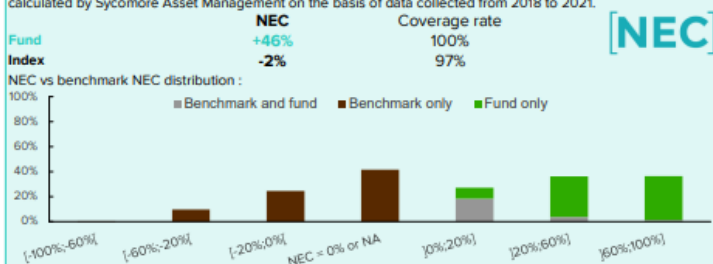
Environmental thematics

- Energy efficiency & electrification — 26%
- Renewable energy — 25%
- Circular enconomy — 16%
- Green building — 12%
- Green mobility — 10%
- Sustainable natural resources — 7%
- Others — 4%

ESG scores

	Fund	Index
ESG*	3.7/5	3.2/5
Environment	4.1/5	3.1/5
Social	3.6/5	3.3/5
Governance	3.7/5	3.5/5

Environmental analysis

Net Environmental Contribution (NEC)**

Degree of alignment of the economic models with the ecological transition, integrating biodiversity and climate, on a scale running from -100% for eco-obstruction to +100% for eco-solution, where 0% equates to the average environmental impact of the global economy. The results are expressed in NEC 1.0 [nec-initiative.org] scores calculated by Sycomore Asset Management on the basis of data collected from 2018 to 2021.

	NEC	Coverage rate
Fund	+46%	100%
Index	-2%	97%

[NEC]

NEC vs benchmark NEC distribution :

Benchmark and fund ■ Benchmark only ■ Fund only

Categories: [-100%;-60%], [-60%;-20%], [-20%;0%], NEC < 0% or NA, [0%;20%], [20%;60%], [60%;100%]

Greenfin Breakdown**

Companies breakdown according to their revenue generated by eco and excluded activities defined by the Greenfin label
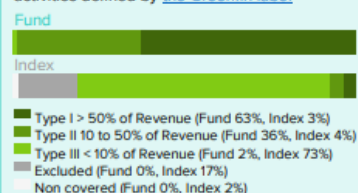
Fund

Index

- Type I > 50% of Revenue (Fund 63%, Index 3%)
- Type II 10 to 50% of Revenue (Fund 36%, Index 4%)
- Type III < 10% of Revenue (Fund 2%, Index 73%)
- Excluded (Fund 0%, Index 17%)
- Non covered (Fund 0%, Index 2%)

Temperature rising - SB2A

Induced average temperature increase by 2100 compared to pre-industrial times, according to the Science-Based 2°C Alignment methodology.
Coverage rate : fund 63%

- +4°C — Current traject. + 3.2°C*
- +3°C
- +2°C — Paris agreement goal [1.5-2°C]
- +1.5°C — Fund + 1.5°C
- +0°C

IPCC Sixth Assessment Report «Climate Change 2022: Mitigation of Climate Change». https://www.ipcc.ch/assessment-report/ar6/

Climate alignment - SBTi

Share of companies that have validated their greenhouse gas reduction targets with the Science-Based Targets initiative.

Fund — 49%
Index — 54%

■ 2°C ■ Well below 2°C ■ 1.5°C

Carbon footprint

Annual greenhouse gas emissions (GHG Protocol) from upstream scopes 1, 2 and 3 per thousand euros invested***.
Coverage rate : fund 92% / index 99%

	Fund	Index
kg. eq. CO_2 /year/k€	288	185

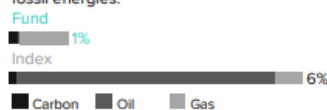### European taxonomy

Turnover percentage of companies eligible to UE taxonomy
Coverage rate : fund 98% / index 98%

	Fund	Index
Eligible share	79%	38%

Fossil fuel exposure

Percentage of income derived from the three fossil energies.

Fund — 1%
Index — 6%

■ Carbon ■ Oil ■ Gas

Biodiversity footprint

Artificialised surface area in m² MSA per k€ invested***, measured by the Corporate Biodiversity Footprint. Mean Species Abundance (MSA) is assessed in comparison with the original state of the environment.
Coverage rate : fund 91% / index 98%

	Fund	Index
m².MSA/k€	-136	-68

Figure 7 - Sycomore Europe Eco Solutions, listed equity fund, January 2023's reporting extract.

The observations made from Sycomore Europe Eco Solutions are fully consistent with the ones made with the "Climate Goal" fund. The weighted average carbon and biodiversity footprints are very significantly above benchmark's ones. Both indicators are unable to capture the high selectivity of Sycomore Europe Eco Solutions, which is materialized by the Greenfin certification and the other key metrics:

- The very high score in terms of weighted average NEC of +46% versus the -2% NEC of the MSCI Europe NR index, benchmark of the fund,
- The Greenfin breakdown, showing Greenfin-based green shares (type 1 and 2) of 98% versus 7% for the benchmark,
- The very low share of fossil-related revenues at 1% (mainly gas) versus the 6% share (mainly oil) for the benchmark,
- The very low share of grey activities as assessed by the NEC distribution scheme (only positive NEC in the fund) and the Greenfin type 3 share of 2% to be compared with 73% for the benchmark,
- The low SB2A ITR at 1.5°C.

To better understand the relative footprint scores, an analysis of the top footprint contributors of Climate Goal fund has been achieved for both carbon footprint (based on Trucost/S&P sourced GHG emission data on scopes 1+2+3 upstream) and CBF biodiversity footprint (based on Iceberg Data Lab CBF v2.11 version, MSA area, on full life cycle scopes 1+2+3 upstream + 3 downstream).

The top 20 (out of 48) carbon footprint contributors of the fund represent 36% of the weight of the fund and 88% of its carbon footprint. They are reviewed and compared versus the information given by 2 other climate metrics (SBTi and SB2A ITR) and the NEC in the following table:

Company	Weight in the fund	Contribution to the carbon footprint of the fund in tons CO_2e per year (scopes 1+2+3 upstream)	NEC	SB2A Implied Temperature Rise in °C	SBTi validated target
Aurubis	1.6%	16025	+6%	na	1.5°C
Veolia	2.7%	6671	+46%	0.89	Well-below 2°C
Prysmian	3.4%	4904	+22%	1.95	1.5°C
Nexans	2.8%	3959	+15%	1.89	1.5°C
Wienerberger	2.2%	3954	+21%	2.35	no
Saint-Gobain	2.1%	2457	+14%	na	1.5°C
Umicore	0.9%	1931	+42%	na	1.5°C
Stora Enso	2.0%	1866	+45%	2.01	1.5°C
Smurfit Kappa Group	1.3%	1688	+77%	2.23	Well-below 2°C
Enel	1.7%	1634	+51%	1.49	1.5°C
A2A	0.9%	1611	+36%	2.49	2°C
Neste Corporation	2.5%	1430	+36%	2.30	no
Befesa	1.7%	1236	+52%	na	no
Construcciones y Auxiliar de Ferrocarriles, CAF	0.8%	1137	+97%	1.42	no
Iberdrola	2.7%	1098	+44%	1.25	1.5°C
Mersen	1.2%	1095	+18%	1.85	no
UPM-Kymmene	0.9%	1030	+68%	1.91	1.5°C
SEB	1.4%	1018	+6%	1.89	Well-below 2°C
ERG	2.2%	1014	+95%	1.20	Well-below 2°C
Signify	1.4%	824	+24%	1.57	1.5°C
Top 20 of the fund	36.4%	56582, ie 88% of total	+38%	1.76	-
Total fund	100%	64063	+30%	1.93	-

Figure 8 - top 20 GHG footprint contributors of the studied portfolio as of Dec 30, 2022.

We observe that these 20 larger GHG emission contributors are business models for:

- **The upstream electrification value chain with a copper refiner** (Aurubis), **two cable manufacturers** (Prysmian, Nexans), and **one battery component manufacturer** (part of Umicore),
- The production of **renewable electricity** (Enel, Iberdrola) and **biofuels** (Neste),
- **Circular economy** with **recycling** (part of Aurubis, part of Umicore, Befesa) and **multi-utilities** (Veolia, A2A), for which the GHG emissions induced by the management of the solid and liquid waste of their customers are mechanically included in their own scopes 1,
- **Building equipment** with an insulation material provider (part of Saint-Gobain) and a LED manufacturer (Signify), both bringing well benchmarked solutions to save huge amounts of GHG emissions,

- **Wood and packaging sector** with providers of certified virgin fiber and recycled fiber packaging (Smurfit Kappa, Stora Enso, UPM), being an alternative to plastic-based packaging.

This review clearly shows that the carbon footprint prism is a very limited guide for investment decision making or decarbonization at portfolio level. This point has been fully documented by Sycomore AM over the recent years[3] and the learnings are quite similar when replacing the carbon footprint by the carbon intensity of revenues, as illustrated in the examples below:

- Comparison of a recycler and a car manufacturer: as only scopes 1+2+3 upstream are available and aggregated in portfolio carbon footprint, 80% of the car manufacturing emissions will be ignored (97% if only scope 1&2), as well as avoided emissions (often named scope 4) for the recycler (representing twice the absolute emissions);
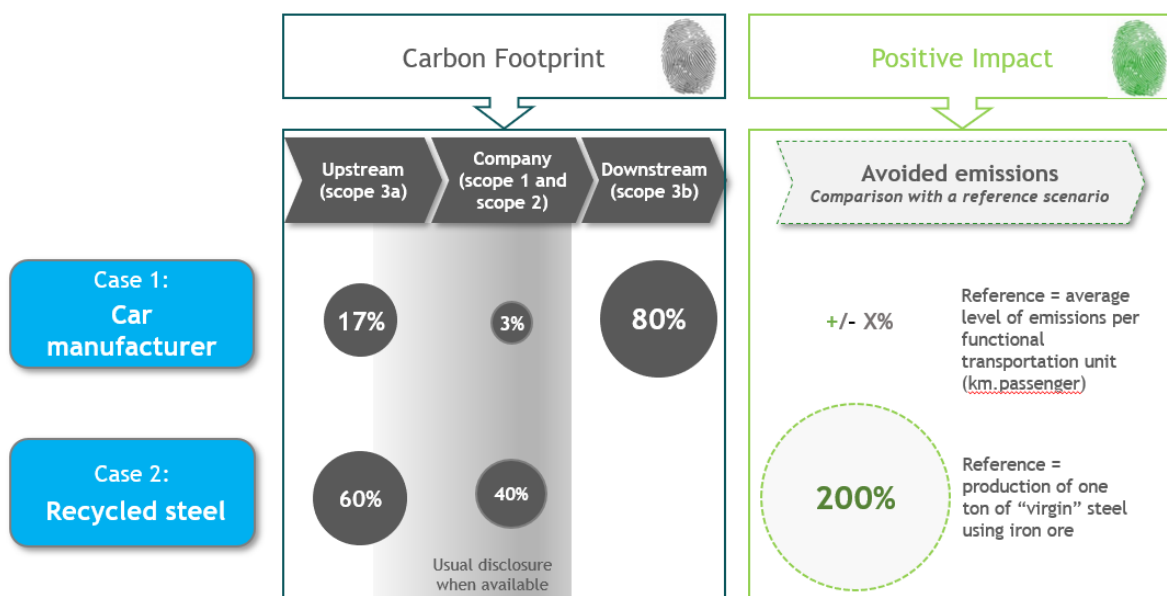
Figure 9 – Comparison of GHG emissions of a car manufacturer and a steel recycle, Sycomore AM, 2018.

- Comparison of two types of car manufacturers when integrating GHG scope 3 downstream emissions: the economic denominator introduces a bias that put the results' hierarchy upside-down.

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[3] In Sycomore AM annual reports and in Sycomore AM Natural Capital Strategy, v 2022, page 15.

Manufacturer	Smart FORFOUR 2	Land Cruiser Serie 150	Observations
Model (both gasoline)	Smart FORFOUR 2	Land Cruiser Serie 150	the smallest is...
Consumption in l/100km	4.3	11.0	the most frugal is...
Direct emissions in g CO_2/km	97	248	the least emitting is...
Tare weight in kg	975	2 100	the lightest is...
Sale price in € excl. tax	10 000	50 000	the cheapest is...
Emissions in t CO_2e/€M of annual sales	2 910	1 488	Carbon intensity depends on sales price...
Emissions in t CO_2e/year/€M invested	5 820	1 984	Carbon footprint depends on stock price...
Emissions in g CO_2e/km/passenger	69	177	GHG impact per functional unit

NB : Calculations by Sycomore AM on the following simplified hypothesis: 1.4 passenger per car on average in Europe (data from I Care & Consult), 20,000 km per year, 15 years' life span, 1 million vehicles sold per year by each manufacturer, enterprise value = market capitalisation = 5xEBITDA (no net debt, no provision), EBITDA margin = 15% for BIG and 10% for SMALL, real-life emissions = normalised emissions according to car manufacturers' data, 2016.

Figure 10 - Carbon footprint and intensity of 2 vehicle types, Sycomore AM, 2018.

- Comparison of 4 companies:

Beyond the carbon footprint

We have actively supported the development of the NEC since 2015 as **we do not rely on aggregate carbon footprints to guide our investments**. The carbon footprint is used as an indicator in our research, and we track its evolution over time, as well as the carbon reduction goals set by the companies. Nevertheless, dividing known greenhouse gas emissions (GHG) – an absolute carbon footprint – with an economic divider (turnover or enterprise value, for instance) generates economic ratios with biases that are now clearly established.

In this example, "classic" carbon indicators imply a preference for Ferrari and Zalando over Alstom and Veolia, regardless of the GHG emissions produced during the use phase - or downstream scope 3 (80% of GHG emissions from auto manufacturers), or how waste is processed at the end of a product's lifecycle (a major issue for fast-fashion), and other environmental factors.

Importantly, carbon indicators do not allow the observer to appreciate the end usage: to produce new individual cars or locomotives for trains? To produce more clothing or provide water and waste treatment services? In contrast, the NEC - with its lifecycle, multi-issue and function-driven approach - effectively enables us to cover these aspects.

Beyond the fact that these indicators are **structurally blind to all non-carbon issues**, these ratios are also inadequate in enabling us to make investment decisions supporting both the mitigation and adaptation to climate change.

		Ferrari	zalando	ALSTOM	VEOLIA
Carbon footprint Tons CO_2e/year/€M EV		29	90	127	713
Carbon intensity Tons CO_2e/€M sales		292	78	173	1118
NEC		-100%	-27%	+100%	+42%

Every year since 2015 we make the same observation: within our range, the funds most aligned with the environmental and climate transition are also those displaying the highest weighted average carbon footprints.

The record carbon footprint is held by **Sycomore Europe Eco Solutions**, a Greenfin-certified fund and the strategy best aligned with the environmental transition within our offering. The fund displays the highest NEC and can boast the best climate alignment score according to SB2A: however, the fund's carbon footprint is 20 times higher than the footprint of our Sycomore Sustainable Tech fund. Carbon footprints mostly reflect sector mixes, and their evolution – based on an identical sector mix – tends to be determined chiefly by variations in market fluctuations, aggregate data coverage or data quality.

Figure 11 - Beyond carbon footprint, extract of Sycomore AM Natural Capital Strategy, v 2022, page 15.

Using the carbon intensity or carbon footprint remains fully relevant, when applied to:

- a stable perimeter, such as a company or an activity,
- a homogeneous set of activities or a pure player,
- or standardized commodities, such as electricity, heat, aluminum, steel or cement.

Therefore, the physical carbon content is extremely relevant and broadly used, even in finance, e.g. as a threshold for electricity, transportation or cement in the EU Green Taxonomy, or as a NEC feeder in many NEC 1.0 frameworks. This is valid for "induced" GHG emissions as well as for "avoided" GHG

emissions, which enables to capture the solution-oriented/regenerative dimension of specific economic activities, such as recycling in the above example.

Relevance weakens when the physical measure is blended with an economical measure, introducing price or valuation bias. Relevance weakens also when aggregation of heterogeneous activities is required. In general, a financial product is gathering a wide and fluctuating diversity of companies and assets. Consequently, the weighted average carbon footprint of a portfolio cumulates, by design, both weaknesses, and there is no surprise in the fact that it has difficulties to support a decarbonization strategy for a generic, diversified financial product.

In brief, SB2A Implied Temperature Rise and, to a lesser extent, SBTi validated targets are more valuable and useful information than aggregated carbon footprint. But, **what about nature-related metrics?**

The top 10 CBF-based biodiversity footprint contributors are reviewed in the following table and compared to:

- the absolute CBF-based biodiversity footprint of each company,
- the relative CBF-based biodiversity footprint per enterprise value unit of each company,
- and the information given by 2 other nature-related metrics, the NEC and the Greenfin certification scheme[4].

The CBF-based results are presented here as an experimental exploration for the purpose of the TNFD pilot and for preliminary results only, as:

- The CBF methodology is recent (initiated in 2019),
- It is not fully delivered (e.g. avoided or positive footprints), neither fully tested yet,
- Consequently, it is not fully stabilized.

Company	Weight in the fund	CBF-based biodiversity footprinting (v2.11, Iceberg Data Lab)			NEC (v1.0, calculated by Sycomore AM)	Greenfin	
		Absolute footprint in km^2.MSA for each corporate	Contribution to the absolute footprint of the fund in km^2.MSA	Relative footprint in m^2.MSA per k€ of Enterprise Value		Greenfin type (in bold when audited)	Green / eco-activity % of sales
Stora Enso	2.0%	-24216	-7.9	-1563	+45%	**1**	50%
Aurubis	1.6%	-3010	-4.5	-1060	+6%	**2**	44%
Nexans	2.8%	-2253	-4.1	-578	+15%	**2**	45%
UPM-Kymmene	0.9%	-17069	-2.2	-894	+68%	**1**	60%
Prysmian	3.4%	-2611	-2.0	-226	+22%	**2**	48%
Smurfit Kappa	1.3%	-5857	-1.3	-390	+77%	**1**	75%
Koninklijke DSM	1.5%	-7750	-0.8	-217	-3%	3	na
Symrise	1.3%	-3902	-0.7	-197	+4%	3	na

[4] Created in 2015 by the French Ministry for Ecological Transition, the Greenfin certification scheme, or *France Finance Verte*, is based on a simple green (12 pages) and brown (1 page) taxonomy and independent accredited auditor, mainly Novethic and E&Y, see https://www.ecologie.gouv.fr/label-greenfin and guidelines in English at
https://www.ecologie.gouv.fr/sites/default/files/Label_TEEC_Criteria%20Guidelines.pdf

Umicore	0.9%	-2475	-0.6	-254	+42%	**1**	70%
Neste	2.5%	-2011	-0.4	-60	+36%	Excluded	38%
Top 10	**18.2%**	**-**	**-24.4, ie 93%**	**-522**	**+28%**		
Total fund	**100%**	**-**	**-26.3**	**-106**	**+30%**		

Figure 12 - Top 10 biodiversity footprint contributors of a concentrated green portfolio as of 31/12/2022.

The Top 10 largest contributions to the fund's absolute footprint (in absolute value and meant to represent the surface maintained fully artificialized by the company's activity along its value chain) represent 18.2% of the fund's weight but 93% of its biodiversity footprint. The highest impacts are thus very concentrated in the following value chains:

- **Wood and packaging sector** with providers of certified virgin fiber and recycled fiber packaging (Smurfit Kappa, Stora Enso and UPM),
- **The upstream part of the electrification value chain with the copper refiner** (Aurubis) and the **two cable manufacturers** (Prysmian, Nexans),
- **Biofuel production** (Neste),
- **Chemistry and ingredients** (Symrise and Koninklijke DSM).

NB: the case of Umicore is difficult to categorize as it encompasses 3 very different activities (catalysis, energy & surface technologies and recycling) that are related to mobility, energy and circular economy.

We observe that the 10 smallest footprints (relative as well as absolute footprints) of the fund have very low values, ranging respectively between 0 and -1.3 m^2.MSA/k€ (versus -62 to -1563 m^2.MSA/k€ for the top 10) and below -0.006 km^2.MSA (versus 0.151 to 7.893 for the top 10). These smallest CBF-based footprints are observed mainly in the two following sectors:

- **Information Technology, Software and Technology** (STMicroelectronics, Dassault systèmes, Nemetschek, SAP, Infineon),
- **Services** (Spie, Cap Gemini, Arcadis, Munich Re).

The resulting sector and company ranking or hierarchization appears to make sense. We observe that:

- the amplitude of the scores between sectors is extremely high, with a factor above 100 000 from the lowest (circa 0.01 m^2.MSA per k€ for service providers) to the highest (1563 m^2.MSA per k€ for Stora Enso),
- 6 companies among the top 10 CBF-based biodiversity footprint are also included in the top 10 of carbon footprint contributors,
- the weighted average relative CBF-based biodiversity footprint of the investigated portfolio is significantly worst (-106 m^2.MSA per k€) than the benchmark's one (-53 m^2.MSA per k€).

This preliminary analysis of the results of the CBF-based biodiversity footprint show the same benefits and limitations as for carbon footprint:

- The biodiversity footprinting methodology enables to identify the sectors with the highest biodiversity impact intensity and therefore the nature-related risks associated at sectoral level,

- The positive impacts of a company (e.g. recycling based company) are not captured unless "avoided impact" indicator is implemented (yet to come with CBF methodology), limiting the capability to identify the nature-related opportunities.

These results will have to be updated when the CBF metric methodology will be completed, fully tested and stabilized.

The two other tested methodological approaches, Greenfin and NEC, are well established, as both initiated in 2015. The two approaches share some similarities, such as transparency, comparability, proven operability and both addressing climate and nature[5]. Nevertheless, their respective main features are quite different and summarized here below:

Features	NEC approach	Greenfin scheme
Type of approach	Science-based, quantitative, third-party managed standard; cross-asset	Normative, taxonomy-based, audited certification; cross-asset
Origin	Collaborative practitioners' initiative	French Ministry of Ecology
Reference zone	Global framework	French national certification
Exclusion	None	Nuclear and fossil fuels' value chains, landfilling without gas capture, unsustainable forestry, peatland agriculture, etc…[6]
Output	Continuous score on a normalized [-100%; +100%] scale; Bottom-up, aggregable score from product/service level to financial top aggregated levels	Trinary per activity: Brown/ Grey/ Green % of eco-activity share in sales and quaternary per corporate with type 1, 2, 3 or excluded[7] Binary per fund: Greenfin certified or not
Discrimination power	High to very high: from **60%** for a standard universe or index up to 100% for an environmental fund (quantified with the share of non-null NEC)	Low for a standard universe, such as Euro STOXX with **24%** discriminated (4% type 1, 7% type 2 and 13% excluded) and 76% of grey share (type 3), up to high for an environmental fund (by design the target of the certification scheme)
Updates	Version β since 2017 v1.0 in production since 2019 v1.1 in preparation for 2024	New name in 2019 3 updates since inception Last update in 2022

Figure 13 - Comparison between NEC and Greenfin approaches, Sycomore AM, 2023.

Based on our combined experience as a NEC expert user and a Greenfin audited asset manager (annually since 2016), we have observed that statistically positive NEC are often correlated with Greenfin type 2 (which means an eco-activity share of sales between 10% and 50%) and highly positive NEC are often correlated with Greenfin type 1 (eco-activity share of sales above 50%). In

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[5] The Greenfin label scope is Climate change, Water, Natural resources and Biodiversity, see page 11 of
https://www.ecologie.gouv.fr/sites/default/files/Label_TEEC_Criteria%20Guidelines.pdf
[6] See page 25 of https://www.ecologie.gouv.fr/sites/default/files/Label_TEEC_Criteria%20Guidelines.pdf
[7] NB: excluded = brown, eco-activity = green, grey = neither excluded, nor green = Eco-Activity Share (EAS) between 0 and 10% = Category 3. Category 1 = EAS ≥ 50% = sort of dark green. Category 2 = EAS between 10% and 50% = sort of lighter green.

brief, both information seems to provide consistent and complementary measurements of greenness of financial portfolios.

When focusing on the top-10 biodiversity footprint contributors, we observe that:

- their average NEC, +28%, is similar to the whole portfolio average NEC of +30%,
- their Greenfin categorization, with a 71% share for types 1+2, is similar to the one of the whole portfolio, with a 66% share for types 1+2,
- their relative biodiversity footprint differs by a factor 5, -522 m^2.MSA / k€ EV versus -106 m^2.MSA / k€ EV for the portfolio weighted average.

The main preliminary learnings of this portfolio-based case study are that:

- on one hand, **CBF-based top-10 is partially pointing out the same part of the portfolio as the top-10 carbon contributors**, with 66% common weight and 60% of common lines (6 out of 10). This common share corresponds to the wood and packaging sector and the upstream electrification value chain with the copper refining and the cable manufacturing activities, which makes sense relatively to the impact on biodiversity of these economic activities (especially through land use change and pollution),
- on the other hand, **the carbon footprint and CBF-based biodiversity footprint seem to produce very different ranking in biofuel production, chemistry, power generation, multi-utilities and building equipment**: there is evidence that the CBF-based footprint is bringing meaningful and additional (to the carbon footprint) information, especially at asset/corporate level,
- the **CBF-based footprinting does not seem to produce enough information related to relative greenness and brownness as provided by Greenfin shares or measured consistently by the NEC:** it has less discriminating power and does not embed a comparative analysis, as the NEC does, limiting therefore its ability to assess material risks and opportunities,
- As a synthesis, **CBF-based relative footprinting brings additional valuable information, but cannot be used as such as a comprehensive indicator for investment decision making or transition risk measurement**.

Potential candidates for nature-related core metrics for Financial Institutions

For the pilot, Sycomore AM has consolidated its feedbacks on nature-related metrics along the TNFD categorization in the following table. The investigated metrics are the possible candidate for additional or core metrics usable at financial player level for most of the steps of the LEAP process. Only relative metrics can be used at this high level of aggregation. Only 2 candidates with significant track-record and meaningful results have been identified:

- NEC scores: NEC 1.0 score of issuers, portfolios, indexes, and asset managers, based on investees data from year 2018 to 2022,
- Greenfin categorization: breakdown along types 1, 2, 3 and excluded, calculated by Sycomore AM, and partially audited by Novethic over the 2016-2023 period.

Have not been included in this selection:

- Carbon- or climate-only metrics, as they ignore by construction non-climate change related pressures on nature, e.g. Implied Temperature Rise or Science Based Targets initiative, validated near-term targets, in °C.
- Principal Adverse Impact (PAI) metrics, as indicators 1 to 6 are focused only carbon, energy and fossil fuels, and other indicators are neither available, nor too specific.
- EU taxonomy-based metrics (eligible, substantially contributing, aligned for sales, CAPEX and OPEX), as the aligned shares based the 6 environmental objectives along June 2023's adoption will only become available in the following years and as the EU taxonomy coverage is still limited. Several expected TNFD priority sectors are not covered by the EU taxonomy yet: Agriculture & Farming, Fishery, Food retail, Mining, Textiles, Footwear & Accessories, …
- Relative CBF-based biodiversity footprint in m^2.MSA per k€, calculated by Iceberg Data Lab, as the CBF v2.11 methodology does not prove, at this stage, to be able to assess material risks and opportunities at company level, and share common limitations with the relative carbon footprint at portfolio level.

Using the TNFD metrics categorization and TNFD_v0.4_Annex_4.3_v3-1 core and additional metrics, the following table gathers Sycomore AM's feedback:

Category	Sub-category / description	NEC	Greenfin certification
Dependencies and impacts on nature	Dependencies on nature	Ø	Ø
	Impact drivers	NEC feeders, whatever the type (quantitative metrics and qualitative information), are impact-driven; they fully or partially encompass metrics n° C1.0, C2.0, C3.0, C3.3, A2.0, A3.3, A17.0, A17.3, A17.4, A17.5, A17.11, SC1.0, SC2.0, SC3.0.0 and SC3.0.1, SC3.4, SA1.0, SA2.1, SA 3.1.0, SA3.4.1, SA6.2, of TNFD_v0.4_Annex_4.3_v3-1	Share of eco-activities as defined by the certification scheme, rough detection via exclusion list
Nature-related risks	Physical risks	Ø	Ø
	Transition risks	NEC-based granular rating for both risks and opportunities assessment, NEC-based brown share usable for risk exposure measurement	Via a brown taxonomy-based on a one-page brown activities list of excluded activities, mainly focused on fossil fuels and nuclear value chains
Nature-related opportunities	Business performance, Resource efficiency, Products and services, Markets, Capital flows and financing, Reputational capital, Sustainability performance, Ecosystem	NEC-based assessment = same metric as for nature-related transition risks; regenerative activities, such as wastewater treatment, soil depollution, recycling, composting, reuse, etc.., have positive NEC; NEC-	Helpful thanks to the share of eco-activities and types 1 and 2, but very rough, France-centered, limited green 12-page taxonomy

	protection, restoration and regeneration, Sustainable use of natural resources	based green share usable for opportunity exposure measurement	
Response metrics	To include management, governance, strategy and performance metrics, including progress against targets	Used at issuer, fund and AM levels for investment strategy and decision, performance measurement, reporting /disclosure and target setting; 3200+ issuers covered by Iceberg Data Lab on listed equities and corporate bonds; expert NEC users in private equity and private debt	% type 1, 2 and 3 are proven response metrics in the Greenfin certification process since 2016 and used over 100 French certified financial products

Figure 14 - Assessment metrics review, Sycomore AM, May 2023.

Our understanding is that **the TNFD core metrics are a short list of the most relevant/material, reliable, comparable & consistent, verifiable, timely, understandable, and accessible metrics**. These criteria are consistent with the 2020 publication, "Environmental Indicators: Conditions for a Relevant Aggregated Measure"[8]. **We consider that the NEC is meeting these criteria**. The NEC genesis, features and uses are explained in the following section.

The French Greenfin label is the most demanding green finance certification in Europe, as documented since 2018 by Novethic[9]. This yearly audited cross-asset certification scheme is binary and simplistic on both exclusion (1-pager list) and inclusion sides (12-page green taxonomy), delivering very limited accuracy for both climate and nature issues.

Nevertheless, the Greenfin label is providing an easy-to-use tool for retail investors and will probably evolve to integrate the granularity of the EU green taxonomy. It demonstrates the potential capability of nature-based certification schemes to facilitate TNFD deployment towards citizens, as savers and individual investors.

As a conclusion, **international certification schemes based on taxonomies or open-source methodologies, such as the NEC, are interesting candidates for core TNFD tools** and may be key facilitators for citizen participation into the race towards a nature-based future.

Focus on the NEC

The Net Environmental Contribution, NEC, is a methodological system that has been designed, tested and deployed over the last 8 years by a community of practitioners and experts with the following key features:

- Using existing and available science-based information, data and expertise on nature-related impacts that we can collect. In short, inputs or NEC feeders are accessible information.

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[8] By Jean-Guillaume Peladan, Julie Raynaud, Peter Tankov, David Zerbib, In « Revue d'Economie Financière », 138 (2020), special issue "Finance Climatique", https://gsf.institutlouisbachelier.org/indicateurs-environnementaux-caracteristiques-dune-mesure-agregee-pertinente-environmental-indicators-conditions-for-a-relevant-aggregated-measure/ or https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3629231

[9] See https://www.novethic.com/sustainable-finance-trends/detail/overview-of-european-sustainable-finance-labels-1.html

- Providing a simple, scalable, user-friendly, and reliable output that can be used by non-experts and any professional in the investment value chain, from investees to investors and savers, including service providers, asset managers, asset owners, regulators, NGO, and academics.
- With broad, cross-asset relevance: ability to assess any economic activities, from SME, to large businesses and financial institutions, and any type of assets, from real assets, such as real estate and infrastructure to financial assets, private or public equities, bonds and debt.
- Addressing the products & services purpose with a life cycle approach including systematically the final use of each product and service.
- Based on transparency and traceability on the whole information chain: inputs information, assessed entity, assessing entity, sources, aggregation method and versioning.
- Supported on the long term by an economically viable structure guaranteeing the robustness, the quality, and the transparency of the methodological approach.

The NEC is a living and collaborative attempt to solve the integration of the triple complexity described in the introductive section. Since inception, in 2015, in order to successfully bridge these complexity gaps, the design philosophy has been guided by the following common sense-driven, pragmatic principles:

- Focus only on significant impacts of each served activity across 9 categories of impact on Nature, which means ignoring limited impacts,
- Focus on orders of magnitude of impacts per provided functional unit,
- Use systematically expert-based proxys when quantified impacts are unprecise or uncomplete rather than ignoring them,
- Keep usability as a "must have" criteria via tests and feedback collection from users.

NEC activity-aggregation engineering

Using the same complexity mapping scheme as in the introductive section, the NEC approach and its aggregation engineering are described hereafter:

Aggregation step	1	2	3	4	5	6
Number of impacts to integrate	n	10 x n	100 x n	10 000 x n	1 000 000 x n	10^7 x n
Example	n = 5	50	500	50 000	5 000 000	5.10^7
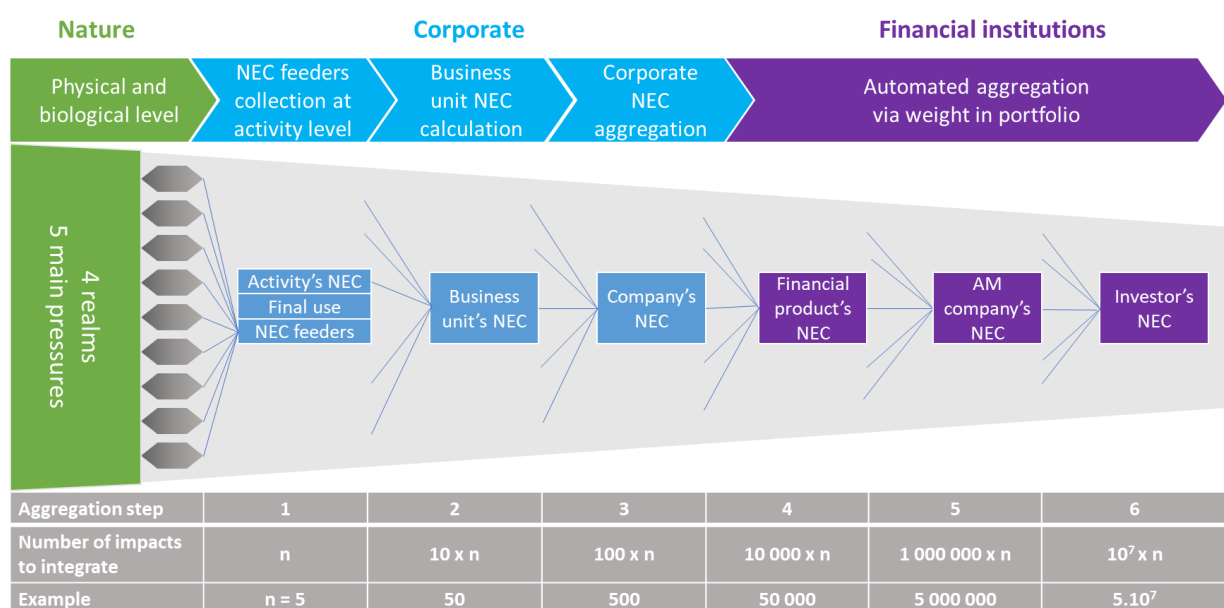
Figure 15 - Aggregation steps, NEC initiative, 2023.

In short, the NEC is able to bridge the 4 to 6-aggregation-steps' problem that Financial Institutions (FI) are facing, because the NEC has been designed to be fully aggregable in a normalized way from the bottom of the aggregation pyramid (level 1) to the top, or visually from the left (level 1) to the right (level 4 to 6).

More precisely, the NEC approach has been designed to:

- **Maximize the quality** (relevance, granularity and accuracy) at the bottom or first level, **level 1**: it is where **input information and data** are collected, which are **NEC feeders and final uses**. NEC feeders are physical impact measures expressed per relevant functional unit, e.g., in the Food & Beverage Framework, GHG emissions and water footprint per kg of proteins, lipids or carbohydrates (from LCA databases for more than 200 products), and perimeter of referenced third-party ratings or third-party audited environmental certifications, such as USDA or EU organic. When the final use of the activity is nor food, neither beverage, the relevant other parts of the methodology are to be used, e.g. the Fuel framework for biofuels or the Apparel & Textile framework for vegetal fiber production.
- **Embed avoided and positive impacts** by systematically using a relative contribution scale centered on the 0% NEC point, set by the world average environmental performance of each modelled functionality. This is the very meaning of "net" and "contribution" in the Net Environmental Contribution's name. By design, the NEC is **embedding a reference scenario or benchmark**, which is the world economy as it is at present.
- **Facilitate the calculation at the activity level**, via NEC calculators. With the example of the Food & Beverage Framework, it means aggregating the different products, by volume or revenues, that are grown, farmed, manufactured or distributed. The NEC of the activity is the weighted sum of its constituents' NEC scores. The elements of the NEC scores that are produced at level 1 are thus aggregated at **level 2 and 3**.
- **Automatize the upper aggregations**, from corporate **level 3** to asset owner **level 6**. The company NEC score is aggregated via its weighted NEC constituents, and so on, along the financial value chain.

NEC impact-aggregation engineering

The 3 impact types – Climate, Biodiversity and Resources - are based on 9 impact driver categories that are systematically screened in the methodology construction of each of the 15 NEC 1.0 frameworks.

1 Air quality deterioration
2 Climate change
3 Energy ressources use
4 Use of non energy resources
5 Waste
6 Water use
7 Water pollution
8 Soil pollution
9 Land Use
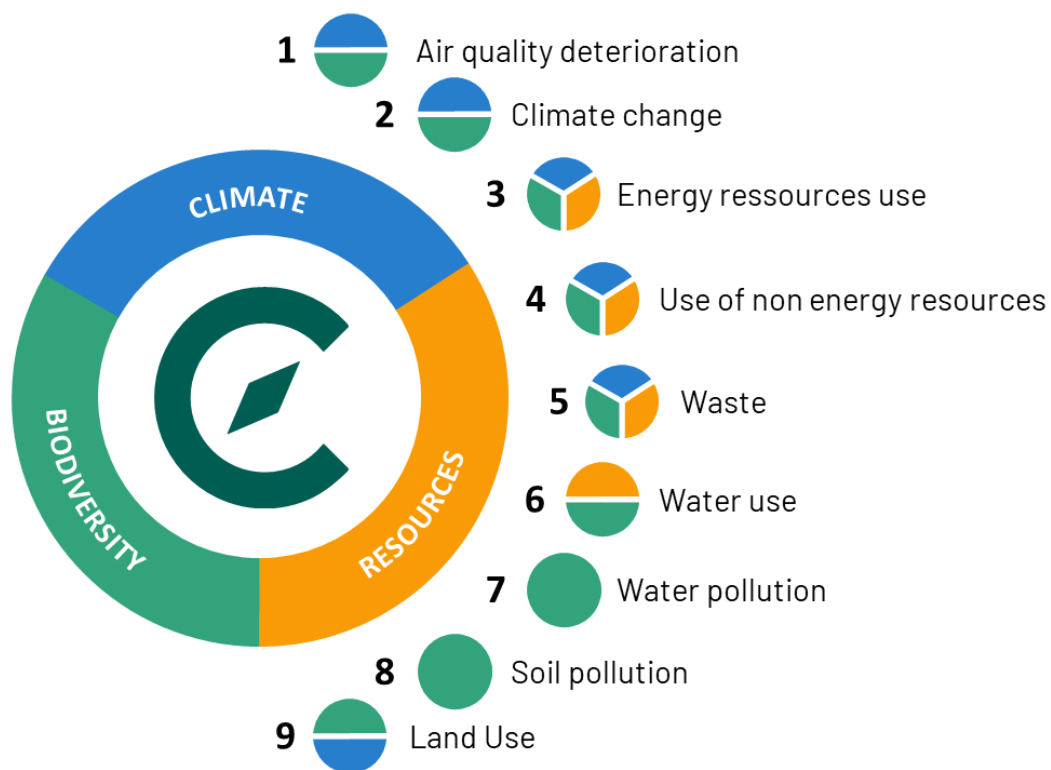
Figure 16 - NEC impact categories, NEC initiative, 2023.

The following table summarizes the links between the environmental issues referenced in the main international frameworks and the 9 impact categories of the NEC.

Net Environmental Contribution, since 2018	Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services, since 2012	9 Planetary Boundaries, since 2009	since 2021		Action Plan for Sustainable Finance, European Union, since 2018
9 environmental issues	Main drivers of biodiversity loss, 2019	9 boundaries, of which 6 have been crossed (at least partially*) and 1 is non-quantified (n-q), 2022	Measurable Impact Drivers, 2022	4 realms, 2022	The 6 environmental objectives
Climate change	Climate change	Climate change* and ocean acidification	Greenhouse gas emissions	Atmosphere	Climate change mitigation ; climate change adaptation
Use of energy resources	Overexploitation of resources	Indirect effects on several planetary boundaries	Energy resources	Land, fresh water, and ocean	Climate change mitigation; transition to a circular economy
Deterioration of air quality	Pollution	Atmospheric aerosols loading (n-q); Depletion of stratospheric ozone; Release of novel entities into the biosphere*	Air pollutants, excluding GHG	Atmosphere	Pollution prevention and control
Use of water	Overexploitation of resources	Fresh water cycle*	Use of fresh water	Fresh water and ocean	Protection and sustainable use of water and marine resources
Water pollution	Pollution	Disruption to nitrogen and phosphorus cycle*; Release of novel entities into the biosphere*	Water pollutants	Fresh water and ocean	Protection and sustainable use of water and marine resources; pollution prevention and control
Soil pollution	Pollution	Erosion of biodiversity*; Release of novel entities into the biosphere*	Soil pollutants	Land	Protection and restoration of biodiversity and ecosystems; pollution prevention and control
Land use (mainly, but also water and marine environments)	Changing use of water, sea and land	Land-system change* and erosion of biodiversity*	Use of land, water and marine ecosystems	Land, fresh water and ocean	Protection and restoration of biodiversity and ecosystems
Use of non-energy resources	Overexploitation of resources	Disruption to nitrogen and phosphorus cycle*	Non-energy resources	Land, fresh water and ocean	Transition to a circular economy
Waste	Pollution	Release of novel entities into the biosphere*	Terrestrial waste	Land, fresh water and ocean	Transition to a circular economy

Figure 17 - Correspondence table between environmental issues featured in leading international frameworks and the NEC's impact categories, source Sycomore AM's Natural Capital Strategy, 2023.

The NEC 1.0 is covering these referenced issues except for the disturbances, such as invasive species, the 5th main pressure on biodiversity identified by the IPBES, or noise and lighting, referenced in the "disturbances" driver of the Natural Capital Protocol and ENCORE impact drivers[10].

Engineered NEC scores

After 4 years of R&D, from the proof of concept to full-scale tests, the NEC has been proposing since 2019, with its 1.0 version, a global, science-based, aggregation method providing a single score on a -100% to +100% normalized scale centered on 0%, calibrated to be the average of the world economy. The 0% point is given for the global average environmental impact of the function that the given activity is fulfilling. The intensity of the contribution is expressed analyzing a company, activity by activity, and computing it using its relative economic weight. The relative economic weight is usually given by the share of turnover, physical volumes, contribution to earnings or enterprise value that the activity account for. By design, the 0% score is aligned to the world average economy and is used to score:

- The cash and undifferentiated derivative instruments, as soon as their final use are unknown,
- The activities that are aligned with the average world economy: default value for undifferentiated activities, undifferentiated services, including financial services when financed activities are not disclosed (banking, insurance, investment, rating services, …),
- The activities that have relatively limited environmental impacts, such as drugs, health care, education, religion, justice, peace keeping, defense, security, furniture, administration, art or justice.

The resulting scores for an illustrative selection of companies are plotted on the following scheme by macro-sectors:
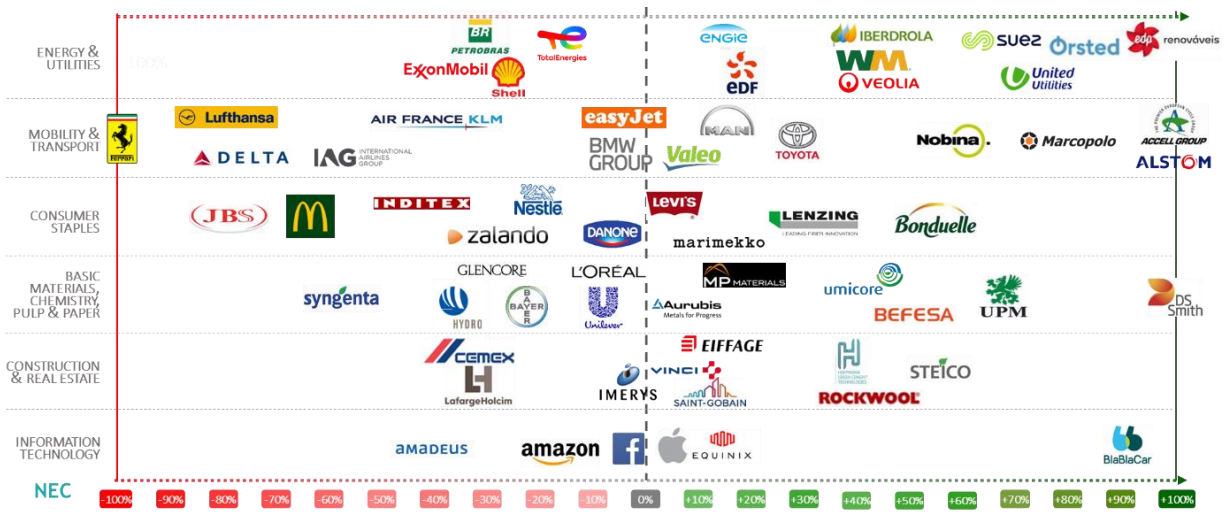
Figure 18 – Sample of NEC 1.0 calculated by Sycomore AM and based on 2019 to 2022 data, 2023.

The NEC proved to be very different from existing E metrics provided by well-established data providers as illustrated by Pierrick Arnault et al[11] in 2019 comparing with Sustainalytics E-rating.

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[10] See Natural Capital Protocol of January 2021 available on https://capitalscoalition.org/ and
https://encore.naturalcapital.finance/en/data-and-methodology/impact-drivers

[11] "Is the transition risk material? Testing the Net Environmental Contribution metric on a universe of listed European equities", https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3630338
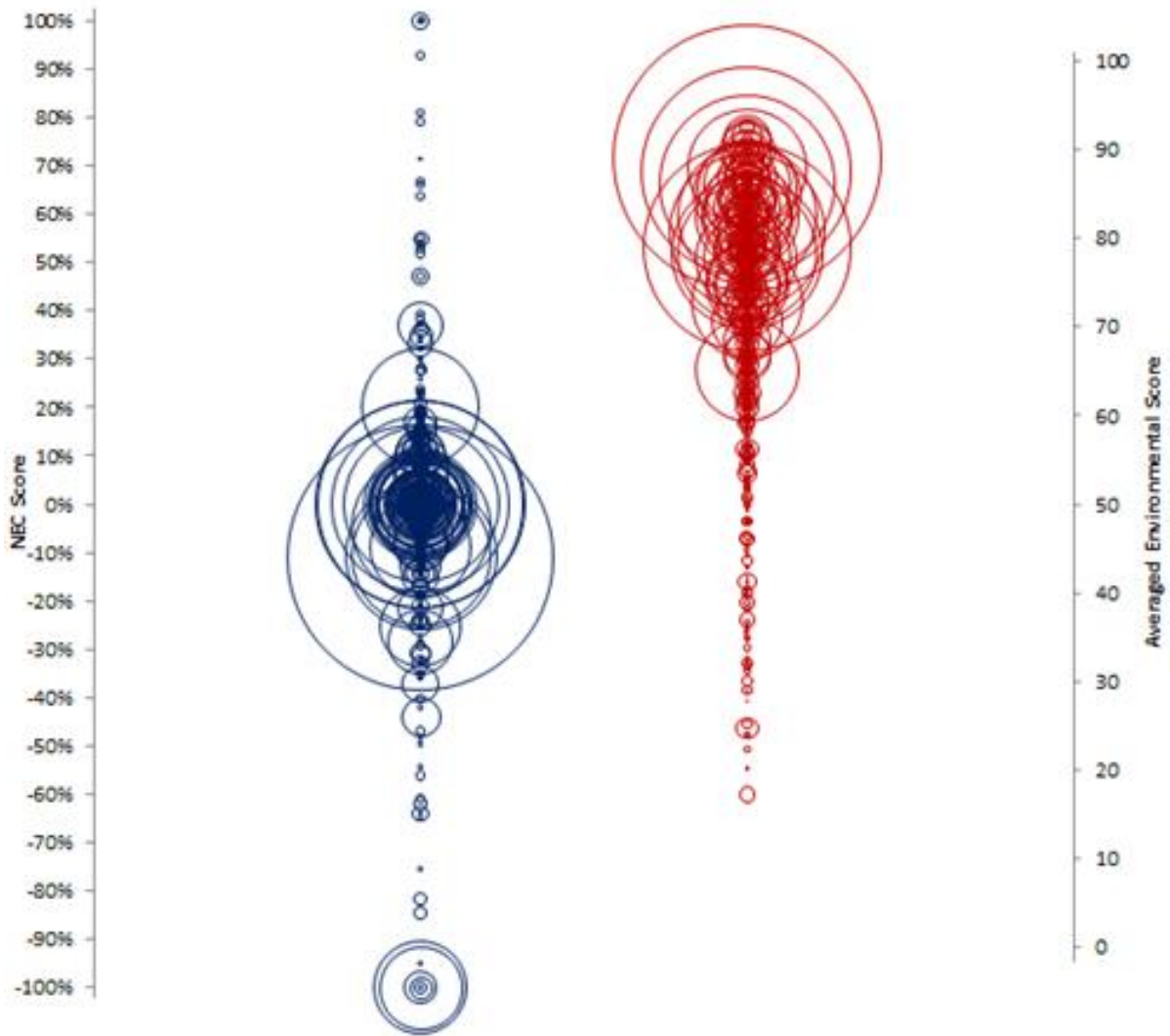
Figure 19 - NEC β distribution (blue) and averaged environmental score (red) for constituents of the STOXX Europe 600 with their respective market capitalization (size of the circles), by BNP Paribas Securities Services, 2018.

As of 31/12/2022, the NEC distribution of the STOXX Europe 600 index is presented below:

▶ 96% of the STOXX 600 index's weight covered, average NEC is -1.6%
▶ The 4% not computed NEC are aggregated with the 0% category
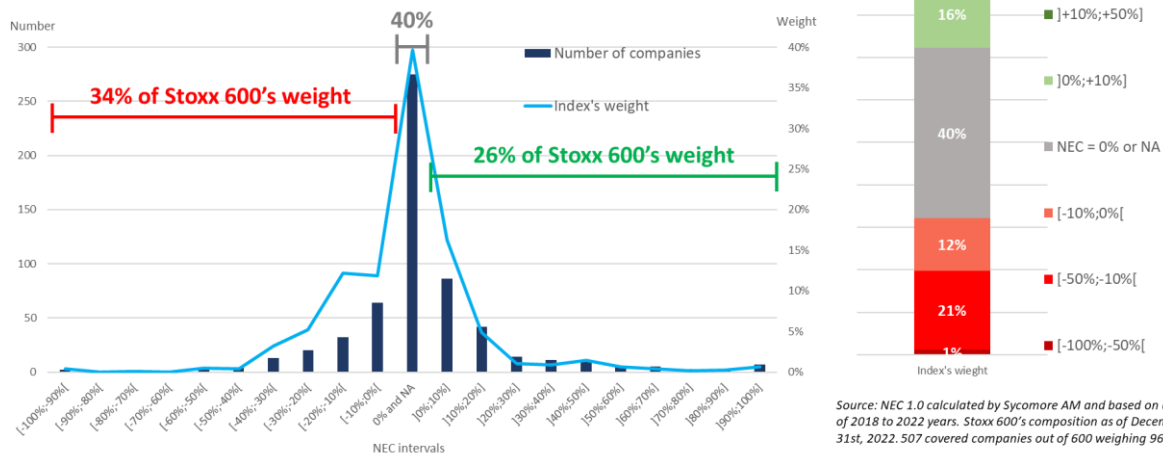
Source: NEC 1.0 calculated by Sycomore AM and based on data of 2018 to 2022 years. Stoxx 600's composition as of December 31st, 2022. 507 covered companies out of 600 weighing 96.3%.

Figure 20 - NEC 1.0 distribution of the STOXX Europe 600, calculated by Sycomore AM, 2023.

NEC treatment of TNFD priority sectors

The following table summarizes how the 15 NEC frameworks relate to the expected 15 priority sectors for the TNFD:

TNFD high priority sectors	Related GICS level 1 sectors	NEC 1.0 Framework	NEC impact intensity
Agriculture & Farming, fishery, food retail	Consumer Staples, Consumer Discretionary, Industrials, Materials	Food & beverage	High
Paper & Wood products, Forestry	Materials, Industrials	Wood & paper	
Oil & Gas Upstream & Services, Oil & Gas from Midstream and Downstream, Energy production and Utilities, Coal	Energy, Utilities	Fuel	
Energy production and Utilities, Coal	Utilities, Industrials	Electricity	
		Heat	
Transportation, Construction & Engineering	Consumer Discretionary, Industrials	Mobility and transport	
Construction & Engineering, Building Materials	Industrials, Real Estate, Materials	Building & real estate	
Mining	Materials, Industrials	Basic materials	
Chemical products, Biotechnology		Chemistry	
Water & Waste services	Utilities	Water	
		Waste	
Textiles, Footwear & Accessories	Consumer Discretionary	Apparel & textile	
-	Information Technology, Consumer Discretionary	Information technology	Moderate
	Consumer Discretionary	Household & personal care	
		Appliances	

Figure 21 - NEC 1.0 frameworks, TNFD priority sectors and GICS level 1 sectors, NEC initiative, 2023.

We observe that:

- 13 of the 15 expected priority sectors are covered by the 12 high-impact intensity NEC frameworks.
- 2 are not specifically covered by any NEC framework: Pharma and Tobacco. They both are rated with 0% default NEC according to the general methodology.
- The 8 GICS level 1 sectors (Consumer Staples, Consumer Discretionary, Industrials, Materials, Utilities, Energy, Real Estate, Information Technology) corresponding to the priority sectors are sectors where the discriminative power of the NEC is strong (corresponding to moderate to high NEC impact intensity).

The following table summarized the sectorial mapping provided by the NEC 1.0 along this sector categorization.

Part of NEC Methodology	NEC 1.0 framework	Related value chains or sectors, along TNFD priority sectors and GICS level 1	Intrinsic impact intensity	Main NEC drivers
12 high-intensity frameworks	Food & beverage	Agriculture & Farming, fishery, food retail	HIGH NEC SCALE [-100%;+100%]	NEC COMPONENTS AND FINAL USE
	Water	Water services, Utilities		
	Wood & paper	Paper & Wood products, Forestry, Materials, Industrials		
	Fuel	Upstream, Midstream and Downstream Oil & Gas and Services, Coal, Energy, Utilities		
	Electricity	Energy, Utilities, Coal		
	Heat	Energy, Utilities, Coal		
	Mobility and transport	Transportation, Construction & Engineering, Consumer Discretionary, Industrials		
	Building & real estate	Building Materials, Construction & Engineering, Industrials, Real Estate, Materials		
	Basic materials	Mining, Materials, Industrials		
	Chemistry	Chemical products, Biotechnology, Materials, Industrials		
	Waste	Waste services, Utilities		
	Apparel & textile	Textiles, Footwear & Accessories, Consumer Discretionary		
3 moderate-intensity frameworks	Information technology	Information Technology, Consumer Discretionary	MODERATE HIGH /3 => [-33%;+33%]	MIX OF FINAL USE NEC AND INTRINSIC NEC
	Household & personal care	Consumer Discretionary		
	Appliances	Consumer Discretionary		
1	General methodology	Others: Health care, Pharma, Tobacco, Financials, Telecommunication Services, …	LIMITED HIGH /10 [-10%;+10%]	FINAL USE NEC [-100%;+100%]

Figure 22 - Value chain mapping, NEC initiative 2022.

Pharma and Tobacco represent a very small share of the economy, circa 5% or less in weight of a generalist index. As a conclusion, **the vast majority of the expected TNFD priority sectors, representing circa 95% in economical weight, are covered by the NEC 1.0 with a high discriminative power**. These results confirm the relevance to achieve this TNFD pilot and explore how the NEC can help to operationalize some of the draft TNFD recommendations.

The NEC initiative

The NEC initiative is the dedicated entity set-up to own, operate and disseminate the NEC metric for the benefit of the society and its users. Launched in 2019, it has been structured in 2021 into a mission-led company, with 2.4m€ equity owned by 4 shareholders. In 2023, the company employs 4 professionals and is preparing the finalization of the new 1.1 version of the NEC.
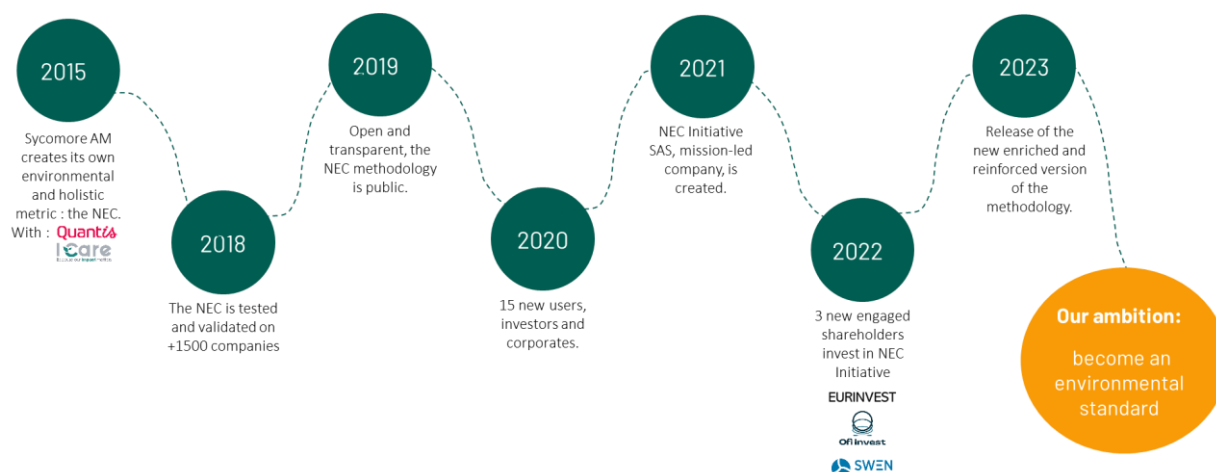
Figure 23 - NEC ramping-up from proof of concept to an international standard, NEC Initiative, 2023.

The NEC metric is used by different types of players: companies, financial stakeholders, service providers, NGOs or index provider. The multiple uses of the NEC metric are referenced in Annex 1 for financial products and in the following list of independent publications referencing the NEC metric:

- Towards Sustainability label – Belgian NGO-managed certification for financial products (2023): "Managers are encouraged to explore more holistic and forward-looking indicators

of environmental and climate transition, beyond GHG intensity e.g., Net Environmental Contribution (NEC), to guide their transition strategy" (page 15),

- Entreprises pour l'environnement, " *Comment mesurer et piloter l'impact de la publicité sur l'empreinte environnementale des consommateurs ?* », study on the assessment of the environmental impact of advertising (French only, 2023)
- Novethic & Ademe – "SFDR ARTICLE 9 FUNDS: A MARKET OFF TO A ROUGH START" (2022) – NEC metric is referenced as a tool able to help financial actors define and measure their objective of sustainable investment for Article 9 funds (page 12),
- PBAF – "Taking biodiversity into account PBAF Standard v 2022 Biodiversity impact assessment - Overview of approaches" (2022) – (page 44),
- WWF – "Assessing portfolio impacts: Tools to measure biodiversity and SDG footprints of financial portfolios" (2021) – (page 23),
- LIST – "Measuring the sustainability of investment funds: A critical review of methods and frameworks in sustainable finance" (2021) – The NEC is listed as one of the three tools to perform the best across all criteria to measure sustainability (pages 9, 10 & 11),
- French Ministry of Ecological Transition – "Biodiversity preservation: good practices" (2020) – (page 11).

The NEC initiative is a member of the TNFD Forum and the Data Catalyst Group.

Using the NEC to facilitate the LEAP approach

The consortium has mapped the NEC's process and scope along the LEAP approach using the TNFD's revised risk and opportunity assessment approach (LEAP) of the v0.3 framework. The mapping exercise has been deployed:

- For NEC scope
- For the NEC methodology design
- For NEC score calculation
- For NEC score uses
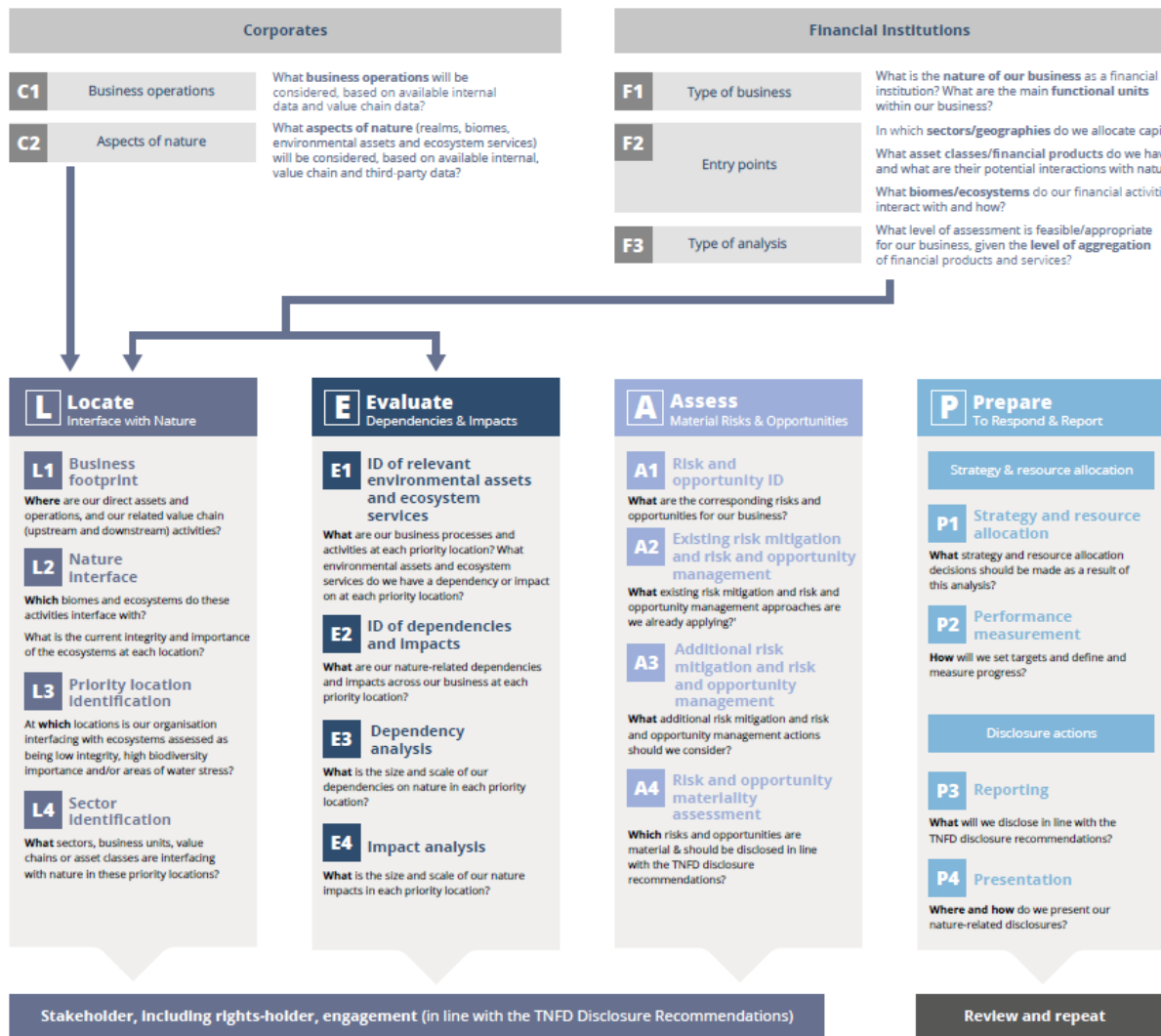
Figure 24 - LEAP scheme, TNFD v0.3, 2022.

The NEC methodology construction and the LEAP approach

The NEC assessment scope is based on the whole value chain, integrating the upstream value chain, business operations and the downstream value chain up to the **final use**, which is a key concept in the NEC methodology. This is reflected by the first two rules of thumb that are structuring the whole methodology and the generic NEC equation, as illustrated below.
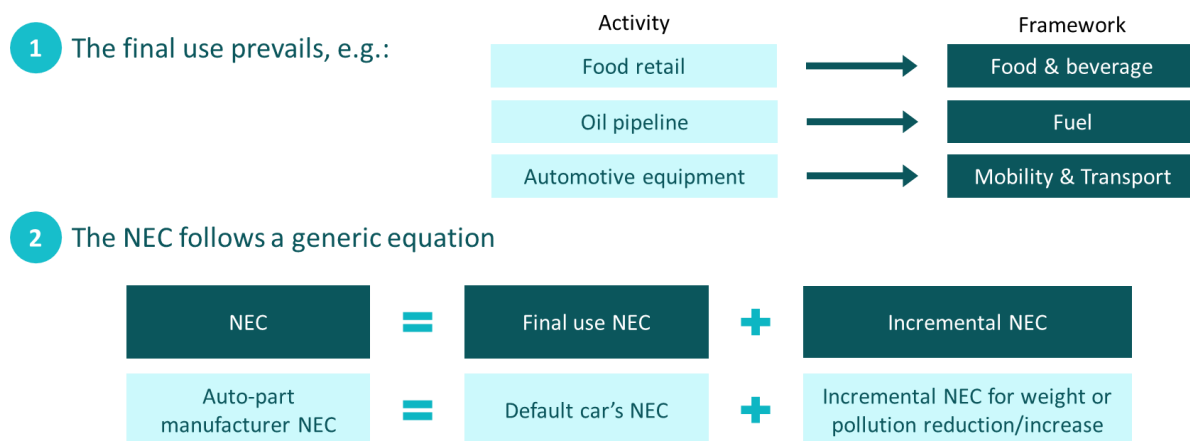
Figure 25 – NEC's rules of thumb, extract of generic NEC 1.0 handbook, NEC initiative, 2019.

The NEC is aggregating:

- each modelled, significant impact per functional unit (kWh, J, m^2, km.passenger, etc…) at corporate/ economic activity level, as explained in each NEC framework,
- and each business unit or each portfolio component at financial institution level using financially relevant functional units, such as revenues split, Enterprise Value, or weight in portfolio.

As a result, the NEC methodology enables the production of aggregable NEC scores from asset level to portfolio, index, universe and AuM, as summarized on the following scheme:
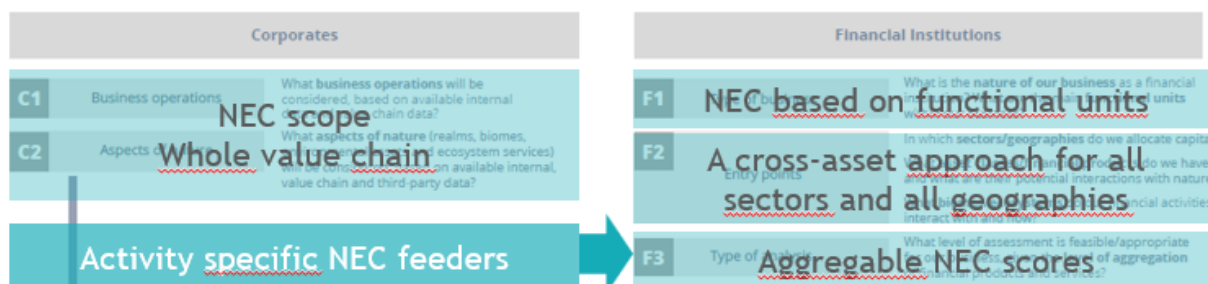
Figure 26 - Mapping NEC assessment scope along LEAP Approach, NEC initiative, 2023.

A recurrent question referring to the climate-nature nexus is: "what is the share of climate within the NEC score?". The answer is: "it depends" and is transparently detailed in each NEC framework and summarized in Appendix 2.

The NEC is providing **a standard, science-based, transparent way to aggregate climate and non-climate pressures on nature for corporates and financial institutions**. The NEC experience is demonstrating that **addressing the climate-nature nexus on a traceable, reproductible, and comparable way is not only possible, but feasible and scalable**. One of the main current limits of the NEC is that these embarked trade-offs between climate and nature (or non-climate) pressures are frozen, thus not modulable. On the other hand, this feature strongly contributes to its usability, comparability and user-friendliness.

As described in the general NEC 1.0 methodology handbook, the NEC construction is a 4 steps process with 2 modelling steps and 2 calibration steps.
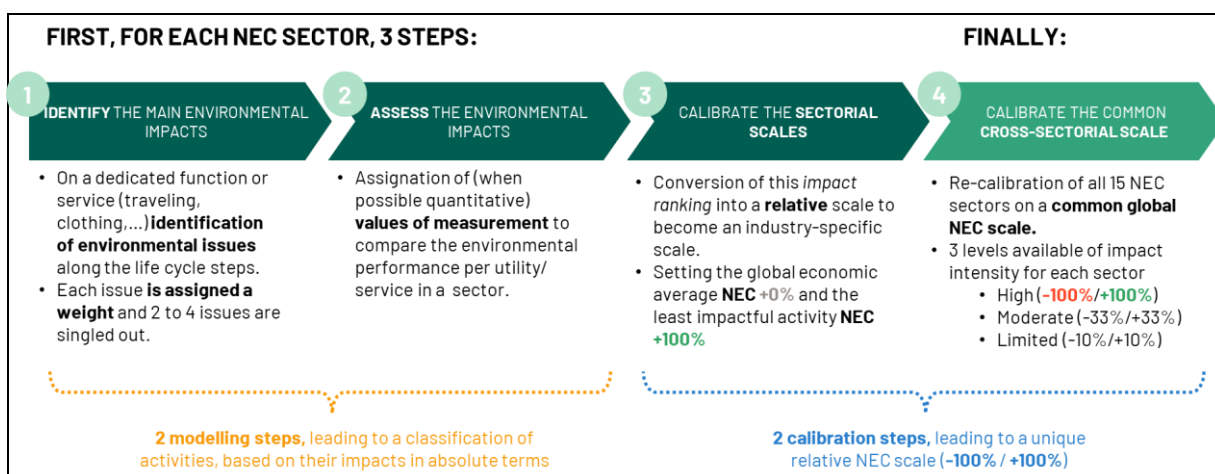
Figure 27 - NEC construction process, NEC Initiative, 2019.

These 4 steps have been completed in the practice with many tests and iterative corrections leading to correction of the previous steps. The whole process presents some similarities with the LEAP approach:

NEC design's step	Definition	Similarities to LEAP
1st modelling step	Identify main impacts to be modelled	Identify business/activities footprint direct and along the value chain (L1 and E2) Main impact identification (L2 and E4)
2nd modelling step	Model via KPI selection	Selection of the most impactful impact drivers, enabling further aggregation of materiality assessment (A1)
1st calibration step	Calibrate at framework level	Normalize the risk/opportunity rating for aggregation in any portfolio, enabling A3 and A4, then P)
2nd calibration step	Calibrate at system level	
Iterative loops	Test each framework with diverse samples or corporates (representative of the business diversity); When discrepancies are detected, the source of the problem is identified, and the previous steps are repeated on an iterative mode	"Review and repeat" principle is applied via this systematic real-life quality check. All NEC 1.0 pieces of methodology are based on the feedbacks from the full-scale tests run with the β version over 1,100 corporates over the 2017-2019 period, these large-scale tests led to the currently available NEC 1.0 version

Figure 28 - Mapping NEC design process along LEAP Approach, NEC initiative, 2023.

The LEAP approach and the NEC scoring process

The NEC scoring is undertaken by trained professionals that have attended the 7 NEC expert users training sessions, where they are empowered with many exercises and with the calculation tools supporting the different frameworks. The trained professionals require two basic skills:

- Knowledge of the analyzed companies and business models,
- Basic environmental knowledge.

This training service is provided since 2019 to the expert users' licensees of the NEC initiative. This prerequisite is step 0 to enter the process.

Similarities with LEAP approach have been tracked in the main operational NEC process: the NEC calculation of a company/project/infrastructure/activity/product/service score, as summarized on the following scheme, where:

- Step 0: expert-user empowering
- Step 1: entity scanning along the final uses and NEC frameworks
- Step 2: NEC elements (components and increments) computation based on NEC feeders
- Step 3: aggregated entity NEC score calculation and identification (for traceability: versioning, year of input information, Id of expert user, potential comments, …)
- Step 4: NEC score utilization for investment strategy, risk management, target setting, threshold setting, disclosure, etc.
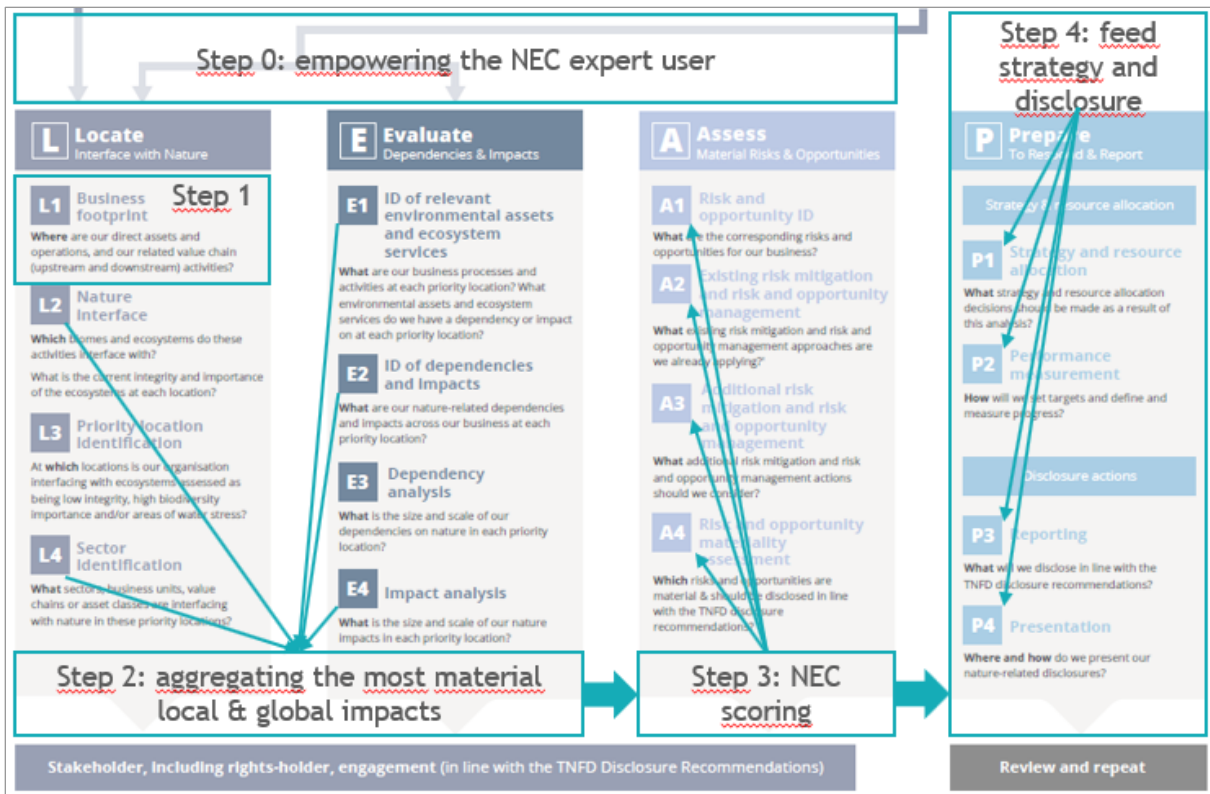
Figure 29 - Mapping NEC scoring process along LEAP Approach, NEC initiative, 2023.

Step 4 corresponds to the very impactful and final P step of LEAP. The NEC have been designed by practitioners and experts with the obsession of being used in practice, for strategy, allocation and decision making (P1 and P2) and of supporting transparency and pedagogy (P3 and P4), as extensively illustrated in the next section.

We observe that **the NEC approach is extensively addressing A and P steps of the LEAP approach**. This is valid in theory and in practice, as illustrated in the next section for financial institutions. Recent years have demonstrated that the NEC was also **attractive for corporates themselves**. Since 2020, a listed company, Spie SA, has been adopting the NEC as a key reporting information complementary to the EU taxonomy alignment scores, as illustrated hereafter:

Figure 30 – Extract from NEC Initiative General Deck, 2023.

NEC uses by financial institutions

A review of NEC uses across many financial institutions has been compiled in Appendix 1. This section is gathering a short selection of the practices and the multiple uses that facilitate the implementation of TNFD recommendations:

- For disclosure, pedagogy and transparency, on a monthly and annual basis,
- For compliance along French regulation,
- For investment due diligence and decision making,
- For greenwashing detection,
- For transition risk management,
- For nature and climate integration and alignment.

Monthly disclosure

At Sycomore AM, the monthly dashboard of the main equity and bond funds systematically encompasses environmental metrics. Minimal disclosure is the NEC score, the fossil fuel exposure and the carbon footprint as illustrated below for a listed equity fund:

Environmental analysis

Net Environmental Contribution (NEC)

Degree of alignment of the economic models with the ecological transition, integrating biodiversity and climate, on a scale running from -100% for eco-obstruction to +100% for eco-solution, where 0% equates to the average environmental impact of the global economy. The results are expressed in NEC 1.0 (nec-initiative.org) scores calculated by Sycomore Asset Management on the basis of data collected from 2018 to 2021.
Coverage rate : fund 100% / index 99%

Fossil fuel exposure

Percentage of income derived from the three fossil energies.

Fund: 0%
Index: 5%

■ Carbon ■ Oil ■ Gas

Carbon footprint

Annual greenhouse gas emissions (GHG Protocol) from upstream scopes 1, 2 and 3 per thousand euros invested***.
Coverage rate : fund 92% / index 98%

	Fund	Index
kg. eq. CO$_2$ /year/k€	75	225

Figure 31 - Sycomore Europe Happy@Work, listed equity fund, January 2023 reporting.

For funds with a combined social and environmental strategy such as the SME fund presented below, at least 3 additional metrics are added: the eligible share to EU taxonomy, the Implied Temperature Rise, SB2A, the SBTi coverage. Nevertheless, among those 6 metrics, only the NEC is encompassing nature.

Environmental analysis

Net Environmental Contribution (NEC) ❀❀

Degree of alignment of the economic models with the ecological transition, integrating biodiversity and climate, on a scale running from -100% for eco-obstruction to +100% for eco-solution, where 0% equates to the average environmental impact of the global economy. The results are expressed in NEC 1.0 (nec-initiative.org) scores calculated by Sycomore Asset Management on the basis of data collected from 2018 to 2021.
Coverage rate : fund 96% / index 75%

European taxonomy

Turnover percentage of companies eligible to UE taxonomy
Coverage rate : fund 64% / index 91%

Fund: 67%
Index: 64%

Temperature rising - SB2A

Induced average temperature increase by 2100 compared to pre-industrial times, according to the Science-Based 2°C Alignment methodology.
Coverage rate : fund 17%

Climate alignment - SBTi

Share of companies that have validated their greenhouse gas reduction targets with the Science-Based Targets initiative.

Fund: 7%
Index: 29%

■ 2°C ■ Well below 2°C ■ 1.5°C

Carbon footprint

Annual greenhouse gas emissions (GHG Protocol) from upstream scopes 1, 2 and 3 per thousand euros invested***.
Coverage rate : fund 95% / index 98%

	Fund	Index
kg. eq. CO$_2$ /year/k€	245	580

Fossil fuel exposure

Percentage of income derived from the three fossil energies.

Fund: 0%
Index: 1%

■ Carbon ■ Oil ■ Gas

Figure 32 - Sycomore SME selection, listed equity fund, January 2023 reporting.

In the case of *Sycomore Sélection Responsible*, the addition of 7th indicator, is being tested as shown below: the biodiversity footprint based on the CBF and reported in $m^2.MSA/k€$ invested.

Environmental analysis

Net Environmental Contribution (NEC) **

Degree of alignment of the economic models with the ecological transition, integrating biodiversity and climate, on a scale running from -100% for eco-obstruction to +100% for eco-solution, where 0% equates to the average environmental impact of the global economy. The results are expressed in NEC 1.0 (nec-initiative.org) scores calculated by Sycomore Asset Management on the basis of data collected from 2018 to 2021.
Coverage rate : fund 100% / index 99%

+8% Fund

-100%   0%   +100%

Index +0%

European taxonomy

Turnover percentage of companies eligible to UE taxonomy
Coverage rate : fund 100% / index 99%

Fund 48%
Index 47%

Temperature rising - SB2A

Induced average temperature increase by 2100 compared to pre-industrial times, according to the Science-Based 2°C Alignment methodology.
Coverage rate : fund 77%

+4°C — Current traject. + 3.2°C*
+3°C
Paris agreement goal [1.5-2°C] — +2°C — Fund + 2.5°C
+1.5°C
+0°C

IPCC Sixth Assessment Report «Climate Change 2022: Mitigation of Climate Change» https://www.ipcc.ch/assessment-report/ar6/

Climate alignment - SBTi

Share of companies that have validated their greenhouse gas reduction targets with the Science-Based Targets initiative.

Fund 72%
Index 57%

■ 2°C   ■ Well below 2°C   ■ 1.5°C

Carbon footprint

Annual greenhouse gas emissions (GHG Protocol) from upstream scopes 1, 2 and 3 per thousand euros invested***.
Coverage rate : fund 100% / index 98%

	Fund	Index
kg. eq. CO_2 /year/k€	148	225

Fossil fuel exposure

Percentage of income derived from the three fossil energies.

Fund 1%
Index 5%

■ Carbon   ■ Oil   ■ Gas

Biodiversity footprint

Artificialised surface area in m^2 MSA per k€ invested***, measured by the Corporate Biodiversity Footprint. Mean Species Abundance (MSA) is assessed in comparison with the original state of the environment.
Coverage rate : fund 100% / index 98%

	Fund	Index
$m^2.MSA/k€$	-70	-66

Figure 33 – Sycomore Sélection Responsible, listed equity fund, January 2023 reporting.

For funds with a stronger environmental objective such as the Sycomore Europe Eco Solutions, the dashboard encompasses 2 additional features:

- The NEC distribution profile compared to the benchmark,
- The Greenfin breakdown.

As presented in previous section (see case study), the monthly reporting provides the more advanced environmental dashboard with 8 metrics:

- 5 purely climate metrics: ITR, SBTi, carbon footprint, EU taxonomy eligibility and fossil fuel exposure,
- 3 nature-oriented metrics: the NEC including a detailed breakdown, the Greenfin breakdown and the biodiversity footprint.

Annual reporting for financial products and asset managers

The French Article 29 of Energy-Climate Law demands the disclosure of climate and biodiversity strategies and 2030 targets, not only for asset managers, but also for financial products above €500m AuM.

The NEC is used for the performance management and the target setting for all funds under the Article 29's compliance obligation, as illustrated hereafter:

2030 targets for **climate** and **biodiversity alignment**

The NEC is based on a universal standard scale ranging from -100% to +100%, with 0% representing the average of the world economy. It applies to all business lines and all asset classes. The NEC of the Sycomore Europe Éco Solutions fund was +48% at 31 December 2021 with a portfolio coverage rate of 100%.

The fund's alignment strategy consists in maintaining the fund's NEC up to 2030 at +40% or above, which is significantly higher than its benchmark and the global average of 0%, in line with the fund's objective to contribute to the ecological transition.

$$[NEC]^l$$

Figure 34 – Sycomore Europe Eco Solutions, annual report on 2021-year, page 13.

This report provides full transparency on the invested companies (see list at pages 53-55 with the weight and the NEC of each issuer) and detailed NEC distribution:

distribution of the weight of the Sycomore Europe Eco Solutions portfolio by NEC range

Range of alignment or increasing net contribution
94% weight with an NEC > 0%

Range of misalignment or increasing obstruction/intensification of negative impacts
0% weight with an NEC < 0%

49%
24,3%
20,4%
6,3%
0%
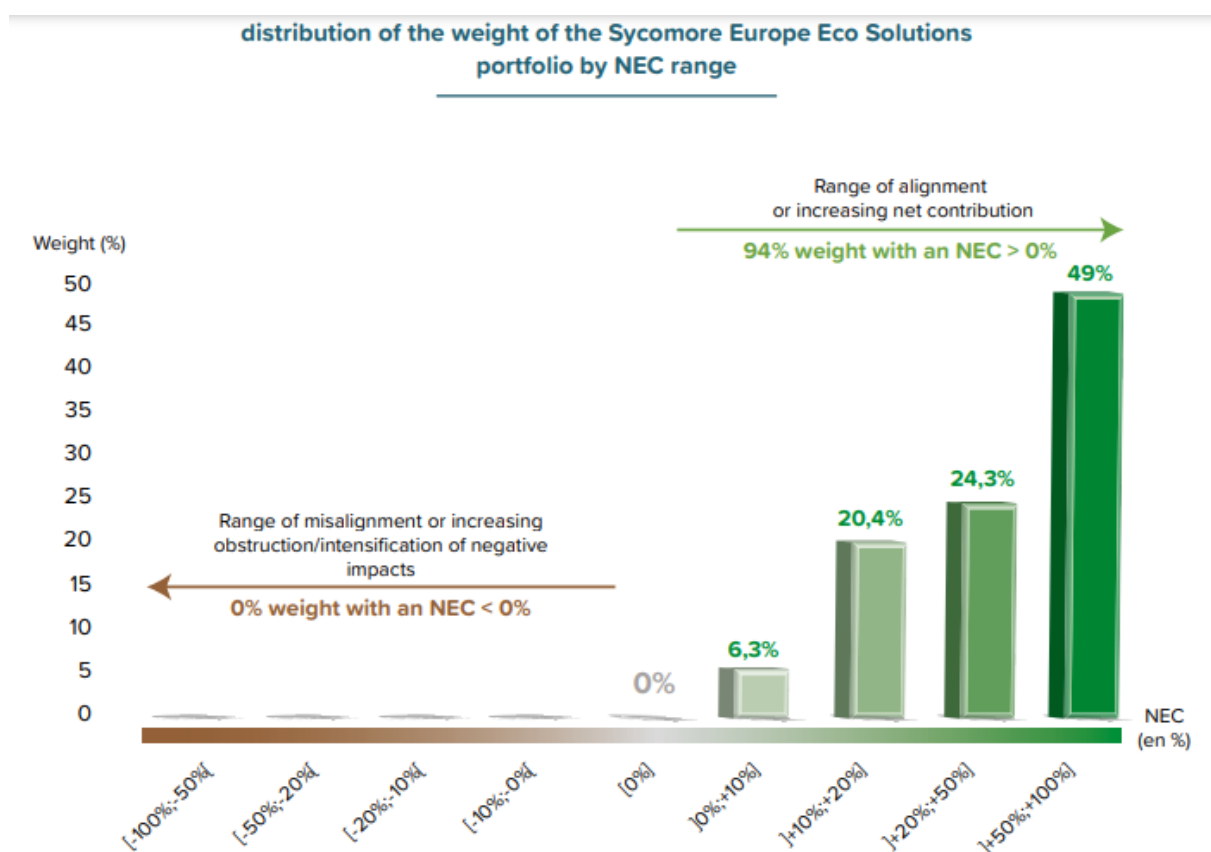
Figure 35 – Sycomore Europe Eco Solutions, annual report on 2021 year, page 19.

Sycomore Europe Eco Solutions 2022 report is also available.

Sycomore AM discloses every year two main annual reports:

- A mission-driven company report, Sycoway as a company, or mission report,

- A responsible investor report, Sycoway as an investor, named Sustainability and Shareholder Engagement Report in 2023.

As reviewed in the previous section dedicated to Sycomore AM's feedback, these 2 reports encompass key information on nature-related strategy and results. Pedagogic sections are included to help the reader understand the way we manage the nature-related transition risks & opportunities, leveraging the NEC.

The breakdown of NECs across Sycomore AM's total AUM is the following:

- 14% in shades of brown – negative NECs – compared to 32% within the STOXX 600,
- 42% of 0% NECs,
- 45% in shades of green – positive NECs – compared to 27% in the STOXX 600.

Portfolio allocations have clearly shifted in favour of positive NECs, resulting in an average NEC of +10% and widening the gap with the STOXX 600 index.

The pathway to achieving the 2030 targets will involve changes to our product mix and action on three levers:

01 Reducing the weight of deeply negative NECs or eco-obstructions,

02 Developing strategies targeting the eco-transition, i.e., companies with NECs that improve year after year,

03 Increasing the weight of NEC-positive industries or eco-solutions.

Figure 36 – Sycomore AM's NEC distribution of assets, Sycoway as an investor, 2021-year, page 88.

Sycomore AM 2022 report is also available.

SFDR-related uses

The NEC is also used as a key metric for environmental sustainability definition in the EU SFDR context.

Figure 37 - NEC supporting EU SFDR sustainable investment definition, NEC initiative, 2023.

Greenwashing detection

The NEC is helpful to detect greenwashing as illustrated below with the top 10's screening of the MSCI ACWI Low Carbon Index Leaders, as of September 30th, 2022.
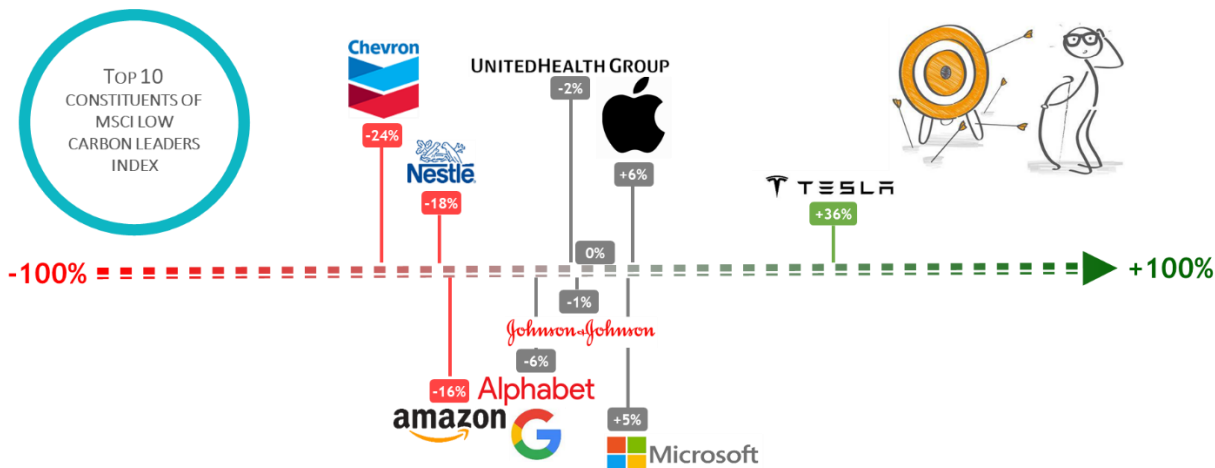
Figure 38 - Top 10 constituents of MSCI ACWI Low Carbon Leaders index, 30 September 2022, NEC 1.0 calculated by Sycomore AM, based on 2019 to 2021 data.

NB: Alphabet A shares and Alphabet C shares account for 2 constituents but refer to the same asset.

Greenwashing is an increasing concern for regulators, NGO and individual savers, and a source reputational risk for financial institutions. This feature has attracted early supporters of the NEC, such as Novethic and its mother company, the French *Caisse des Dépôts et Consignations*, CDC.

Investment strategy/allocation

The NEC is at the core of the investment process of the Eco Solutions funds – Sycomore Europe and Global Eco Solutions - as explained hereafter by her fund manager.

Figure 39 - Investment strategy driver, NEC initiative, 2023.

The NEC is currently used as an investment decision metric, driving investment allocation in many financial products designed and managed by Sycomore AM.

Transition risk and NEC dynamics

Transition risk and opportunity are key milestone of TCFD, TNFD and many other guidelines. Its assessment is based on:

- Understanding the existing risk mitigation and risk and opportunity management (A2)
- Anticipating additional risk mitigation and risk and opportunity management (A3)

Its usefulness is based on the ability of the financial institution to integrate this transition risk and opportunity assessment into effective responses and enlightening reports as referenced in the Prepare step of the LEAP approach.

The NEC methodology strongly facilitates these steps. The NEC calculation can be achieved at any point in time as soon as the NEC input information are available to compute it. Sycomore AM has successfully experienced a dynamic utilization of the NEC based on:

- Historical evolution of the NEC in past years,
- NEC comparison pre- and post-M&A or divestment,
- Forward looking NEC calculation based on mid- or long-term strategic plans.

The NEC of TotalEnergies has evolved from -24% to -14% in the last years, mainly driven by the change in its oil-gas mix (more gas and less oil) and the growing share of renewables, as illustrated below (NEC 1.0 calculated by Sycomore AM and based on 2017 to 2022 data and company news):

In the last decade, many energy companies have initiated strategic shifts. Total started in 2011 with the acquisition of a 60% stake in SunPower for $1.38bn, then accelerated its shift towards Natural Gas, LNG and renewables:

- 2016: acquisition of Saft, battery manufacturer, for €950m, and of Lampiris, power and gas retailer
- 2017: acquisition of GreenFlex for €350m, of a 23% stake in EREN for €237m and of 2 CCGT plants
- 2018: acquisition of 74% of *Direct Energie*, power and gas retailer for €1.4bn, of *Quadran*, renewable power generation, of 2 CCGT plants and of the Engie upstream LNG business for $1.5bn
- 2019: acquisition of Spanish gas and power retail business and 2 CCGT plants from Energias de Portugal, of the Toshiba LNG American business and of *Vents d'Oc*, independent wind developer
- 2021: acquisition of a 20 % stake of Adani Green Energy for $2.5bn and TOTAL transformation into TotalEnergies
- 2022: acquisition of 50% of Clearway Energy Group for US$1.6bn
- 2023: acquisition of the remaining 70.8% stake of EREN for €1.5bn net and a 50% stake in Rönesans Enerji in Turkey, award of two marine concessions for offshore wind by Germany, divestment from TotalEnergies EP Canada Ltd for US$3bn (oil sands assets)

Over the last five years period, its NEC increased by 10 %points
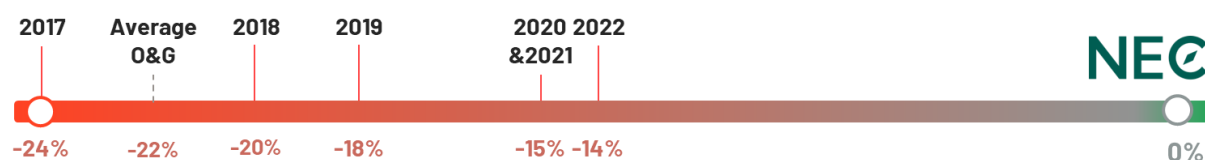
Figure 40 - TotalEnergies NEC increase over the 2017-2022 period, Sycomore AM, 2023.

By comparing the NEC before and after an acquisition, any M&A or divestment can be assessed and discriminated, as illustrated below (NEC 1.0 computed by Sycomore AM[12]), in three different cases:

- Significant increase of the company's NEC, as with the takeover of WhiteWave by Danone in 2017,
- No significant NEC effect: typically, when a company acquires a company with the same business model and positioning to increase its size, the most common case,
- Significant decrease of the company's NEC, as with the takeover of Monsanto by Bayer in 2018.

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[12] Based on 2016 sales of Danone of €22bn, 2016 sales of Whitewave of e3.6bn, 2017 sales of Monsanto of US$13.8bn, 2017 sales of Bayer of €49.2bn and 2018 update.

Moreover, the past NEC score can be computed on a decade or more to assess the consistency of strategic moves, as illustrated below with Orsted and Albioma utilities[13]:
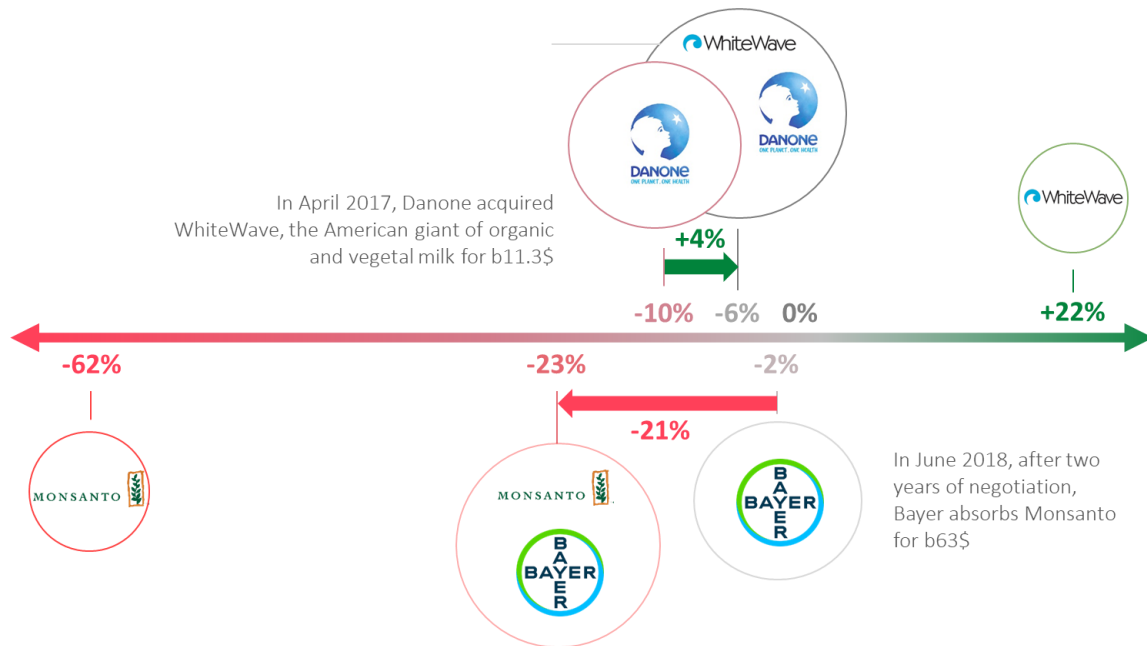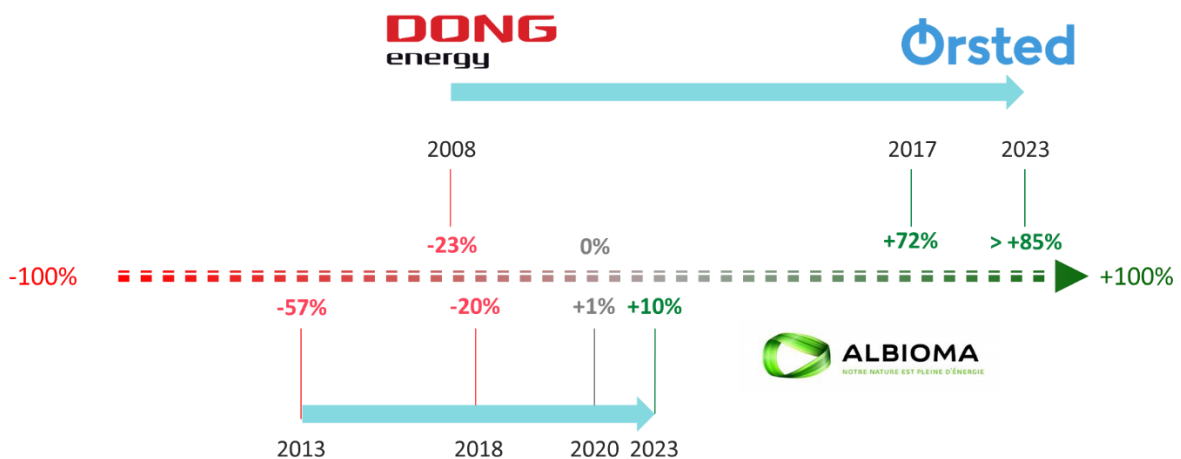
Figure 42- Strategic moves of 2 energy utilities as seen by the NEC over the 2008-2023 period.

The NEC dynamics provides a key element to determine if the company is changing its business model and its practices or not. It helps detecting greenwashing and quantifying the magnitude and pace of a business effective transformation.

When scenarios are lacking or failing

By construction, the NEC encompasses a climate dimension and could be used over time as previously described. As such the NEC empowers its expert users with an alternative or complementary solution to climate scenario alignment, especially in the case of absence of reference scenario, as summarized in the following table. This is particularly relevant in nature-

[13] NEC 1.0 calculated by Sycomore AM on related years' data and according to strategic plans of Orsted (ex-DONG energy) and Albioma.

related matter where scenarios are lacking or far less developed and even for more questionable than in the climate area (see Appendix 3 for more detailed feedback to the TNFD).

Forward-looking approach	Future projection versus present and past	Climate scenario-based alignment
Continuous relative score	NEC year N+M (in the future) versus NEC year N and NEC year N-P (in the past)	Implied Temperature Rise in °C, e.g. SB2A from Iceberg Data Lab
Discrete levels or targets	Target settings from companies, e.g. "nature-positive", "deforestation-free", "net-zero biodiversity loss" by year N+M	Net-zero, climate neutral or carbon neutral claims from companies, Science-Based Targets validated 1.5°C, well-below 2°C and 2°C near-term targets, etc.

Since 2019, shared R&D works between Sycomore AM and the NEC initiative have explored the relationships between the NEC score and two climate alignment metrics, Science-Based 2°C Alignment (SB2A)'s ITR and SBTi validated targets. Key findings were:

- About Implied Temperature Rises from SB2A and SBTi:
  - Substantial discrepancies exist between the continuous temperature provided by SB2A and the three discrete values supplied by the SBTi approach,
  - An average gap from a 101 companies' data set was 0.7°C and the SB2A tends to come up with a higher implied temperature rise, a result that can be viewed as more cautious,
  - These gaps vary greatly from one sector to the other, ranging from +2.5°C for airports (SB2A ITR providing a +4.5°C temperature for an airport operator with a SBTi approved target of +2°C) to -1°C for heavy electrical equipment such as turbines for wind farms (aligned with a temperature rise of +1.5°C for SBTi and with a +0.5°C ITR for SB2A).
  - Both metrics are interesting but have their own respective limitations, their coverage remains partial, and they provide different information.
  - They cannot be aggregated together.
- About NEC and SB2A ITR:
  - The NEC is generally stable over time. In the 3 past years, we have reviewed how the NEC score of companies has evolved in the recent past (2 to 4 years) and how its future evolution could be quantified according to the disclosed strategy (CAPEX plan, claimed M&A targets, divestment projects, project pipeline development, customer mix change, supply chain change, etc…) on a set of 200 companies of our investment universe. The key learnings of this study have been:
    - For the lion share of the companies, the NEC was stable,
    - The NEC of the benchmarks, such as MSCI Europe or STOXX Europe 600, proved to be stable as well, with very small variations lower than 1% NEC over the 2018-2022 period,
    - The most significative NEC variations were observed in the Energy sector and in the Mobility value chain or for other sectors only when a M&A operation occurred in relation to a high impact sector, which means that either pre-M&A or post-M&A configuration or both involve at least one of the 12 high impact NEC frameworks for their NEC computation (e.g. Danone acquiring WhiteWave).

o   As the NEC is very often stable over time, the best default prediction of the company future NEC is its current NEC, which is common sense, as the future positioning of a company is the result of its current positioning and of its positioning change. For R&D purpose, the relation between 191 company NEC scores (NEC 1.0, based on 2017 to 2019 data, calculated by Sycomore AM) and SB2A Implied Temperature Rise (Science-Based 2°C Alignment bottom-up method provided by I Care) have been explored. A sigmoidal model gave a determination coefficient R^2 of 0.73.
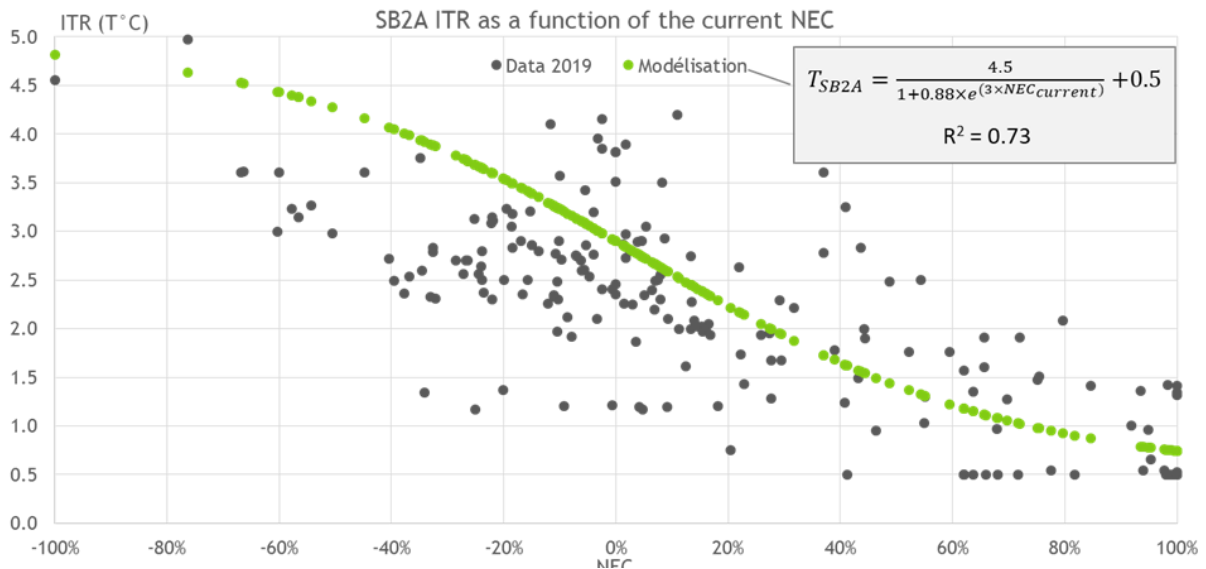
Figure 43 - Explorative comparison of companies' SB2A ITR and NEC, Sycomore AM, 2020.

o   In 2021, the study has been updated with a focus on the [-10%; +100%] NEC range which is the core investment universe of Sycomore AM. The R&D work has been achieved on an enlarged data set of 210 NEC scores (NEC 1.0, based on 2018 to 2020 data, calculated by Sycomore AM) and SB2A Implied Temperature Rise (Science-Based 2°C Alignment v1.2, provided by Iceberg Data Lab). An exponential model gave the same 0.73 determination coefficient R^2. The results confirmed that the **NEC appears to partially embark a climate-alignment dimension as modelled by the SB2A ITR**, with the advantage of been more granular, more transparent and with a full coverage capability.

These works have been decisive at Sycomore AM to define the Asset Management company's 2030 NEC target of +20%, extending the ability of the NEC to address the climate-nature nexus, not only for reporting, transition risk and opportunity assessment, investment policy and strategy, but also for target setting and alignment/performance to target at AM level.

The NEC provides a transparent, traceable trade-offs between nature and climate, addressing the Metrics & Targets D TNFD Recommendation (v0.3) at corporate level, as well as at financial institution level.

Other uses in the finance industry

In Private Equity, Private Debt and Infrastructures, SWEN Capital Partners illustrates how the NEC can be leveraged on other asset classes, as illustrated in their 2021 article 29 LEC reporting[14].

Figure 44 - Focus on Swen Capital Partners' NEC use, 2023.

The NEC has started to be used by Asset Owners and other Asset Managers as illustrated below.
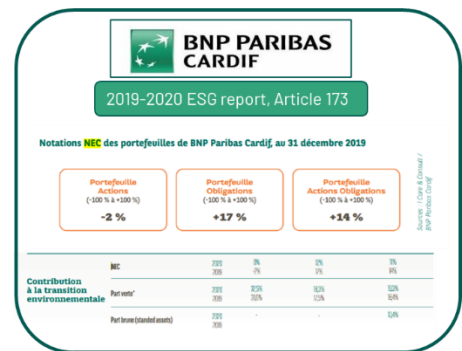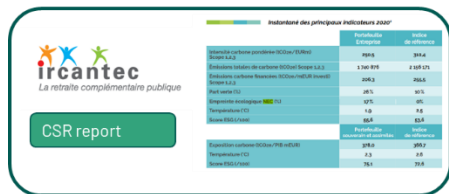
Figure 45 – Ircantec, Groupama AM and BNP Paribas Cardif uses of the NEC, NEC initiative 2023.

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[14] See in French only: https://www.swen-cp.fr/site/parameters?url=https%3A%2F%2Fparametersservices.ofivalmo.fr%2FgetFile%3Fid%3D62bdeeb9abf30%26filename%3D62bdeeb9abf30-document-62bdeeb9ae563.pdf%26type%3D3

Since 2023, it is also used by an Index Provider, Solactive with the **Solactive Atlantic NEC 50 Index GTR.**

Figure 46 - NEC-based index, Solactive, 2023.

Key pilot learnings

For financial institutions

By reviewing many uses of various environmental metrics as aggregated at for investors and financial institutions, the pilot brings deciphering elements to better distinguish the different types of metrics that are usable at the top of the corporate and financial value chains as mapped on the following table, where:

- **Absolute metrics** means pure or aggregated (e.g. CO_2e or $m^2.MSA$) physical metrics expressed in **physical units**,
- **Relative footprint**, such as carbon, water or biodiversity relative footprint or intensity, are expressed in **physical units per monetary unit**,
- **Normative E rating**, as provided by the mainstream ESG data providers, are in general based on qualitative analysis on a black-box mode,
- **Climate alignment score,** such as SBTi coverage or Implied Temperature Rise, are failing at addressing the non-climate scope,
- **Relative NEC scoring** appears to be the most advanced, actionable metric for nature-related scope, addressing the climate-nature nexus. The NEC is sharing the same philosophy as the Greenfin or EU taxonomy-based metrics, without bearing their limitations (binary, limited coverage, national or regional prism/bias, …).
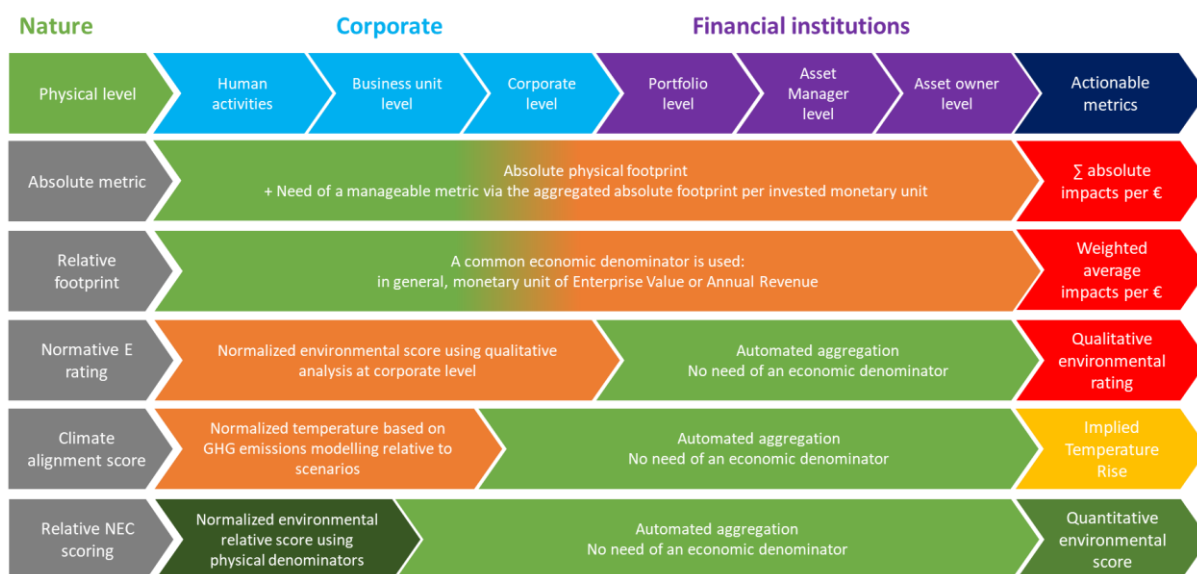
Figure 47 – Nature-related metrics' types along the aggregation challenge, Sycomore AM, 2023.

Among these analyzed metrics, the pilot study has pointed out that:

- Based on its "embedded reference benchmark", the 0% NEC point, for each sector, the NEC captures the relative, impact-based, environmental performance of the product/services mix of the companies, enabling to assess nature-related materials risks and opportunities on the whole scope of corporate activities, making it therefore the only available indicator to be **relevant for the A step of the LEAP approach and enabling to take effective actions for the P step**,

- Very few existing metrics are addressing the **climate-nature nexus**, the NEC achieves it, providing corporate and financial players with an operational, transparent tool to manage trade-offs between climate and nature,

- The NEC approach shares many similarities with the LEAP approach, enabling to **operationalize it**, and, more widely, the NEC has proven to **facilitate the implementation of some key TNFD recommendations**,

- The NEC 1.0, as a collaborative, transparent, common tool, which is already operational at asset owner, asset manager and corporate level and on a cross-asset basis, is **disruptive and extremely different from existing E ratings** from main-stream ESG data providers,

- The NEC is not a one-stop shop solution for nature-related issues, as it needs to be completed by other metrics such as nature-related physical risks measurement, taxonomy-based metrics and biodiversity footprinting, but it is an **insightful, actionable, premium brick in nature-climate dashboard for both corporates and financial institutions** for transition risk measurement and management, target setting and relative positioning versus peers and benchmarks.

To the TNFD

The TNDF, as a global standard prescriber, needs to focus on value-added, transparent, actionable methodologies, practices and metrics for financial institutions addressing the aggregation challenge, enabling the diffusion of a common language along the value chain and empowering investors in their nature-related risks analysis and the management of their impacts and dependencies on nature.

The NEC approach and its metrics sets, from NEC feeders to NEC scores, has been identified among a set of 8 existing or emerging approaches, to be a particularly relevant candidate to the TNFD core disclosure metrics, addressing the multiple challenges of aggregation, standardization and transparency, bridging the double gap between the products & services and corporate's environmental impacts and between corporates and financial institutions. Thanks to the granularity of the analysis of the environmental performance of the product mix of the companies, **the NEC is one of the very few indicators that can be used to identify materials risks and opportunities and operationalize their management up to the A and P steps of the LEAP process**.

Green taxonomies and certification schemes can be helpful to reach retail investors, and to provide additional metrics, as demonstrated by the Greenfin label in France or potentially by the EU green taxonomy on-going attempt. Nevertheless, as pointed out by the WWF[15], if the taxonomies may contribute to build "a common language to shift finance towards nature-positive investments", the 29 referenced on-going taxonomy attempts underline **the urgent need for convergence of this heterogeneous international landscape**.

The recourse to forward-looking scenarios must be a limited, generally optional, illustrative approach in both TNFD draft disclosure recommendation 'Strategy C' and TNFD LEAP approach for nature-related risk and opportunity assessment. We also recommend taking into consideration not only different scenarios, but also or as an alternative, science-based frameworks. By "science-based frameworks", we mean **methodological frameworks, such as the NEC, science-based policy tools, such as the EU taxonomy, and robust third-party environmental certifications, such as the Greenfin label**.

For the NEC initiative

The NEC 1.1 update and tests are currently approaching their final steps for a release expected in the following months, 4 years after the public release of 1.0 version. Integrating 4 years of users' feedback, following a 2-year long additional R&D investment with I Care and Quantis consultancies and more than one year of iterative testing process with the expert users, the NEC 1.1 guidelines have also been integrating the TNFD draft recommendations since March 2022. The new version will bring additional features and significant improvements:

▸ **Increased discrimination power**, measured as the share of non-null NEC: raising from 60% to 70-80% on typical index such as STOXX Europe or MSCI World,

▸ Extensive **sources' update** for all frameworks in terms of data (Impact World + 2021, IAE 2020 and 2021, Global Forest Watch, Aqueduct water risk atlas, SDG6.2 database…) and in terms of referenced environmental certification schemes, in line with the **"credible and transparent third-party certification" schemes referenced in TNFD v0.4**[16].

▸ **Enlarged scope** of the specific frameworks: financials (banking, insurance, investment), pharmaceuticals, district heating, concentrated solar power, telecommunications, semi-conductors, blockchain, hydrogen production technologies, methanization feedstocks, biofuels…

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[15] Cf. "Sustainable finance taxonomies: a common language to shift finance towards nature-positive investments", December 2022: https://www.wwf.eu/?8341941/Sustainable-finance-taxonomies-a-common-language-to-shift-finance-towards-nature-positive-investments

[16] As indicated in TNFD_v0.4_Annex_4.3_v3-1, for metric A 17.4 and A 3.2, Table 7.

- ▶ **Expanded integration of geography-based information** via an enlarged recourse to certification schemes, third-party ratings and spatialization, in particular for Electricity, Heat, Wood & Paper, IT & Telecom, Chemistry, Mobility & Transport, Building & Real Estate, Appliances and Waste frameworks,

- ▶ **Better quantitative integration of biodiversity**, e.g. via land use, eutrophication, water stress, air quality, ecotoxicity, resource depletion, leading to:
    - ▪ Finer assessment for transport infrastructures, electric and hybrid vehicles, water management,
    - ▪ More accurate assessment of nature-based solutions, such as methanization, biogas, biomass cogeneration, or agricultural and farming practices.

These new features will significantly **increase the facilitation power of the NEC to support and operationalize the LEAP deployment**.

In brief, the TNFD draft versions have pushed the NEC initiative in its updating works towards **more granular and more spatialized integration of environmental impact drivers**. The NEC 1.1 version will improve the ability of the NEC approach to provide an operational and transparent way to integrate both nature and climate from corporates level up to all levels of financial institutions.

Table of figures

Appendix 1: referenced uses of the NEC

Entity	Entity or product type	Product name	Track-record	Disclosure / source
Sycomore AM	Listed equity, open-end fund	Sycomore Europe Eco Solutions	Since 2015 with NEC's prototype, then NEC 1.0 since 2019, €675m	[Sycomore Europe Eco Solutions 2022 report](#) and its reporting corner at https://en.sycomore-am.com/funds/20/sfs-sycomore-europe-eco-solutions
	Listed equity, open-end fund	Sycomore Global Eco Solutions	Since Dec. 2021, €71m	[Sycomore Global Eco Solutions 2022 report](#) and its reporting corner at https://en.sycomore-am.com/funds/34/sfs-sycomore-global-eco-solutions
	Listed equity fund	Objectif Climat Actions 2	Since Dec. 2020, €257m	https://www.afg.asso.fr/wp-content/uploads/2020/06/cp-fonds-objectifs-climat-version-propre-18062020-1.pdf
	Listed equity and corporate bond funds	17 other products, e.g. Sycomore Sélection Responsable, Sycomore Inclusive Jobs, etc…	96% of AuM under NEC disclosure since 2018 and as of 31/12/2022, corresponding to Article 8 and 9 funds under NEC screening since 2021	NEC used at the company level including a 2030 target and covering the whole, directly-invested AuM perimeter, i.e. €7bn, [Sycoway as a company](#), 2022 version for 2021 , cf. page 42 « 11 funds, accounting for 48% of our net assets" are « using the NEC as an outperformance criterion on sustainability issues » and [Sustainability and Shareholder Engagement Report](#) for 2022
Spie	Issuer	SPIE SA	Positive NEC share of sales disclosed since 2020	Spie's 2021 Full Year Results Presentation, March 11th, 2022, page 35
Swen Capital Partners	Private Equity fund (FCPI)	Territoires innovants 3	€150m at in 2022's closing	Swen CP, https://www.swen-cp.fr/site/parameters?url=https%3A%2F%2Fparametersservices.ofivalmo.fr%2FgetFile%3Fid%3D62a8ddfb9fa49%26filename%3D62a8ddfb9fa49-document-62aa031b79270.pdf%26type%3D3

	Private Equity Fund	Swift 1	Since 2022	Swen CP, https://www.swen-cp.fr/site/parameters?url=https%3A%2F%2Fparametersservices.ofivalmo.fr%2FgetFile%3Fid%3D63206b56053bc%26filename%3D63206b56053bc-document-63206b560666a.pdf%26type%3D3
Revaïa	Private Equity	All portfolio companies	Since 2020	Revaia ESG report 2022, page 39
Zencap Asset Management	Private equity	ZEST II - Zencap European Sustainable Transition II	Since 2021	ESG report 2022 (pages 23, 29, 56)
Groupama	Asset Owner	ESG reporting of Groupama's investment policy	NEC of equities and corporate bonds disclosed since 2020	Rapport ESG 2022 Article 29, Rapport ESG 2021 Article 173
Ircantec	Pension fund	CSR Report	Ecological footprint (NEC)	CSR Report 2021
BNP Paribas Cardif	Asset Owner	Responsible investment report	NEC of equities and bonds portfolios, 2019, 2020	Stratégie d'investissement responsable 2020, Rapport_RSE_2020_Complet.indd (ademe.fr) Stratégie d'investissement responsable 2019, 91cbe694-0a5f-caf7-7b80-7687c263629d (bnpparibascardif.com)
Solactive	Index provider	Solactive Atlantic NEC 50 Index	Launched Feb 2023	Solactive Atlantic NEC 50 Index GTR

Appendix 2: list of main NEC 1.0 feeders

The below table summarizes the main NEC 1.0 feeders per framework and separated into 2 categories:

- Climate change
- Other nature-related pressures: Land/ Sea / Fresh Water Use Change, direct exploitation and pollution

For each framework and each category, the main NEC feeders are described along:

- Accuracy of integration using the following accuracy matrix symbols:
  - +++ for relevant issue with quantitative assessment
  - ++ for relevant issue with semi-quantitative assessment
  - + for relevant issue with only qualitative assessment
  - Ø for not relevant or marginal
  - – for relevant issue, not integrated yet
  - NB: when several issues are computed, several accuracy symbols are used.
- Unit or short definition,
- Weight in the NEC on a 0 to 100% range.

Pressure on biodiversity	Climate change			Land/ Sea / Fresh Water Use Change Direct exploitation Pollution		
Framework	Integration accuracy	NEC feeder	Weight	Integration accuracy	NEC feeder	Weight
Food & Beverage	+++	kgCO$_2$e/kg of nutrient	33%	+++ + and -	l of water/kg of nutrient and agricultural practices	67%
Water	-	none	0%	+++ and + and Ø	Water leakage, national level of regulation	100%
Wood & paper	+	Certifications and final uses	heterogene ous	+ and Ø	Certifications and final uses	heterogeneo us
Fuel	+++ and ++	Final use, fuel type, over-budget carbon factor	Variable, eg circa 40% for final use, 33% upstream and 100% of over carbon budget	++	Final use, fuel type, share and type of bio-sourcing	Variable
Electricity	+++	kgCO$_2$e/kWh	50%	+++, Ø and -	Species depletion in points	50%

				and Radioactive and non-radioactive waste in ecopoints per kWh	
Heat	+++	$kgCO_2e/MJ$	50%	++ and Ø	Particulate Matter /MJ	50%
Mobility & transport	+++	$gCO_2/p.km$ and $gCO_2/t.km$	50%	+++, Ø and -	NO_x and PM/ p.km and per t.km	50%
Building & real estate	+	Energy efficiency and Certifications	50% to 100%	+	Certifications	0% to 50%
Basic materials	+++	Final use, End-of-life recycling rate, kg CO_2e/kg extracted, CO_2 savings and kg CO_2e/kg produced	3% to 100%	+++ and Ø	Final use, End-of-Life recycling rate, m^3 water, kg SO_2 per kg and kg P-equivalent per kg extracted	0% to 97%
Chemistry	++	Final use	systemic	++	Final use, bio-sourced share, share of pesticides and fertilizers	systemic
Waste	+	Via waste type, treatment type and national standards' level	Variable	+	Via waste type, treatment type and national standards' level	Variable
Apparel & textile	++	$kgCO_2e$/kg of fiber integrated via adjusted MSI Higg index rating and business practices	variable	++	Water eutrophication, water scarcity, abiotic resources depletion per kg of fiber via adjusted MSI Higg index and business practices	variable
Household & personal Care	+	Via certifications	systemic	+	Proxy via palm oil content and RSPO level	systemic
Information technology	+++	PUE and renewable share of power supply and via final use	variable		Via final use	variable
Appliances	++	Via energy efficiency (kWh/unit) and business practices	variable	++	Via water efficiency (liter/unit) and business practices	variable

The exhaustive list of all NEC feeders is publicly available in the 16-section methodological guidelines on the NEC initiative website.

Appendix 3: Specific feedback on scenario analysis

Considering the inclusion of scenario analysis into the TNFD scope, Sycomore AM shares here-below the feedback sent to the French TNFD consultation group in January 2023, addressing the 4 suggested key-questions:

1. ***"In the absence of a normative global goal for tackling nature loss (the equivalent of the 2-degree Celsius Paris Agreement goal for climate), do you agree with the TNFD's proposed approach to develop and use analytic, rather than normative, scenarios built around critical uncertainties associated with physical and transition risks?***

The Paris Agreement defines a rather unprecise global goal between 1.5°C and 2°C implied temperature rise in 2100 versus pre-industrial's global average temperature. There is no unique normative scenario for climate, but a bunch of evolving and different scenarios generated by diverse institutions such as IPCC, IEA or the French ADEME. Tentative tools generating Implied Temperature Rise for companies have been developed, tested and compared during the last 5 years, with poor comparability and rather deceptive results, as illustrated by https://www.institutlouisbachelier.org/wp-content/uploads/2021/03/the-alignment-cookbook-a-technical-review-of-methodologies-assessing-a-portfolios-alignment-with-low-carbon-trajectories-or-temperature-goal.pdf. Additionally, when carbon budget allocation proved to be feasible (even if arbitrary) on homogeneous and commoditized activities, such as cement, steel or aluminum production, power or heat generation, air transportation or car manufacturing, representing a small portion of the real economy, it proved to be a very difficult (a nightmare) on heterogenous, non-commoditized activities, comprising the vast remaining part of the economy (at least 80%). As nature-related risk analysis is embedding climate along with many other environmental pressures, these strong observed limitations of climate scenario analysis utilization are amplified in the TNFD / Natural Capital approach. We thus fully agree with the TNFD's proposed approach to develop and use analytic, rather than normative, scenarios. And we suggest that local scenarios analysis is more appropriate to feed company-level and asset-level physical and transition risk assessment, and global scenarios are more appropriate to feed more systemic-related activities, such as insurance, banking, reinsurance or non-corporate entities, in particular for assessing the systemic risks.

2. ***Does the approach outlined in this paper feel feasible and repeatable for your organisation, given your organisation's current level of familiarity, experience and capabilities with scenarios?***

Our organization is a small asset management company (€8bn AuM), with a 1.5°C validated SBTi (in 2022) target and some experience with scenarios and ITR measurement, as a user of the SB2A Implied Temperature Rise and SBTi coverage since 2020. We have disclosed a synthesis on the elements provided by SB2A ITR and SBTi approach on our last investment report (along article 29), see page 45-46 of https://en.sycomore-am.com/download/567368154.

A scenario means to model the present situation and a possible future. We consider that:

- *the economic players, the vast majorities of companies and in particular financial players, are far from having a comprehensive understanding of their current and actual impacts and dependencies today.*
- *The predictability of future is supposed to decrease in the coming years and decades, as the Earth system is no longer operating in a safe zone, as documented by the Planetary Boundaries, IPPC and IPBES: in a more instable biosphere, forward-looking exercises, such as scenarios, are becoming more and more speculative and are to face increasing difficulties to prove to be accurate or even useful, as they won't (very probably) anticipate the "real" future.*
- *Scenario-based elements (e.g. use of future decarbonization technologies, CCS, green hydrogen, etc.) may support net-zero claims (by 2050 or earlier) without robust argumentation*

We thus recommend to clearly prioritize means, efforts and deliverables on the assessment and mitigation of current and actual impacts and dependencies of the organization and of all its potential new development (organic or external growth, CAPEX, …) to feed professional and in-depth transition and physical risk analysis. Recourse to scenarios is one of the forward-looking possible approaches to test a strategy, a business unit or an asset.

3. **What need or interest do you have in 'add-ons' to this building blocks approach to support more sophisticated applications of scenario thinking, such as the incorporation of impact modelling and the quantification of risks?**

No interest in more sophistication in scenario thinking which is already a very sophisticated approach. Improvement of scenarios accuracy must continue to be based on academics and institutions, and synthetized by platforms such as IPCC and IBPES. More granularity is needed in current and actual impacts, dependencies and risks assessment. **Kunming-Montréal Agreement** *will help with target 15 statement:*

"Take legal, administrative or policy measures to encourage and enable business, and in particular to ensure that large and transnational companies and financial institutions: (a) Regularly monitor, assess, and transparently disclose their risks, dependencies and impacts on biodiversity, including with requirements for all large as well as transnational companies and financial institutions along their operations, supply and value chains and portfolios, cf. https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf

4. **Should the scenarios-related disclosure recommendation (Strategy C) and the use of scenarios more generally be recommended for medium and smaller size organizations or only for larger corporates and financial institutions?**

For the previously exposed reasons, we recommend the use of scenarios only for large corporates and large financial institutions, especially when exposed to systemic risk. For all organizations, the priority should remain the transition and physical risks assessment and management, based on an extensive analysis of current impacts and dependencies."

In conclusion, we propose to transform the recourse to scenarios into a limited, generally optional, illustrative approach in both TNFD draft disclosure recommendation 'Strategy C' and TNFD LEAP approach for nature-related risk and opportunity assessment. We propose the following wording:

- TNFD draft disclosure recommendation 'Strategy C'! 'Describe the resilience of the organisation's strategy, taking into consideration different **science-based** scenarios **or frameworks.**'
- TNFD LEAP approach for nature-related risk and opportunity assessment: 'Scenario analysis **may** inform all phases of the LEAP approach. It is particularly relevant to:

- o The 'Assess material risks and opportunities' phase. Scenario analysis can explore risks and opportunities – and management of those – under plausible futures.
- o The 'Prepare to respond and report' phase, in particular 'P1 – Strategy and Resource Allocation' where scenario analysis can test the resilience of organisational strategic choices and response options against plausible futures.

By "science-based frameworks", we mean methodological frameworks, such as the NEC, SBTi, science-based policy tools (e.g. the EU taxonomy), or third-party audited environmental certifications (such as the environmental certification schemes, referenced in the NEC 1.0).