Is the transition risk material?

Testing the Net Environmental Contribution[™] metric on a universe of listed European equities

Table of content

Abstract	2
Context	2
NEC methodology	5
Tested data set	9
Comparing the NEC with E ratings	9
Tested NEC-based investment strategies	.12
Analysis over one-year periods	.13
Analysis over three years	.14
Performance attribution	.16
Comparison between three-year and five-year timeframe results	.17
Comparing NEC score and five-year return of the tested strategies	.18
NEC versus environmental ratings as investment factor	.18
Analysis on a second European Index	.19
Conclusion	.20
Glossary and references	.21
Appendix	.22

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Keywords

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Abstract

In 2017, BNP Paribas Securities Services and Sycomore AM joined forces to accelerate the testing and enable the quicker deployment of a new advanced metric. This metric had been designed to measure the alignment of any economic activity with globally established goals around energy and ecological transition, and climate change mitigation. This metric, the Net Environmental Contribution[™] or NEC, provides a single figure on a scale ranging from -100% (negative net contribution/obstruction) to +100% (clear positive contribution/full alignment). Sycomore AM provided BNP Paribas Securities Services with the individual NEC for each of a set of +1,200 companies, covering its whole invested universe and major European indices. This article explores the financial and environmental performance of stocks within the STOXX 600 universe, using the evidence produced by the NEC.

Key learnings are:

- The NEC key features distribution and scope of application are different from environmental (E) ratings provided by extra-financial agencies and high E ratings do not automatically translate into a high contribution to the environmental transition;
- Patterns between the NEC and stocks prices emerge when studying three- and five-year periods;
- Among the tested strategies, a portfolio of stocks with NECs ranging from +10% to +100% and an average NEC of +25% appears to offer both the highest return and the highest risk-adjusted return (approximated by the Sharpe ratio) over three-year and five-year periods;
- As the NEC is a proxy for the degree of alignment with the environmental and energy transition, the preliminary results show it could be material to equity returns and risk-adjusted returns over a period as short as three years.

In conclusion, the NEC beta version we tested seems to be useful already, both for constructing an investment strategy and for meeting French article 173 reporting requirements and some of the TCFD recommendations. It seems the NEC methodology, which is moving towards an open-source model, is worth being further improved and rolled out to a broader universe.

Purpose of the study

The purpose of the following study is twofold.

- First it aims to verify that the NEC metric demonstrates different features to environmental ratings and could therefore be a useful tool for reporting environmental footprint and transition risk.
- Second, the study aims to test if the NEC could provide useful insights for investment decisionmaking, approximated here by risk and return performances.

Context

The environmental challenge

Natural capital is the very foundation of everything on earth. There can be no prosperous human activity without maintaining the stability of the ecosystems that keep mankind alive today. The services carried out by these ecosystems, noted by the Millennium Ecosystem Assessment in 2005, span pollination by bees through the water cycle, all the way to climate stability.

The environmental degradation caused by human activities, which has been extensively proven, has become one of the biggest challenges that mankind must face in the 21st century. Extreme weather events are intensifying and estimates around global warming suggest we should expect a rise in temperature of between +3°C and +6°C by 2100. This would cause sea levels to rise by 2 meters and create hundreds of millions of climate-related refugees. But it goes way beyond the just global warming. The Global Footprint Network and

World Wide Fund for Nature (WWF) have shown that each year since the 1970s, we have been using more natural capital than the planet can regenerate and producing more pollution that the biosphere can absorb. According to the World Health Organization (WHO), 23% of global mortality is related to the environment – this represents 12.6 million deaths every year.

The regulatory landscape

In 2015, the United Nations adopted 17 Sustainable Development Goals (SDGs). These goals are gradually becoming recognised as a global benchmark for the public and private sector to measure the progress made to improve the lives and future prospects of everyone, everywhere. Nine of these goals cover environmental issues: goal 6 is about water; goal 13 concerns the climate, goals 2, 14 and 15 relate to ecosystems and the sustainable food supply these can produce. Goals 7, 9, 10 and 11 cover energy consumption, production and systems, both industrial and urban.

Article 173 of the French Energy Transition Law for Green Growth¹, passed in 2015, marked a turning point in climate-related disclosure requirements for issuers, asset managers and institutional investors. Since 2016, these entities have had to publish information on not only the integration of environmental, social and governance (ESG) criteria into their investment policy, but also on their own corporate strategy, their contribution to the energy and environmental transition, and the fight against climate change.

At the same time, the French government launched the Energy and Ecological Transition for Climate Label, EETC² certification, a green taxonomy of eco-activities. It demands the strict exclusion of fossil fuels and nuclear energy, with partial exclusions for companies operating in the value chain of these activities. Additionally, it requires companies to measure the actual contribution their investments make to the energy and ecological transition, i.e. to report their impact on at least one of the four following fields: climate change, water, natural resources, biodiversity.

In June 2017, the Task force on Climate-related Financial Disclosures (TCFD), responding to a request from the G20 and Central Bank governors to the Financial Stability Board (FSB), drew up a set of recommendations³ with a view to developing information disclosure on climate-related risks and opportunities investors could use when making investment decisions. The Task Force developed four widely-adoptable recommendations that were structured around four thematic areas representing core elements of how organizations operate: governance, strategy, risk management, and metrics and targets.

In 2018, further to the European Commission's Action Plan on Sustainable Finance of March, a package of legislative proposals was issued in May. The proposed regulation sets out six environmental objectives:

- climate change mitigation
- climate change adaptation
- sustainable use and protection of water and marine resources
- transition to a circular economy, waste prevention and recycling
- pollution prevention and control
- protection of healthy ecosystems

This new European Union (EU) regulatory framework is a clear step forward advocating for a comprehensive and not carbon-only approach of environmental sustainability⁴.

¹ Voted on August 17th, 2015 with implementing enactment n°2015-1850 setting out measures for the enforcement of article 173 published on December 29th, 2015.

² See on Novethic site: <u>https://www.novethic.com/fileadmin/user_upload/divers/labels/Brochure-EETC-Label-2017.pdf</u> <u>https://www.novethic.com/fileadmin/user_upload/divers/labels/1605-LabelTEEC_Referentiel-ENG.pdf</u>; <u>https://www.novethic.com/french-green-public-label.html</u>

³ See <u>https://www.fsb-tcfd.org/publications/final-recommendations-report/</u>

⁴ For an activity to be environmentally-sustainable, it must contribute substantially to one or more of these objectives, not significantly harm any of them, and comply with minimum safeguards and technical screening criteria, which will be set out in a Delegated Act; see for example https://home.kpmg.com/ie/en/home/insights/2018/06/fs-regulatory-insights-june-2018-eu-strategy-on-sustainable-finance.html

The need for improved metrics

Like any industry, the financial sector is being impacted by the ecological challenges facing the world – and it is trying to better understand any resulting risks and opportunities in order to address them. As the saying goes: "If you can't measure it, you can't manage it". As investors try to address the energy and environmental transition - which will happen whether we like it or not – integration of environmental ratings and carbon footprinting have become popular in the industry. Even so, attempts by the industry to both measure and report on the environmental challenges have proven unable to clearly reflect the underlying risks and opportunities.

Environmental ratings are usually structured on a three-pillar basis: policies and commitment; implementation, i.e. programs, systems and mechanisms; and results, i.e. performance and controversies. While environmental ratings may provide some useful information to help understand how a company deals with environmental issues in its own operations, their ability to measure to what extent a business model is aligned with the energy and environmental transition or compatible with a resilient natural environment is questionable. Various studies⁵ have demonstrated that environmental ratings are somehow biased by a company or CSR reporting size, its geographic location, or industry. This means they fail to provide an accurate view of risks or distinguish between different business models within a same industry.

Measuring carbon intensity or footprint in finance usually consists of computing the tons of CO_2 equivalent emitted annually by a company on a limited perimeter and dividing it by the company sales, market capitalization or enterprise value. However, this method misses up to 97% of the emissions from car manufacturers and overlooks the emissions avoided by insulation solutions for example. Using this current method, the carbon footprint changes every day with stock price fluctuation. Furthermore, using the carbon footprint as a proxy for environmental impact ignores the rest of the environmental challenges, such as biodiversity, water pollution, air pollution or resources. Eventually it favors low carbon solutions like nuclear electricity, diesel or plastic packaging, being blind on their impacts on waste generation, biodiversity or air quality. As such, the carbon footprint fails to provide the relevant information needed both for risk assessment or investment decision-making, as well as for impact reporting.

As a consequence, in early 2015, Sycomore AM started to work on a new, disruptive metric to overcome the limits of currently available methodologies. Sycomore AM wanted to both capture the main impact companies made on various environmental issues and identify investment opportunities in areas that are aligned with current and future trends driving the energy and environmental transition. Through this, it would be able to spot the business models that are damaging natural capital in such a way that they will end up obsolete or at least challenged.

In this context, Sycomore AM decided to leverage the experience it gained through the development of its Sycomore Eco Solutions fund. It was the first fund to receive the French Label for the Energy and Ecological Transition⁶ - an environmental indicator designed to identify the companies that develop eco-solutions - by creating the *Net Environmental Contribution*[™] (NEC). The NEC was developed with the support of I Care & Consult, a consulting and innovation company dedicated to the environmental transition, and Quantis, a provider of environmental sustainability solutions. In 2017, BNP Paribas Securities Services joined forces with Sycomore AM to accelerate the NEC implementation and testing phases⁷.

⁵ Ratings that Don't Rate: The Subjective World of ESG Ratings Agencies, ACCF, July 2018 <u>http://accfcorpgov.org/wp-content/uploads/2018/07/ACCF_RatingsESGReport.pdf</u>

⁶ Novethic press release: <u>https://www.novethic.com/fileadmin//user_upload/tx_ausynovethicpresse/communiques/PR-Green-Label-TEEC-Sycomore.pdf</u>

⁷ The present study is part of this partnership and focuses on exploring the NEC characteristics and on confronting the NEC indicator to the financial risk and return.

NEC methodology

Over three years of applied research and development, 18 frameworks have been designed and implemented leading to a beta version of the NEC being established at the beginning of 2018. In brief, the NEC:

- Captures the full value chain impacts using Life Cycle Assessment based on physical data
- Evaluates transition risks & opportunities, but not directly physical risks
- Goes beyond carbon and carbon footprinting, and captures all 6 environmental issues identified by the EU regulatory framework on sustainable finance
- Provides a unified set of frameworks aggregating bottom-up product/service-based analysis by function, activity by activity
- Is based on NGO, branch and academic tools, databases and studies about environmental impacts assessments
- Is applicable cross-asset (equity, corporate and sovereign bonds, private equity, real estate, infrastructure)
- Provides a single metric that is a proxy for the environmental contribution of a given activity, it reflects an order of magnitude (a difference below 10 percentage points being meaningless), taking no claim on being an exact calculation

At the end of 2018, the NEC is moving from a proprietary development into an open-source initiative in order to mutualise R&D, updates, standardisation, awareness, expertise and efforts towards transparency of the initiative⁸.

NEC definition: the NEC is a new advanced metric that enables investors to measure to what extent a given business model is strategically aligned with the energy and environmental transition. Using tangible physical data, taken from the whole value chain, it provides a snapshot of an activity's net environmental contribution and can be aggregated at a company, portfolio or index level. To assess an environmental impact, the NEC uses a multi-criteria approach and considers at least two of the following five issues: climate, water, resources and waste, air quality and biodiversity, in order to capture a comprehensive environmental footprint. The indicator is calculated on a scale from -100%, for the most damaging activities, to +100% for clear environmental solutions that fulfill the same given function. It is meant to provide an order of magnitude of the net impact. The 0% point is given for the average environmental impact of the function that the given activity is trying to fulfill. 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, contribution to earnings, enterprise value or market capitalization the activity account for.



Figure 1: NEC illustration, Sycomore AM, 2018.

⁸ See: <u>https://quantis-intl.com/net-environmental-contribution/</u>

The NEC methodology consists of 18 function-specific frameworks that have been designed using a valuechain approach and organized into three categories, according to environmental impact intensity (high, moderate and limited). For each framework, the most relevant environmental issues have been selected and weighted following Life Cycle Assessment (LCA) standards.

				Envir	onmental issu	ies	
Domain	Framework	Impact intensity	Climate	Resources and Waste	Biodiversity	Water	Air quality
	Food						
	Beverages						
Ecosystems	Water		-	-			-
	Forestry, Wood, Pulp and Paper						-
	Fuel					-	
Energy	Electricity					-	-
	Heat	High		-	-	-	
Mobility	Passenger	[-100% ;		-	-	-	
	Freight	+100%]		-	-	-	
Construction	Building & infrastructures						-
	Mining						-
	Metals						-
	Chemistry						
	Waste					-	
	Textile						-
	Personal & House Care	Moderate		-		-	-
Production	Information Technology	[-33% : +33%]		-	-	-	-
	Appliances				-		-
	Others: Healthcare, Media, Telecom, Finance, Insurance	Limited [-10% ; +10%] unless dedicated to a high or moderate impact activity	Indirect i	ntegration thr the above fra	ough a value c meworks wher	hain appro	bach with

Direct integration

Indirect integration

No integration yet

Figure 2: Coverage of environmental issues by area and function as per NEC beta version, Sycomore AM, 2018.

For illustrative purposes, find below some examples of positive and negative contributions for each group of functions.

Area	Functions/uses	Negative NEC	Positive NEC
Construction	Access to a home, shelter, personal space	Energy-inefficient buildings, concrete and cement-based building solutions	Renovation, thermal insulation, timber framing, home exchange
Ecosystems	Access to food, use of water, exploitation of living resources	Pesticides, nitrogen-based inputs, intensive farming, animal protein	Vegetable-based and organic foods, sanitation, sustainable forestry
Energy	Access to energy: fuel, heating and electricity	Thermal coal, non-conventional oil & gas, carbon-rich electricity	Renewable energy, smart electricity grids, energy storage
Mobility	Personal travel and freight	Air travel, vehicles with high fuel consumption, road freight	Car-sharing, bicycles, public transport, railways
Production	Consume, produce, extract, recycle,	Linear economy, mine extraction, disposable goods, cotton	Circular economy, green chemistry, recycling, function- driven economy

Figure 3: Illustration of positive and negative net contribution by area as per NEC beta version, Sycomore AM, 2018.

For illustrative purposes, see below some NEC beta version default values for the food framework that equally weights climate, biodiversity and water issues, with the middle point 0% defined as the average global diet environmental impact.



Figure 4: Illustration of the default NEC by food products, as per the food framework of the NEC beta version, Sycomore AM, 2018.

NEC, Article 173 and TCFD recommendations

The NEC is designed to capture any company activity's contribution to the environmental and energy transition. The 0% point sits in the middle, standing for the average environmental impact needed to fulfill a function. The +100% measure represents the eco-solution – i.e. the lowest environmental impact to fulfill the same function – defined as the best, significantly scalable solution that is aligned with the 2°C objectives for activities with the highest impact intensity. Activities are classified in three impact intensities so that all frameworks can be compared and added up.

Therefore, a positive NEC means a company's overall impact is better than the measured average and is thereby helping reduce the environmental footprint of a function (providing electricity, heating space, feeding people, building...) and participating in the environmental transition.

While the various attempts to establish a 2°C scenario or pathway (SBT initiative, SEI metric, Transition Pathway Initiative) have so far only been able to cover a very limited scope of activities, the NEC offers the benefit of assessing the full range of activities.

In some frameworks (electricity, energy, mobility...) the link between a 2°C scenario and the NEC percentage point could quite easily be drawn. Nonetheless, as mentioned in the introduction, climate and other environmental issues are clearly interrelated and reaching the 2°C target will only result from a whole systemic shift. One sector being able to offer a trajectory to 2°C relies on others doing the same. While most other 2°C metrics are based on top-down greenhouse gas (GHG) sectorial allocations, the NEC takes a bottom-up approach, and then consolidates the net contributions from a sector's range of activities on a unified scale of environmental impacts.

As such, the NEC is a relevant metric to understand the transition risks and opportunities as defined in the Article 173 and TCFD recommendations; a valuable metric to assess contribution to international goals on climate change as expected by the Article 173; and a useful tool to identify which business models are already aligned with a 2°C world and which companies are transforming their business models in order to contribute to the transition and ultimately align with the 2°C or less. The NEC can also be used dynamically to track business model transformation and detect over time whether a company is working towards alignment with global environmental goals or away from them. However, the NEC has not been designed to perform scenario analysis as suggested by the TCFD recommendations, neither to assess physical risks as mentioned by both Article 173 and TCFD.

Note that the French Green public EETC label offers more guidance for green investment and for the reallocation of assets towards the ecological and energy transition. The specifications drawn up by the French authorities stipulate which activities are excluded and give a detailed sector-based list of green activities, which must make up a minimum proportion of the financed activities in the portfolio. The result is a whole taxonomy of green and brown activities.

According to Sycomore AM's two-and-a-half-year experience in managing an EETC certified fund, it has been found that a positive NEC usually matches green activities as defined by the French authorities, while excluded activities usually have a negative NEC. As such, the NEC appears to be a useful signal of compliance with the EETC label.

More detailed information about the NEC is available on the NEC partners' websites⁹.

⁹ See in particular: <u>https://en.sycomore-am.com/5b34f956-Natural_Capital_Strategy_2018.pdf</u>; <u>https://en.sycomore-am.com/Our-Magazine/2017/12/454-Our-compass-for-navigating-the-energy-and-environmental-transition</u>. <u>https://securities.bnpparibas.com/about-us/news/sycomore-am-sign-research-partne.html</u>. and <u>https://en.sycomore-am.com/files/R/E/5a452894-RESPONSIBLE_WAY_by_Sycomore_AM_N_7.pdf</u>

Tested data set

The universe covered by the Net Environmental Contribution[™] includes around 1,200 companies. The NEC scores were computed from June 2017 to February 2018 by Sycomore AM teams, assisted mainly by I Care & Consult and Quantis experts. Data used for the NEC calculation were a mix of company disclosure (mainly 2016 annual reports), external databases, third-party studies and dialogue with the companies. The data set was transferred for analysis to BNP Paribas Securities Services' teams in March 2018. The data set produced NEC reflecting how the companies were operating mainly during 2016. Consequently, the data set is a 2016 picture of the NEC beta version calculated in 2017.

In order to avoid introducing a bias from the Sycomore AM's investment universe, only equities listed on public indices have been used for this study. Notably the *STOXX Europe 600* (EU0009658202) composed of 600 large, mid and small capitalizations across 17 countries of the European region was used.

We extracted the weekly close prices, based in Euros and adjusted for splits and corporate actions, of all the companies included in the *STOXX Europe 600* for a period of five years from December 27, 2012 to December 29, 2017 from Factset. The index is calculated using a free-float market capitalization methodology and rebalanced quarterly.

All the results use static NEC scores that were calculated for the 2016 calendar year. The companies present in the *STOXX Europe 600* in 2016 without a NEC score were excluded from this study. We constructed a reference index/strategy named *SE570*, which was derived from the *STOXX Europe 600*, to serve as a benchmark for the various strategies implemented and tested. The composition of this reference index is based on the stocks in position (accounted for according to weights) at the beginning of the analysed period. Companies without sufficient financial data (not present in one index at the beginning 2017 or before) were excluded from the following analysis. We normalized the weights proportionally for all the strategies to allow the sum of all the weights to be 100%.

The returns of the **SE570** or any strategy over a period were computed using the normalized weighted returns of all the index components over that period. The volatility of a component of the index was computed using the standard deviation based on the analysed period. The volatility of the strategy was calculated using the standard deviations of all stocks as well as correlations of each security pair (over the analysed period using weekly returns). The three or five-year returns are compounded annualized returns. The Sharpe Ratio was calculated with the German Treasury ten-year bond yield at the end of each year.

Comparing the NEC with E ratings

Figure 5a shows the distribution of the NEC data set - encompassing 1167 corporate issuers across the whole economic sector spectrum, mainly listed entities - on a logarithmic scale. More than 600 companies (half the dataset) have a NEC at 0%. Each histogram features the number of companies within a range of 10% [-5%; +5%] of NEC scores on the X-axis, except for +100% [+95%;+100%] and -100% [-100%;-95%], which have a range of 5%. **Figure 5b** displays the distribution of the NEC on the X-axis with the bubble size featuring the market capitalisation at the end of 2016 in the Euro currency for the whole data set.



Figure 5a: NEC scores distribution, BNP Paribas Securities Services, 2018.



Figure 5b: NEC scores distribution and market capitalisation, BNP Paribas Securities Services, 2018.

Figure 6 separates each constituent of *the STOXX Europe 600* index on the vertical axis by its NEC score versus its environmental rating. The environmental ratings are provided by Sustainalytics via Yahoo! Finance as of October 2018. The majority of the components of the *STOXX Europe 600* have strong environmental ratings whereas their NEC is often neutral - centred at 0%.



Figure 6: NEC distribution (blue) and average environmental rating (red) for all the components of SE570 with their respective market capitalization, BNP Paribas Securities Services, 2018.

The NEC dataset shows a very different structure, illustrating visually how different the NEC is from usual environmental ratings. This is consistent with the NEC being disruptive compared to usual environmental ratings that are calculated by aggregating several ratings at corporate/holding level, such as greenhouse gas emission levels, water treatment, waste management or biodiversity program, whereas the NEC is based on a lifecycle assessment using physical data and built activity by activity.

The concentration of large-cap companies around the 0% NEC can be explained by these enterprises often being strongly diversified with a large scope of activities. They also have wide interactions with multiple parts of the world economy, positioning their net impact close to its average environmental impact – or 0% NEC – as it is the case for large financial players. The dark green solutions and the deep brown activities, according to the NEC, are less diluted in smaller companies or pure play models. This explains why the share of small to medium-sized companies is higher in the extreme NEC zones away from 0%.

Figure 7 provides the distribution of the NEC scores in blue and of the E ratings in red for **SE570** according to their GICS level 1 sector and the normalized weights for 2017. The size of the bubble still represents the weight of the company in the index. **Figure 7** illustrates the difference between the NEC and E rating is also strong within sectors.



Figure 7: NEC and E scores distributions of the components per market value and sector GICS level 1 (2016), BNP Paribas Securities Services, 2018.

Tested NEC-based investment strategies

As the previous observation and comparisons to the E ratings demonstrated the NEC as a new type of metric, we studied how it could interact with performance and risk metrics. For this purpose, six NEC-based strategies were created and tested over the reference index *SE570*. As creating strategies from European index requires considering only the stocks for which a NEC score has been calculated, we excluded 30 companies not covered for the *STOXX Europe 600*.

For 2016, the reference index is composed of the members present at the beginning of that year. This methodology applies for all periods. If a company is not in an index at the beginning of the year (but is incorporated the index during the year) or if it is removed before the end of the year, it is not integrated in the statistics, the coverage is adjusted, and the weights are normalized to calculate the performance and risk accordingly.

The different strategies created are described here-below with their NEC scores calculated with 2016 data:

- Green: Clear positive contribution, NEC [+10% to +100%], average NEC of +25%: a universe of 101 companies with a NEC above or equal to +10%. By design, this strategy does not include companies from the *Financial*, *Health Care*, *Telecommunications Services* and *Information Technology* sectors because their NEC is equal or close to 0%.
- Red: Clear negative contribution, NEC [-100% to -10%], average NEC of -30%: a universe of 76 companies with a NEC below or equal to -10%. By design, this strategy does not include companies from the *Financial*, *Health Care*, *Telecommunications Services and Information Technology* sectors because their NEC is equal or close to 0%. From the NEC standpoint, the Red strategy is the symmetric opposite of the Green one.
- Green OW: Highly positive contribution with NEC [+30% to +100%] over-weighted by a factor of 10, average NEC of +14%: encompassing 570 companies and overweighting those with a NEC above or equal to +30% by increasing the corresponding year allocation by 10 times and rebalancing proportionally the other weights to get a total sum of weights equal to one. The total weight of the 33 over-weighted companies is around 30% depending on the year.
- Red OW: Highly negative contribution with NEC [-100% to -30%] over-weighted by a factor of 10, average NEC of -32%: encompassing 570 companies and overweighing those with a NEC

below or equal to -30% by increasing the corresponding year allocation by 10 times and rebalancing proportionally the other weights to get a total sum of weights equal to one. The total weight of the 34 selected over-weighted companies is between 41% and 57% depending on the year.

- Neutral Green: Neutral and positive contribution, NEC [-10% to +100%], average NEC of +3%: a universe of 498 companies with a NEC above or equal to -10%. This universe encompasses the Green strategy and the relatively neutral stocks with NEC [-10% to +100%], including all *Financial*, *Health Care*, *Telecommunications Services and Information Technology* companies.
- Sector Neutral Green: Sector neutral-best in class NEC, Top 10% NEC by sector, average NEC of +3%: a universe encompassing 207 companies, we selected the 10% with highest NEC scores by sector GICS level 1 (the best NEC scores over the eleven sectors (*Consumer Discretionary, Consumer Staples, Energy, Financials, Health Care, Industrials, Information Technology, Materials, Real Estate, Telecommunication Services and Utilities*)). For the four sectors with NEC at 0% all the companies were selected. This is the only strategy with two levels of selection, the highest NEC score and the sectors.

The next analysis steps aim to compare the financial results of the six NEC-based strategies to the market risk and return on different timeframes.



Figure 8: NEC scores by strategy derived from the SE570 index, BNP Paribas Securities Services, 2018.

Analysis over one-year periods

In order to compare annual returns and volatilities, we have plotted 2015, 2016 and 2017 performances on three risk-return maps in **Figure 9**. The horizontal and vertical lines intersect and demarcate four regions related to the benchmark results: lower volatility – higher return at top left, lower volatility – lower return at bottom left, higher volatility – higher return at top right, higher volatility – lower return at bottom right.



Figure 9: Risk-Return maps of all the strategies for 2015, 2016 and 2017 respectively, BNP Paribas Securities Services, 2018.

The results for the three years displayed in **Figure 9** show that no stable pattern clearly emerges, except for the **Green** strategy, which remains in the same top right quadrant, higher volatility – higher return; and the **Green OW** strategy, which has stable excess returns over the years. The **Red** strategies are much more volatile both in term of excess return or risk over the years shown above.

Analysis over three years

We extended the previous analysis over a three-year period, centered on 2016. The results are shown in **Figure 10** as annualized excess return and volatility for all the strategies over the reference benchmark.



Figure 10: Excess risk and return by strategy over three years (2015-2017), BNP Paribas Securities Services, 2018.

Over the three-year timeframe, four strategies out of six have a noticeable higher annualized return than the benchmark demarcated by the horizontal axis. We observe that:

- The **Green** strategy shows the highest annualized return with an excess return of 345bp compared to its respective benchmarks, while volatility increased 65bp.
- The Green OW outperformed by 215bp with a reduced volatility of 35bp compared to the SE570.
- The Red OW outperformed by 200bp with stable volatility compared to the SE570.
- The Red strategy outperformed by 200bp while volatility increased by 120bp.
- The Neutral Green strategy was close to the benchmark both in terms of performance and volatility. By design, this strategy is highly correlated to the benchmark as it overlaps 80% of the initial benchmark composition (in weight), excluding the most negative NEC, i.e. NEC between -100% and -10%.
- The **Sector Neutral Green** is located in the worst quadrant with an excess volatility and an underperformance compared to the SE570.

In order to capture the risk-adjusted returns of all the strategies in a single metric, Sharpe ratios were computed and presented in **Figure 11**.



Figure 11: three-year annualized Sharpe ratio, BNP Paribas Securities Services, 2018.

The risk-adjusted return is maximized for the **Green** strategy derived from *STOXX Europe 600*. The **Green OW** and **Red OW** also display relatively high Sharpe ratios and the **Sector Neutral Green** strategy appears to have the lowest Sharpe ratio.

Performance attribution

In order to isolate the NEC selection effect from the sector allocation and the market capitalization effect, a performance attribution on the **Green** strategy has been performed on the three-year period according to the *Compounded Notional Portfolio*¹⁰ (CNP) methodology. Results of the **Green** strategy derived from the **SE570** benchmark are presented in **Figures 12a and 12b**.



Figure 12a: Performance attribution breakdown by market capitalization for the Green strategy over the three-year period and compared with SE570, BNP Paribas Securities Services, 2018.



The performance attribution per market capitalization over three years shows in **Figure 12a** that the stock selection effect (based on NEC) is the main driver of the outperformance (85.6% of it).

Figure 12b: Breakdown of the performance attribution of the Green strategy per sector, 3-year period and compared with SE570, BNP Paribas Securities Services, 2018.

The performance attribution per sector over three years shows in **Figure 12b** that the stock selection (driven by NEC) is the main driver of the outperformance (82.6% of it).

The conclusions of the performance attribution analyses are that the NEC selection effect appears to be: - the main driver of comparative performance

¹⁰ Extension of the CNP method for deriving and linking sector-level effects that is intuitive, consistent with common industry practice and precisely additive to the total level effects over any range of time period from Mark R. David, CFA paper "Sector-level Attribution Effects with CNP".

- not biased by market capitalization allocation
- not significantly biased by sector allocation

Comparison between three-year and five-year timeframe results

Figure 13 shows the evolution of the strategies' results over a three-year period to one of five years, in terms of annualized excess return on the Y axis and excess volatility on the X axis compared to the SE570.



Figure 13: Evolution of the excess return and volatility of all the strategies from 3 years (2015-2017) to 5 years (2013-2017), BNP Paribas Securities Services, 2018.

We observe rather stable patterns for three strategies:

- The **Green** strategy still shows the highest excess return for both periods, 280bp compared to the benchmark and a volatility increase of 107bp.
- The **Green OW** strategy remains in the same top-left quadrant for both periods, outperforming the benchmark by 176bp annually and with volatility reduced by 11bp.
- The **Neutral Green** strategy appears to remain close to the benchmark in terms of performance with slight excess volatility.

We observe moving patterns for three strategies:

- The **Red** strategy has shifted from the top right to the bottom right quadrant, underperforming by 150bp annually the benchmarks with volatility increasing by 80bp.
- The **Red OW** strategy has made a less salient shift, still outperforming by 110bp compared to the *SE570*. Volatilities have not shifted compared to the three-year period.
- The **Sector Neutral Green** strategy has slid closer to the benchmark in terms of return with slight excess volatility.

This comparison shows more consistency between the three-year and five-year patterns for the green strategies, with salient results for the two significantly positive NEC strategies: **Green** with a +25% NEC and **Green OW** with a +14% NEC. As the **Green** strategy is significantly aligned with the EETC label requirements, this provides an encouraging finding for promoters of this green label in France. It also advocates a wider deployment of green labels, as is planned by the European Union, which has an ecolabel for finance in its 2018 sustainable finance plan.

We also notice that the strategies with fewer components have a tendency to be located in the right part of the map. It is consistent with idiosyncratic risk being a function of the number of stocks in the strategy. We also observe a decrease in volatility between the three- and five-year periods. Finally, the evolution of the

two **Red** strategies appears to be correlated, the excess of the three-year annualized returns fades out over the five-year timeframe, even becoming negative for the **Red** strategy.

Comparing NEC score and five-year return of the tested strategies

Figure 14 plots the performances over five years against the average NEC of each tested strategy. A noticeable relationship appears between the average NEC of a strategy and its outperformance over five years. The higher the NEC, the higher is the five-year annualized return. This observation suggests the NEC could effectively track the transition opportunities and risks, which could also be material for returns over a five-year period.



Figure 14: NEC and annualized returns by strategy over a five-year timeframe (2013-2017), BNP Paribas Securities Services, 2018.

NEC versus environmental ratings as investment factor

We pointed out the theoretical difference between the methodology and underlying principles behind the NEC calculation and the environmental rating calculation by a given data provider. In order to compare both ratings, we have created equivalent strategies based on the environmental ratings extracted from Yahoo Finance website¹¹.

The average NEC for the *STOXX Europe 600* for 2016 is -2% (close to 0%). The average environment rating for the *STOXX Europe 600* for 2016 is 72/100. Although the *STOXX Europe 600* is meant to reflect the European economy given its high sector diversification, the environment rating appears to be negatively skewed. We created three strategies by selecting companies in the *STOXX Europe 600* accordingly to their E rating.

¹¹ Publicly available and based on Sustainalytics ratings.

E ratings>65: Strategy composed of the companies with an environment rating equal or above 65/100 for the year 2017. There are 278 companies in this strategy with an average market capitalization of 26.3 B€. Its NEC is -1% and the coverage of the *STOXX Europe 600* is 70%.

E ratings>80: Strategy composed of the companies with an environment rating equal or above 80/100 for the year 2017. There are 109 companies in this strategy with an average market capitalization of 27.7 B \in . Its NEC is +2% and the coverage of the *STOXX Europe 600* is 30%.

E ratings<55: Strategy composed of the companies with an environment rating equal or less than 55/100 for the year 2017. There are 59 companies in this strategy with an average market capitalization of 12.1 B \in . Its NEC is +10% and the coverage of the *STOXX Europe 600* is 4%.

The results are added to **Figure 14** in order to compare the three above strategies with the previously tested NEC-based strategies.



Figure 15: NEC versus E rating strategies' annualized returns over a 5Y timeframe (2013-2017), Sycomore AM and BNP Paribas Securities Services, 2018.

The strategy achieving the highest return is the *E ratings*<*55*, which consists of the bottom E-rated companies. Contrary to the main study on NEC, the strategy based on the highest E ratings is not the best performer. We also see that there is no correlation between the E rating and the NEC: the highest NEC is achieved by the lowest E-rated group (*E ratings*<*55*). Finally, none of the E ratings-based strategies have an average NEC significantly different from 0%, which illustrates the inability of the E rating to provide any alignment or misalignment with the ecological transition.

Analysis on a second European Index

In order to validate all the above results, we decided to study a second index, the *MSCI Europe*. It is similar to the *STOXX 600 Europe*, composed of small, mid and large European capitalisations. We also constructed a reference benchmark (named *MSCIE*) with all the companies for which we had sufficient market data and a NEC calculated over 2016. We present in **Figure 16** the results expressed in **Figure 14** with the addition of the second set of results that were derived from the MSCIE.



Figure 16: NEC and annualized returns of the strategies over a five-year timeframe (2013-2017) derived from both indexes, BNP Paribas Securities Services, 2018.

As the two indexes have similarities in their construction, sector and geographical allocations, the results are very close to the findings of the STOXX 600 Europe.

Conclusion

In a context of heightened concerns about our natural capital and an urgent need to deal with climate change, integrating environmental transition risk into financial analytics has become a major issue. This has been emphasized by the 2015 French article 173 of the Energy Transition for Green Growth Law, the 2017 TCFD recommendations and the 2018 European Commission's Action Plan for Sustainable Finance. This trend is amplified by an increasing demand from civil society and investors for relevant and robust information about the impact of their money, stimulating the need for relevant metrics and robust green certification, such as the French EETC label or the planned European ecolabel for finance.

Based on a disruptive, science-based approach, the beta version of the NEC methodology is the output of a three-year collaborative R&D effort putting together asset management skills and environmental expertise. It has produced a new advanced cross-asset metric that provides a measure of strategic alignment with the environment and energy transition and can be applied to any economic activity or entity, from companies to indexes. The NEC is a transition risk assessment tool and environmental contribution measure, using a scale from -100% to +100%.

The main findings from this study are:

- Similar patterns between the NEC and stock performance emerge over three and five-year periods; especially for the two strategies with significantly positive NEC, Green OW at +14% and Green at +25%.
- The Green strategy with NEC [+10% to +100%] and a +25% average NEC appears to offer both the highest return and the highest risk-adjusted return, approximated by the Sharpe ratio, over three-year and five-year periods.

- The two sector neutral strategies close to benchmarks Neutral Green and Sector Neutral Green, with the same slightly positive NEC of +3% compared to -2% for the SE570, do not deliver a clear improvement in financial performance;
- The two strategies with significantly negative NEC, Red with an average NEC at -30% and Red OW at -32% do not deliver a stable outperformance over a three-year or five-year timeframe;
- The NEC selection effect is not significantly biased, neither by market capitalization nor by sector allocation;
- The NEC metric is completely different from E ratings provided by ESG data providers and high E ratings do not translate into high contribution to the environmental transition nor superior returns over five years as the NEC does.

The scope presented in this paper is restricted to the listed European stock market, which has experienced a positive trend since 2012, and the NEC scores have been computed only for the 2016 calendar year. Nevertheless, the NEC beta version appears to capture some patterns related to mid-term returns over the years and as it aims to be a proxy of the transition alignment, these preliminary results support the three following points:

- The degree of alignment with the environmental transition could be material on stock returns over a period as short as three to five years;
- The NEC could be useful both for investment strategy and for reporting purposes;
- The NEC appears to be worth being further improved and rolled out on a wider perimeter and over time.

Glossary and references

<u>Natural capital</u>: The world's stock of natural assets, which include earth and minerals, air, water and all living things that form the basis of our ecosystem. We approach them through five themes: climate, water, resources and waste, biodiversity and air quality.

<u>Climate goals</u>: Combatting climate change and its impacts, by limiting global warming to less than 2° Celsius over to pre-industrial levels and strengthening resilience and adaptive capacity to climate-induced impacts, including: climate-related hazards in all countries; integrating climate change measures into national policies, strategies and planning; and improving education, awareness-raising and human and institutional capacity with respect to climate change mitigation, adaptation, impact reduction and early warning as defined by the United Nations Sustainable Development Programme.

<u>Article 173 of French Energy Transition Law for Green Growth</u>: In 2015, France passed the Energy Transition Law for Green Growth, introducing mandatory extensive ESG, energy and ecological transition and climate change-related reporting for asset owners and asset managers. The reporting obligations set out under Article 173 of the Law require investors to report on the integration of both physical risks and transition risks on their activities and assets.

<u>TCFD</u>: The FSB Task Force on Climate-related Financial Disclosures (TCFD) develops voluntary, consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers, and other stakeholders. The Task Force's report establishes recommendations for disclosing clear, comparable and consistent information about the risks and opportunities presented by climate change. The Task Force released its final recommendations¹² report and supplemental materials on Thursday, June 29, 2017.

<u>EETC</u>: The French Green Public label "Energy and Ecological Transition for the Climate (EETC)" guarantees a fund invests most of its assets in environmentally-friendly activities and that it excludes nuclear and fossil

¹² More information on <u>https://www.fsb-tcfd.org/publications/final-recommendations-report/</u>

fuel businesses as well as companies involved in controversial environmental or social practices.

<u>UN Sustainable Development Goals</u>: The Sustainable Development Goals (SDGs), otherwise known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. These 17 Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities.

Sector-level Attribution Effects with Compounded Notional Portfolios by Mark R. David, CFA http://boston.qwafafew.org/wp-content/uploads/sites/3/2017/01/CNPWithSectors.pdf

Appendix

Figure 17 synthesises the coverage, return and standard deviation for all the strategies for years 2015, 2016 and 2017.

	SE570	Green	Red	Green OW	Red OW	Neutral Green	Sector Neutral Green
Coverage over STOXX Europe 600 2015	90.7%	9.4%	13.8%	97.9%	97.5%	73.4%	38.1%
Coverage over STOXX Europe 600 2016	92.4%	10.0%	13.1%	97.8%	97.5%	76.2%	39.9%
Coverage over STOXX Europe 600 2017	98.7%	11.3%	15.6%	96.7%	97.5%	79.3%	38.9%
Return 2015	5.9%	8.8%	-1.0%	9.9%	7.6%	7.5%	8.7%
Return 2016	-0.9%	2.2%	8.6%	-1.0%	-1.0%	-2.8%	-8.3%
Return 2017	6.9%	11.3%	10.5%	9.6%	11.6%	7.2%	5.8%
Volatility 2015	12.1%	13.5%	14.6%	12.6%	12.9%	12.8%	12.6%
Volatility 2016	12.1%	13.1%	12.0%	11.8%	12.3%	12.8%	14.6%
Volatility 2017	5.1%	6.5%	6.30%	5.3%	5.8%	5.4%	5.9%

Figure 17: Coverages over SE570, returns and volatilities for all the strategies derived from the SE570, BNP Paribas Securities Services, 2018.

Figures 18a and 18b express the results displayed in Figure 10.

	SE570	Green	Red	Green OW	Red OW	Neutral Green	Sector Neutral Green
Coverage over STOXX Europe 600	90.7%	9.4%	13.8%	97.9%	97.5%	73.4%	38.1%
Return 3 Years (annualized)	3.9%	7.4%	5.9%	6.0%	5.9%	3.9%	1.8%
Volatility 3 Years (annualized)	10.7%	11.34%	11.9%	10.4%	10.78%	10.9%	11.8%

Figure18a: Risk-return of all the strategies over 3 years (2015-2017) derived from the SE570, BNP Paribas Securities Services, 2018.

	Out-performance over the symmetric strategy(Red)	Volatility surplus over the symmetric strategy(Red)	Out-performance over the SE570	Volatility surplus over the SE570 strategy
Green	1.5%	-0.5%	3.5%	0.7%
Green OW	0.1%	-0.4%	2.2%	-0.3%
Neutral Green	-	-	0.0%	0.1%
Sector Neutral Green	-	-	-2.1%	1.1%

Figure 18b: Risk and return surplus of all the strategies over 3 years (2015-2017) derived from the SE570, BNP Paribas Securities Services, 2018.

Figures 19a and 19b express the results displayed in Figure 13.

	SE570	Green	Red	Green OW	Red OW	Neutral Green	Sector Neutral Green
Coverage over STOXX Europe 600	83.9%	8.9%	15.3%	98.1%	97.5%	65.7%	31.1%
Return 5 Years (annualized)	6.5%	9.3%	5.0%	8.2%	7.6%	7.2%	7.1%
Volatility 5 Years (annualized)	10.3%	11.4%	11.1%	10.2%	10.3%	10.5%	11.4%

Figure 19a: Risk-return results of all the strategies over 5 years (2013-2017) for the SE570.

	Out-performance over the symmetric strategy (Red)	Volatility surplus over the symmetric strategy (Red)	Out-performance over the SE570 strategy	Volatility surplus over the SE570 strategy
Green	4.27%	0.34%	2.80%	1.07%
Green OW	0.69%	-0.08%	1.76%	-0.11%
Neutral Green	-		0.70%	0.14%
Sector Neutral Green	-		0.62%	1.05%

Figure 19b: Risk-return map of all the strategies over 5 years (2013-2017) for the SE570, BNP Paribas Securities Services, 2018.

Figure 20 presents the results of the calculation for the reference benchmark *SE570* and the different strategies linked to environmental scores.

	SE570	E Scores>65	E Scores >80	E Scores <50
Coverage over STOXX Europe 600	80.5%	66.8%	22.1%	2.5%
Return 5 Years (annualized)	6.5%	6.7%	9.2%	10.1%
Volatility 5 Years (annualized)	10.1%	10.2%	10.7%	9.5%

Figure 20: Risk-return results of E score strategies over 5 years (2013-2017) for the SE570, BNP Paribas Securities Services, 2018.