

# THE TURTLE BECOMES THE HARE

THE IMPLICATIONS OF ARTIFICIAL SHORT-TERMISM  
FOR CLIMATE FINANCE



DISCUSSION PAPER – OCTOBER 2014



# 1. INTRODUCTION

## 2° INVESTING INITIATIVE

The 2° Investing Initiative [2°ii] is a multi-stakeholder think tank working to align the financial sector with 2°C climate goals. Our research and advocacy work seeks to:

- Align investment processes of financial institutions with 2°C climate scenarios;
- Develop the metrics and tools to measure the climate performance of financial institutions;
- Mobilize regulatory and policy incentives to shift capital to energy transition financing.

The association was founded in 2012 in Paris and has projects in Europe, China and the US. Our work is global, both in terms of geography and engaging key actors. We bring together financial institutions, issuers, policy makers, research institutes, experts, and NGOs to achieve our mission. Representatives from all of the key stakeholder groups are also sponsors of our research.

## AUTHORS

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**A growing narrative around short-termism.** A growing chorus of voices have argued that the finance sector suffers from ‘short-termism’ – focusing on short-term risks and benefits at the expense of long-term risk-return optimization. While the academic literature behind this narrative has enjoyed a renaissance since the 1990s, the global financial crisis and its aftermath triggered a new focus on the issue, by academics, policymakers, and financial institutions themselves.

**Impact of short-termism.** The new focus has placed particular emphasis on short-termism as a cause of the global financial crisis. In this role, short-termism is seen to have taken long-term (or even medium-term) risks off the radar screen. Short-termism is also blamed for models that extrapolated beyond short-term factors and were built with limited ‘short’ backward-looking data. Beyond the link between short-termism and the financial crisis, short-termism also constitutes a larger challenge to the ability of financial markets and financial market actors to allocate capital efficiently. In particular, there is growing evidence around the relationship between short-termism and the deviation of stock prices from fundamentals (Saustner 2014). Short-termism is also increasingly being seen as a barrier to ‘socially-desirable’ long-term investments in infrastructure (Group of 30).

**Short-termism and 2° C finance.** The capital reallocation and mobilization challenge associated with 2°C climate goals appears to be particularly affected by short-termism. In terms of high-carbon investments, long-term so-called ‘carbon’ risks that may negatively affect the long-term risk-return performance of high-carbon investments are not accounted for in a short-term environment. Similarly, climate-friendly investments due to their capital intensity and emerging nature rely on long-term, ‘patient’ capital.

**Drivers of short-termism.** The literature views short-termism as a more modern phenomenon that can be linked to the financial market reforms beginning in the 1980s. According to this argument, short-termism is partly a function of the changes in the underlying structure of the finance system. The reforms also appear responsible for changing the incentives of the finance sector agents – asset managers, institutional investors, and the larger rating, data, and analysis ecosystem. In particular the incentives related to the structures of compensation schemes – usually short-term – and the compensation ‘benchmark’ – usually linked to the short-term performance relative to a benchmark.

**The turtle becomes the hare.** In such a financial ecosystem then, the turtle becomes the hare. Long-term institutional investors are driven by metrics and the hares – their short-term peers. They are either directly benchmarked to their short-term peers or face financial market prices and drivers that are dominated by these peers.

**Gaps in what we know.** As convincing as this narrative sounds, there is very little profound analysis on the actual presence of short-termism in financial markets. There is no convincing and comprehensive answer to the big question – what defines short-term and long-term. Similarly, there is no comprehensive review of the actual time horizons by the range of actors in the investment chain and the divergence in time horizons among these actors – ranging from the asset owner (households, governments, or corporates) to the institutional investor representing the asset owners (insurance companies, pension funds, etc.), to the asset manager managing the investments of the asset owner, and on to the larger finance sector ecosystem, notably the credit ratings industry, the index industry, the credit and equity research analysts, the data providers, and the financial market tools and products. The incentives these different market actors face, the impact this has on their time horizon, and in turn the impact the time horizon has on the next actor in the chain (either directly or indirectly) has not been addressed in the broader literature on short-termism. The analysis that does exist usually operates in silos, addressing one actor in the investment chain.

**Short-term vs. short-termism.** In this context, a key question to be answered is to what extent the time horizons are ‘rational’ or ‘natural’. In other words, what is just short-term – natural short-term time horizons – and what is short-termism – ‘artificial’ short-term time horizons. Short-term loans by banks are a function of matching assets with the short-term liabilities that banks face in the form of deposits. This can be – and is – described as rational and prudent behaviour that contributes to financial stability, helping to ensure the liquidity of banks. Indeed, this type of short-termism is mandated to some extent in regulations such as Basel III that requires higher capital reserve requirements for more long-term loans. Artificial short-termism appears then when there are no short-term constraints in practice. Thus, insurance companies are natural ‘long-term’ investors. Life insurance annuities pose little liquidity risk with high charges associated with early termination of an annuity. At the same time, as a report by the WEF (2011) highlights, insurance companies are on average only peripherally invested in ‘illiquid’ long-term investments. While some of this is a function of regulatory issues and constraints in the investment process, the WEF leaves a significant share of this gap unexplained.

**Purpose of this report.** This note seeks to provide a first step into lifting the veil on the dots connecting the time horizons of the different assets and actors in the investment chain. The note builds on the existing analysis of the 2<sup>o</sup> Investing Initiative on this topic, published in its work on financed emissions methodologies, benchmark index investing, and financial regulation. The note seeks to start a dialogue that will culminate in a report planned for 2015.

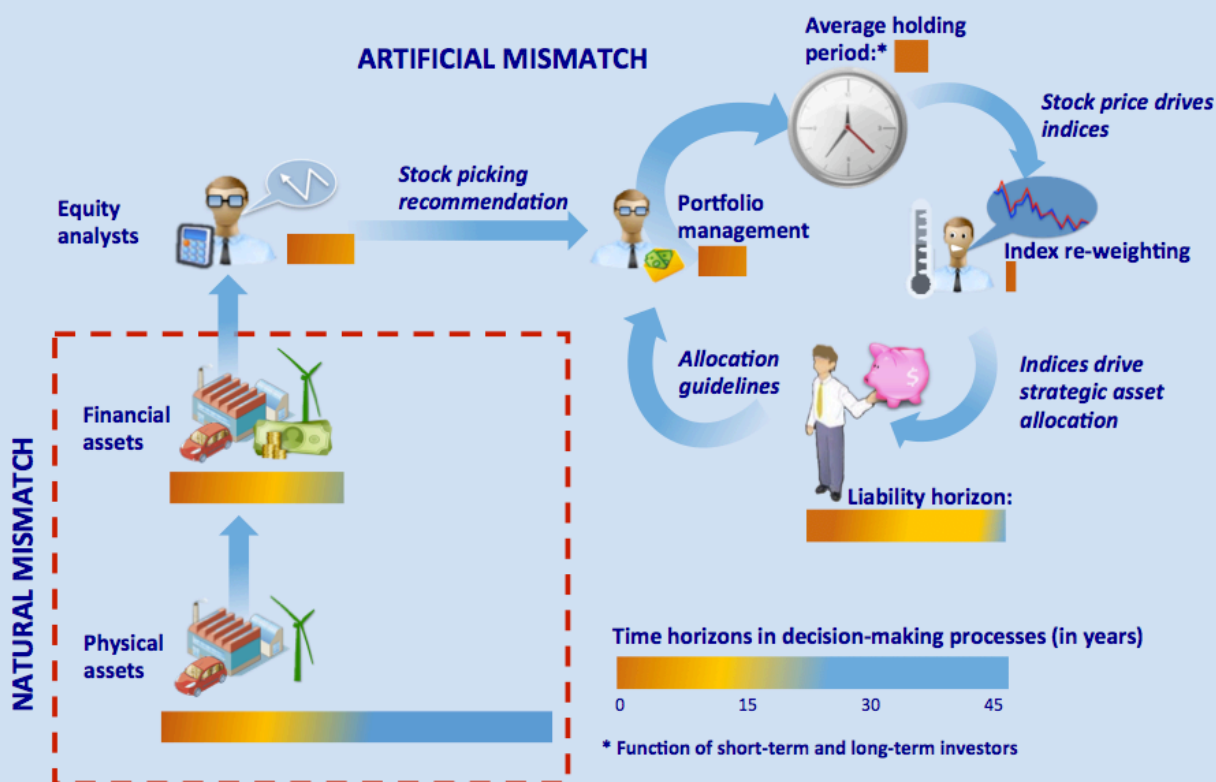
## 2. TIME HORIZONS IN THE INVESTMENT CHAIN

### 2.1 OVERVIEW

**The investment chain.** The purpose of this review is to understand the time horizons across the investment chain. The review begins with a discussion on the ‘lifetime’ of physical assets and companies and the lifetime of financial assets, notably equities and bonds. The discussion then proceeds to move from lifetime of assets to time horizons of agents, beginning with the decision-makers in companies and proceeding to the time horizon of financial assets, and finally to the time horizon of finance sector agents – notably the time horizon of institutional investors (Fig. 1). The analysis will then end with the discussion of the time horizon of the ultimate asset owner, defined through the time horizon of the liabilities of the institutional investors – manifesting itself through life insurances, pension funds, etc.

**Natural vs. artificial time horizons.** A key result of the analysis is that there is a natural and artificial mismatch in the investment chain. The natural mismatch relates to the long-term lifetime of physical assets and the ‘lifetime’ of companies versus some types of financial assets. Here, there is a natural shortening of these two time horizons. What is defined as the ‘artificial’ mismatch is the mismatch created by investment processes that artificially shorten the time horizon of investment chains – artificial relative to the long-term time horizon of asset owners and the associated mandate for asset managers to maximize long-term risk-return.

FIG. 1: A REPRESENTATIVE VIEW ON THE TIME HORIZON ACROSS THE INVESTMENT CHAIN (SOURCE: 2°INVESTING INITIATIVE)

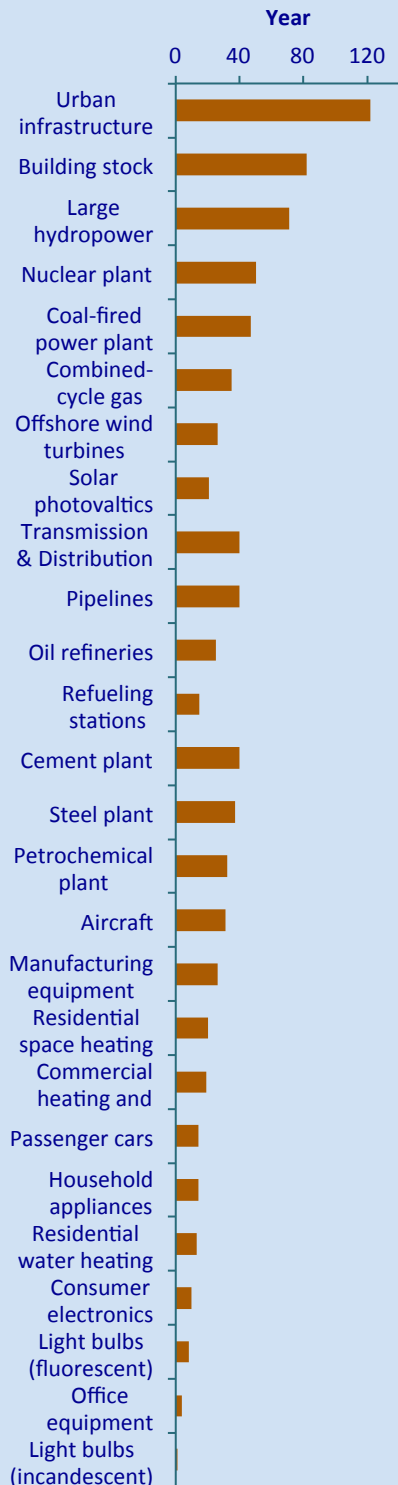


## 2.2 LIFETIME OF PHYSICAL ASSETS

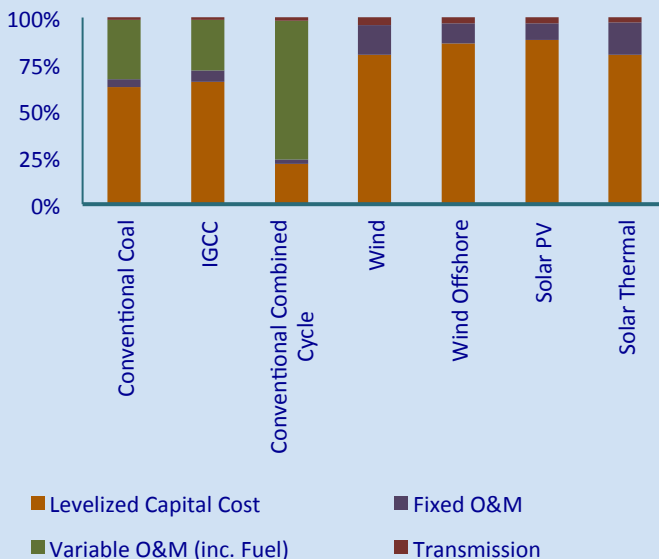
**Lifetime as a capital depreciation function.** The time horizon of physical assets is simply a function of the capital depreciation – in other words, when does it stop being working capital. In this regard, there are significant differences, with urban infrastructure (roads, etc.) having a lifetime of 120 years to light bulbs with a lifetime of 1 year (Fig. 2). Beyond these average numbers, there can be significant variation in the average. By extension, a coal plant for example, once built, does not automatically need to have a 40-year lifetime. Some coal plants being mothballed in the United States have had a significantly shorter lifetime.

**Payback period.** Another way to think about the time horizon of physical assets is relative to its payback period. While this payback period will differ significantly depending on the financing structure, underlying patterns in this respect can be derived from the capital intensity of a physical asset. Thus, a higher share of capital cost, typical for renewable energy investment, is likely to be associated with longer payback periods (Fig. 3).

**FIG. 2: AVERAGE LIFETIME OF ENERGY RELATED ASSETS (SOURCE: IEA 2012)**



**FIG. 3: COST STRUCTURE OF ENERGY RELATED INVESTMENTS (SOURCE: EIA 2014)**



### 2.3 LIFETIME AND TIME HORIZON OF COMPANIES

**Companies don't die.** The challenge of defining the 'time horizon' or lifetime of a company is that companies unlike physical assets don't die a natural death. In this context, the average life of a company (from founding to bankruptcy) is not a really helpful measure. Instead, other measures must be mobilized, including the 'lifetime' of company's assets and the time horizon of the employees

**Lifetime of company cash flows.** The nature of company cash flows can vary widely from sector to sector. The retail sector is one example where the breakdown of cash flows is very short-term. For energy-related assets, these cash flows are generally more long-term, with over 60% of the cash flows related to oil & gas exploration materializing in >10 years (Fig. 4). This type of analysis can be used not just to understand the breakdown of the short-term and long-term share of a company, but also as a measure to understand the exposure of the company to long-term risks and opportunities – a key question from a financial sector perspective.

**Lifetime of company's assets.** A different way is to look at the current assets. This type of analysis can be particularly relevant for commodity sectors. In the oil & gas sector, one such measure is the reserves to production ratio, which measures how many years the respective oil & gas company can produce at current rates given current reserves (Fig. 5).

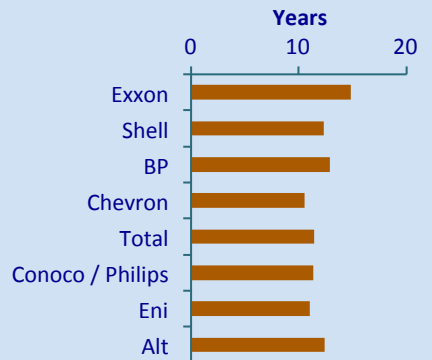
**Time horizon of CEOs.** Beyond the lifetime of a company, a key question relates to the decision-making time horizon within the company. Here, one relevant measure is the tenure of the key decision-maker, the CEO, in the company. Analysis on the oil & gas sector suggests that the average CEO tenure for an oil & gas company is 4.5 years with roughly 50% of CEO having served less than 5 years (Fig. 6).

**Further indicators to be explored.** There are a range of further indicators that can be explored including the discount rate of CEOs and the actual time horizon that figures in investment decisions

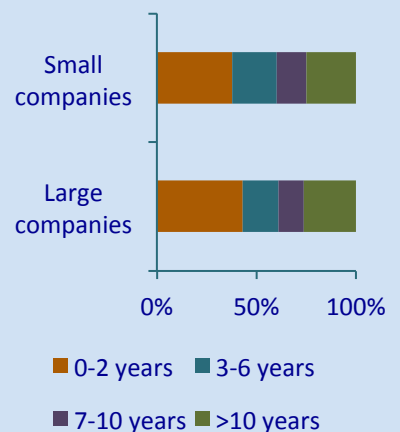
**FIG. 4: BREAKDOWN OF CASH FLOWS OF MAJOR ENERGY-RELEVANT INDUSTRIES (SOURCE: IEA)**



**FIG 5: RESERVES TO PRODUCTION RATIO (SOURCE: 2°INVESTING INITIATIVE, BASED ON 2010 ANNUAL REPORTS)**



**FIG 6: CEO TENURE IN OIL & GAS SECTOR IN THE US (SOURCE: OGFJ 2014)**



## 2.4 LIFETIME OF FINANCIAL ASSETS – LOANS AND BONDS

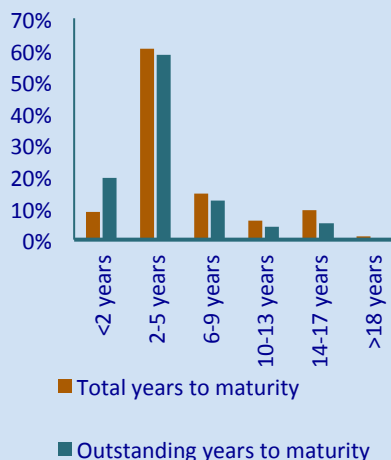
**Maturity of credit.** The maturity of credit is in most cases frequently constrained by the deposits of the banks which are short-term. By extension, credit is also relatively short-term estimated at 4.2 years on average for bank loans.

According to an analysis by Profundo for the Green European Foundation, for the oil-gas sector, over two-thirds of the outstanding loans to high-carbon companies of European banks in Dec. 2012 mature within five years (Fig. 7). Thus, while there is no homogenous time horizon of credit assets, the maturity of bank loans is visibly constrained.

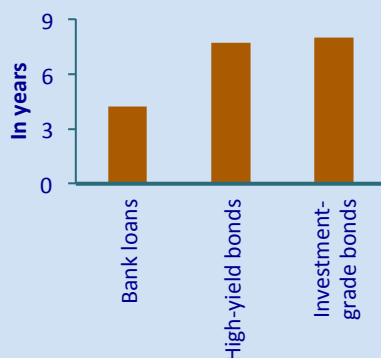
**Time to maturity for bonds.** While classified as one type of financial asset, there is obviously significant difference between sovereign bonds, whose time to maturity can extend over decades, corporate bonds, with times to maturity of anywhere to less than 1 to over 10 years (Fig. 8). Asset-backed securities in turn will also have significant differences in the maturity time depending on the underlying asset, ranging similarly from less to one year to more than 10 years, particularly related to real estate assets. More generally for corporate bonds, the trend seems to be towards a shortening of maturity times (Fig. 9).

**Case study: European utilities.** While data on the average time to maturity of bonds and the loans to the high-carbon sector in Europe suggest a very short time horizon of loans and bonds, there can be significant divergence too. A case study for the bonds issued by the European utilities listed in the STOXX 600 illustrates this point: For the bonds issued between 2010-2014 to date (133 bonds, 10 utilities), the average time to maturity was 18 years. Interestingly, there is some evidence that this term to maturity is not consistent across utilities when looking at the renewable share in the utility fuel mix. While the average time to maturity shows no discernible difference, the median time to maturity of ‘green’ utilities (>20% renewable) was 6 years and the median time to maturity of ‘non-green’ renewables (<20%) was ~10 years.

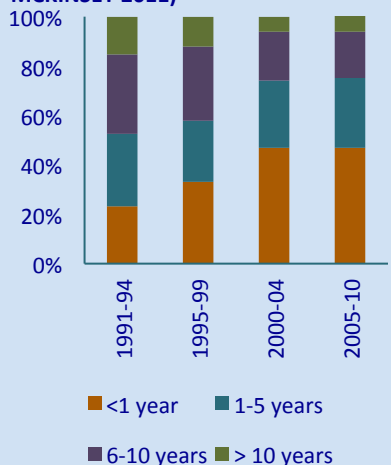
**FIG. 7: ORIGINAL AND REMAINING LENGTH OF LOANS TO HIGH-CARBON COMPANIES OF EUROPEAN BANKS AS OF DEC. 2012 (SOURCE: GEF 2014)**



**FIG 8: TIME TO MATURITY OF CREDIT AND BONDS (SOURCE: MCKINSEY 2011)**



**FIG 9: DEVELOPMENT OF CORPORATE BOND TIME HORIZON (SOURCE: MCKINSEY 2011)**



## 2.5 LIFETIME AND TIME HORIZON OF FINANCIAL ASSETS – EQUITY

**Equities last forever.** Similar to corporate assets, equities don't have a natural time to maturity. As a result, the lifetime of equities is usually discussed in terms of their holding period (stock duration) and their trade (share turnover).

**Stock duration & share turnover.** The most popular metric related to equity trading is the share turnover. This stat has become particularly prominent after being used by Bank of England Governor Andy Haldane to argue that the time horizons in financial markets have shortened. While popular, the metric is not ideal, as it may be driven by short-term and high-frequency trading, which is a phenomenon only affecting parts of the stock market. High-frequency trading in particular has been the attention following 'flash crashes' (see box). More informative then is the stock duration as a metric, defined as the weighted-average length of time that institutional investors have held a stock in their portfolios, based on their quarterly holding reports and weighted by the dollar amount invested across all institutions currently holding a stock. Even though the two metrics show different trends, they suggest that the time horizon of equities is less than 2 years (Fig. 10). At the same time, roughly 30% of stocks have a stock duration longer than 2 years (Fig. 11). This appears very short relative to the company valuation (p. 4).

## HIGH-FREQUENCY TRADING AND FINANCIAL INSTABILITY

Evidence from two prominent flash crashes in the United States suggest that they may have been directly related to index investing and that index investing played a role in driving the crash. Thus, it is argued that the crash on the 19th of October 1987 in the United States was amplified "due to portfolio insurance trades that used S&P index futures to create synthetic puts." (Wurgler 2011). Indeed, S&P500 stocks lost 7% more than non-S&P500 stocks with equal market capitalisation.

Early analysis suggests that the flash crash of the 6th of May 2010 can similarly be linked to indexes, specifically to S&P500 e-mini index futures, where a negative shock to S&P500 prices triggered a large intraday price decline further amplified by futures selling. It should be noted that this explanation for both flash crashes is both simplistic to the extent that index investing seems more of a amplifier than an originator. In addition, the analysis presented here is contested and others have argued that index investing has not played a significant role. Nevertheless, there is some evidence showing a relationship worthy of further analysis and research.

FIG. 10: STOCK DURATION AND SHARE TURNOVER (SOURCE: SAUSTER 2014)

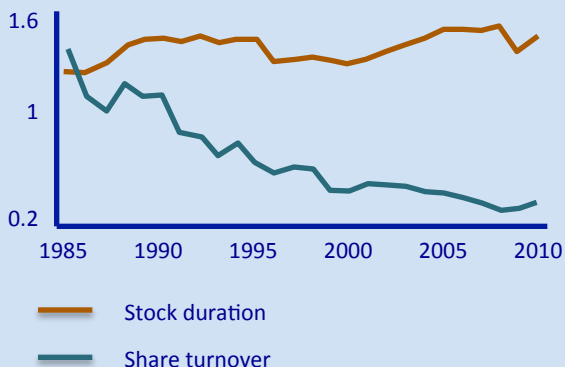
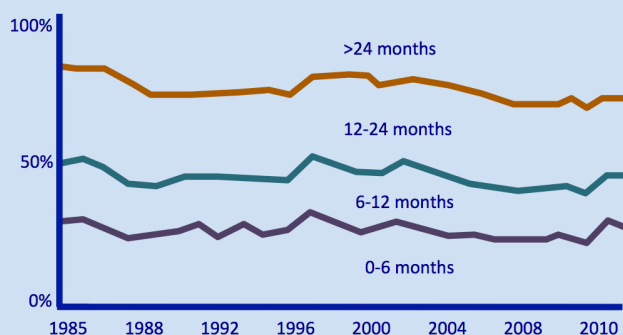


FIG. 11: SHARE OF INVESTOR HOLDINGS (SOURCE: SAUSTER 2014)





## 2.6 LIFETIME OF FINANCIAL ASSETS – ALTERNATIVES

**Diversity in alternative investments.** Alternative investments in investors’ portfolios comprises a diverse range of financial assets, including private equity funds, venture capital funds, hedge funds, commodity investments, real estate investments, and direct project debt and equity finance. For all these different types of investments, the time horizon varies. Understanding the time horizon across the board requires an in-depth analysis of the various assets. For this note, two particular issues will be highlighted in this regard.

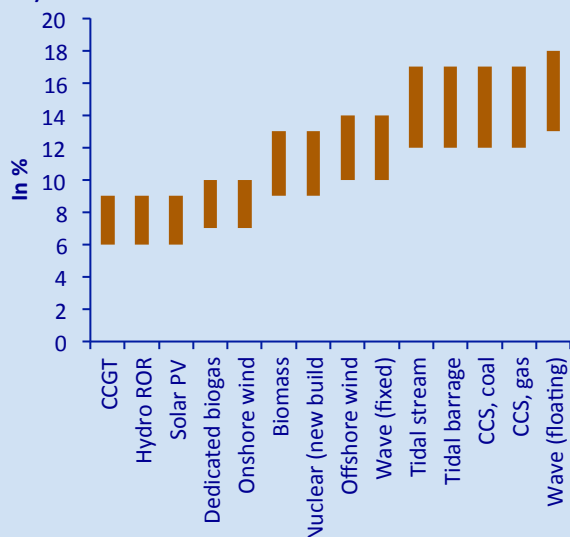
**Lifetime of project finance.** Similar to asset-backed securities (cf. previous page), there is a wide divergence in the time to maturity for project finance. Beyond the lifetime of project finance, however, it is interesting to not just look at the lifetime of projects, but how they are discounted (Fig. 12 and box).

**Lifetime of commodities.** In commodity trade, there is naturally also the component of physical assets. In practice, however, the relevant metric relates to the volume of trading of oil futures (Fig. 13), suggesting a time horizon of roughly 3 years for over 90% of futures trade.

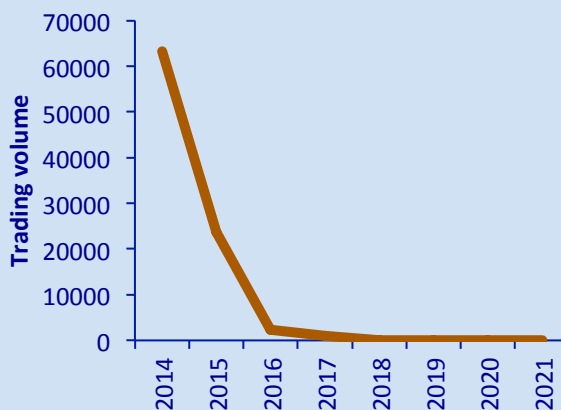
## HYPERBOLIC DISCOUNT FUNCTIONS

When quantifying time horizons, the discussion is frequently limited to the length while assuming a consistent discounting of the future. Economic research inspired by psychology has demonstrated however that frequently discount functions are not exponential (discount) but hyperbolic, where short-term future is heavily discounted, but the discount function levels off, with long-term and very-long-term treated similarly. Naturally, a big question mark around this analysis is the time frame. The research in this regard suggests hyperbolic discount functions apply for events only seconds apart, but also for long time horizons (e.g retirement plans). While the discussion in this is limited to just looking at the lifetime of assets, a broad discussion on time horizons in the finance sector also needs to address the consistency of the discounting that occurs within these time horizons.

**FIG. 12: ESTIMATED DISCOUNT RANGES ACROSS TECHNOLOGY TYPES FOR UK INVESTORS (SOURCE: OXERA 2011)**



**FIG. 13: CRUDE OIL WTI FUTURES TRADING VOLUME\* (SOURCE: 2° INVESTING INITIATIVE)**



\* Based 26/09/2014 data.

## 2.7 TIME HORIZON OF INVESTORS

**A portfolio – not the sum of its parts.** When looking at the time horizon of institutional investors, variables such as the holding period of equities or the maturities of bonds cannot be translated one-to-one as the time horizon of investors. In other words, the investor is not just the sum of its (portfolio) parts. A number of additional factors need to be considered.

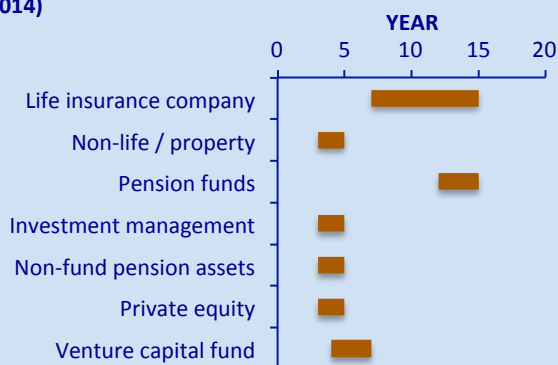
**Time horizon of liabilities.** The first distinction is understanding the differences between investors. These differences articulate themselves based on the type of investors (i.e. insurance company, pension fund, etc.), the investors' geography, the investors' regulatory framework, etc. In particular the type of investor will have a significant impact on the structure of the investors' liabilities, which vary widely (Fig. 14). These liabilities, at least in theory, are one factor of the investors' time horizon. For a bank in turn, these liabilities in the form of deposits, are equally a factor, although unlike for investors, banks' liabilities tend to be more short-term than the asset side. An analysis of these different liabilities then is not necessarily reflective of the time horizon of investors.

**Differences between investors.** Moreover, looking at the time horizon of assets hides the differences of investment horizons by investors in practice. Thus, the average stock duration between investors can vary significantly between pension fund, bank stocks, and other types of investors – indeed, this stock duration is not even consistent over time (Fig. 15).

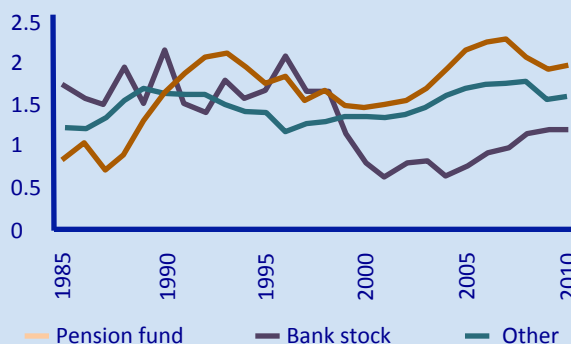
**The time horizon of financial analysis.** Another factor is the time horizon of financial analysis. In other words, how far does credit and equity research analysis for investors and banks extend into the future and at what point are current trends simply extrapolated.

**Time horizon of decisions.** Finally, the actual time horizon when making investment decisions can be both more short-term and more long-term than the holding period or time to maturity. Indeed, this 'decision' time horizon is likely to be different for portfolio managers of different asset classes.

**FIG. 14: HYPOTHETICAL TIME HORIZON OF INVESTORS BASED ON LIABILITIES (SOURCE: FRANKFURT SCHOOL 2014)**



**FIG. 15: STOCK DURATION OF DIFFERENT INVESTORS IN YEARS (SAUSTNER & CREMERS 2014)**



**Time horizon of fund managers.** There are a range of factors that drive short-termism amongst fund managers, particularly in the listed equity asset class. Fund managers are the agents that make the investment, or buy-sell decisions and are either in-house or external agents of institutional investors. There are a range of drivers that contribute to the shortening the horizon to 1-3 years for 'long-only' equity managers.

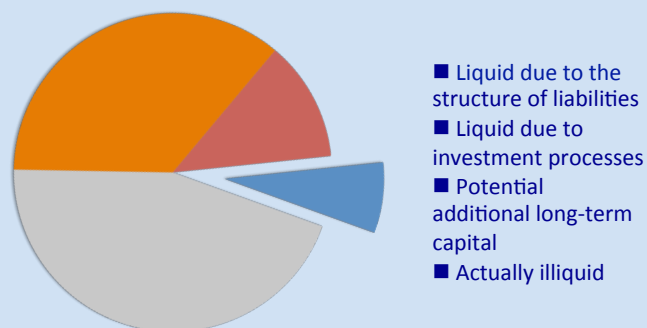
Mercer (2010) found that 63% of long-only equity managers have shorter investment horizons than what they claim to have in their investment product descriptions (Fig. 17). This is due to a myriad of factors, including the short-term pull of the financial markets and focus on recent and near-term results. It also relates to the short-term performance review cycles of fund manager performance and the absence of appropriate risk tools and capabilities.

**Missing pieces.** The analysis presented here provides a snapshot of the debates around short-termism by financial institutions and particularly investors. At the same time, it misses a number of pieces. Missing for one is the discussion of the impact of the broader regulatory environment on investment horizons. This has become a prominent theme in the context of Basel III and Solvency II for insurers in Europe, which mandates higher capital reserve requirements for long-term investments.

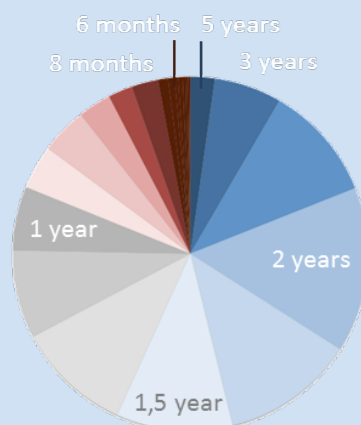
Missing as well is the discussion to what extent these time horizons are artificial or natural. A key question in this regard is both the interface between fund managers and institutional investors and institutional investors and the actual asset owners (households, corporates, governments) that stand behind these investors.

Finally, there seems to still be a black box as to the nature of short-termism. The WEF (2012) argues that there is 'potential additional long-term capital' available among institutional investors that is currently not being utilized (Fig. 16). Part of the answer as to why that is may rest with the time horizon prescribed by the broader finance sector ecosystem (cf. next page).

**FIG. 16: ALLOCATION STRATEGY OF LONG-TERM INVESTORS (SOURCE: WEF 2012)**



**FIG. 17: TIME HORIZON OF FUND MANAGERS (SOURCE: MERCER 2011)**



## 2.8 TIME HORIZON OF THE FINANCE SECTOR ECOSYSTEM

**The forgotten actors.** Frequently, the discussion around time horizons stops at the actual decision makers with regard to investments in the finance sector – the fund managers and institutional investors. However, this analysis falls somewhat short, failing to address the broader finance sector ecosystem and the decision-making it partly influences and perhaps even partly prescribes. In this context, the analysis needs to address both the incentives – as with investors – but also the actual tools and products. These relate notably to the credit ratings, index products, data products, and research of credit and equity research analysts.

**Credit ratings.** Credit ratings are a significant determinant of institutional fixed income investments. Bonds below investment grade are usually off limits to investors. As a result, the extent to which the ratings analysis covers the whole maturity of the bond and doesn't just extrapolate after the short-term will factor into the time horizon of investors.

**Index products.** Equity indices are a significant determinant of both active and passive investors' portfolios. The most prominent equity indices are market-cap weighted, and thus their composition is significantly determined by stock prices. The extent to which these stock prices are 'short-term' may then also determine the time horizon of passive investors and 'closet indexers'.

**Data products.** Data is the basis of all financial analysis. Data is usually based on the past and current data points (e.g. annual GHG-emissions). The availability of forward-looking data, such as R&D, and energy-technology breakdown of capital expenditure will thus also factor into the time horizon of investors.

**Equity and credit research analysts.** Finally, many investors rely on the research of credit and equity analysts for their investment decision. The time horizon of this analysis then will shape the time horizon of investors (and vice-versa).

## FORWARD - LOOKING INDICATORS

Understanding the alignment of the index with climate goals requires not just an analysis of their 'past' (i.e. sales or revenue), but also the 'future'. Indeed, given the proportion of company value due to long-term cash flows (Fig. 5), these indicators are arguably the most relevant indicators from an investor's perspective. These 'future' indicators can be understood through a number of indicators, notably their investment in 'green' R&D and their capital expenditure. These indicators, however, are not currently considered in index construction, nor are they readily available in financial databases. The main forward-looking indicators relate to R&D expenditure and capital expenditure.

Forward-looking indicators can become relevant for 'fundamental' indices that use economic variables as the basis for construction. To date, most fundamental indices are limited to backward-looking indicators. To a significant degree, this is a function of the barriers to adoption. Data on the breakdown by sector in terms of R&D expenditure and capital expenditure is low to zero. Part of the solution thus relates to improving data reporting by companies. The second part relates to the expanding on the type of data collection in financial databases (e.g. Bloomberg, MSCI, CDP, etc.)

This discussion is relevant for time horizons of investors as the use of indices built on the basis of forward-looking indicators can lengthen the time horizon of investors, as many of these indicators, such as capital expenditure, are associated with long-term real assets (see p. 5).

**SOURCE: 2° INVESTING INITIATIVE (2014) "BENCHMARK INVESTING"**

# 3. IMPACT ON THE CARBON BUBBLE & CLEAN TRILLION

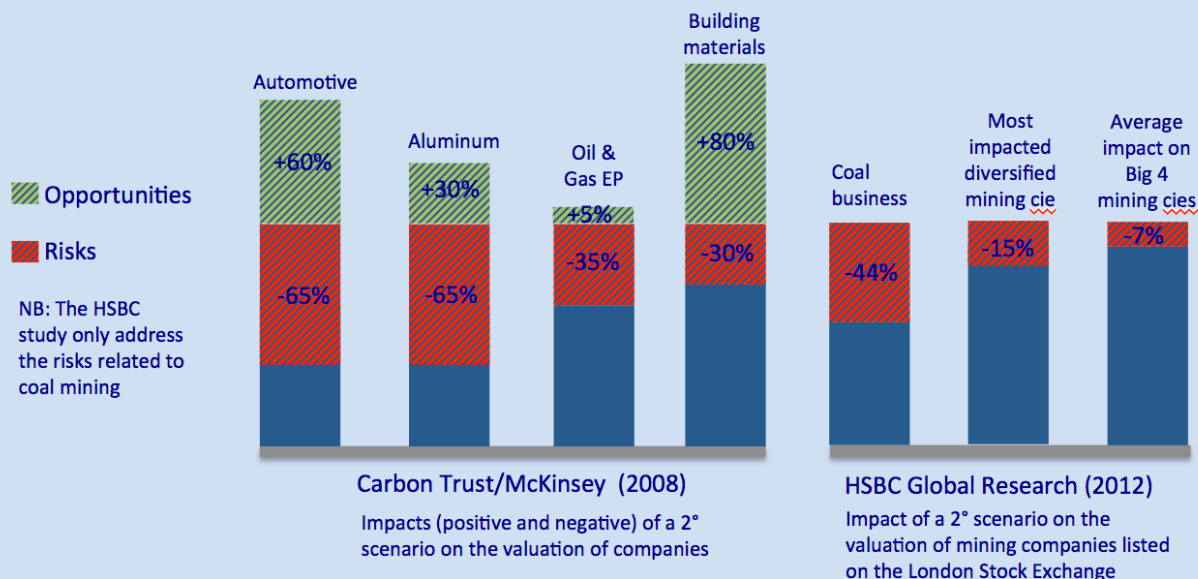
## 3.1 IMPACT OF SHORT-TERMISM ON THE CARBON BUBBLE

**Narrative on carbon bubble and risk.** The past two years have seen the growth of a narrative around ‘carbon risk’. The narrative rests on the assumption that the finance sector is facing significant financial risk as a result of the potential for assets to become ‘stranded’ in a 2°C scenario. These risks are usually defined as ‘carbon risks’, the risks directly associated with the GHG-emissions of physical assets.

**Carbon bubble research.** A significant success of the growing research around carbon risk is the increasing ability to show that carbon risks can have a significant impact in a 2°C world (Fig. 18). CTI estimates \$1.1 trillion of capital expenditure earmarked for high cost oil projects (market price >\$95) out to 2025, the associated asset of which would be at risk in a low-carbon scenario with lower oil prices. Kepler-Cheuvreux estimates that in a 2°C world, the fossil-fuel industry would stand to lose \$28 trillion (in constant 2012 \$) of gross revenues over the next two decades.

**Carbon bubble and long-termism.** Whereas the literature on carbon asset risk is becoming more expansive, the literature on linking this risk to financial institution is still limited. This is partly a methodological challenge, partly perhaps an implicit admission that carbon asset risks simply are not very material for financial institutions today. In a study commissioned by the Green European Foundation, Profundo found that a 2°C policy shock to European banks would only lead to a one-time average loss of 0.4% for banks (€140 billion of losses on €35 trillion of assets), 1.8% for the European insurance sector, and 2.5-3.4% for the EU pension fund sector. This is not accounting for any potential off-setting gains from other income streams. If the finance sector was more long-term, this equation would likely change.

FIG. 18: CARBON RISKS AT ASSET LEVEL (SOURCE: 2° INVESTING INITIATIVE, BASED ON CARBON TRUST /MCKINSEY 2008 AND HSBC GLOBAL RESEARCH 2012)



### 3.2 IMPACT OF SHORT-TERMISM ON THE CLEAN TRILLION

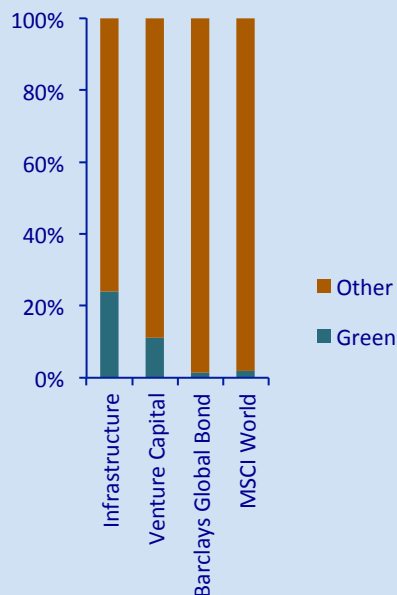
There are a number of avenues through which short-termism can affect climate-friendly investment.

*Climate finance as capital-heavy investment.* As a rule, renewable energy and energy efficiency projects have a higher share of capital costs and lower share of operating costs compared to fossil fuel installations (cf. Fig. 3 on p. 5). As a result, the payoffs are likely to be more long-term with longer payback periods.

*Climate finance reliant on project finance.* Particularly in Europe, much of renewable energy financing takes place in the project finance space. This type of financing falls in the category ‘alternative financing’ for institutional investors. As highlighted by the WEF (2011), the short-term time horizons of investors due to investment processes and other factors reduce their share in illiquid investments such as project finance. According to estimates of the author, the share of ‘green’ in illiquid infrastructure investments in Europe for example is roughly 24% (Fig. 19). Similarly in venture capital, according to a survey from the European Commission, roughly 11% of venture capital projects in Europe are environment-related. Counter to that is the (current) low single digit share of ‘green’ in the Barclays Global Bond Aggregate and the MSCI World, two benchmark indices for the composition of institutional investors’ portfolios. Based on this analysis, short-termism leads to less available capital for this type of climate-friendly finance.

*Climate finance promises long-term benefits:* Similar to the discussion of the carbon bubble, climate-friendly investments may provide long-term benefits from a risk-return perspective in the long run, even if surrounded by significant uncertainty in the short run. Short-term time horizons are likely to not only discount these benefits (see discussion above on payback periods and Fig. 9 on p. 12), but also cause these benefits to not be integrated into the analysis. In this context, longer time horizons may also be driven and profit from climate performance metrics.

FIG. 19: ESTIMATED SHARE OF GREEN IN VARIOUS TYPES OF INVESTMENT IN EUROPE (SOURCE: 2° INVESTING INITIATIVE, BASED ON EU, MSCI ESG RESEARCH AND THOMSON & REUTERS DATA)



### CLIMATE PERFORMANCE INDICATORS

Despite the growth in carbon accounting methodologies for the finance sector, the associated tools are disconnected from investment processes. To the extent that they are being used, such as with the uptake of the MSCI Low Carbon Leaders Index by FRR and AP4, they rely on annual emissions and thus don't integrate forward-looking data. Consequently, a new generation of indicators measuring the climate performance based on forward-looking data and energy-technology roadmaps can drive more long-term thinking. Such an indicator would naturally also profit in uptake and relevance in investment decisions in a long-term investing environment.



The 2°Investing Initiative (2°ii) is a multi-stakeholder think tank bringing together financial institutions, policy makers, research institutes, experts, and environmental NGOs. Dedicated to research and awareness raising to promote the integration of climate goals in financial institutions' investment strategies and financial regulation, 2°ii organizes sharing and diffusion of knowledge, and coordinates research projects.

The 2°Investing Initiative has been created in 2012. Its work is funded by the Caisse des Dépôts, the AFD, the ADEME (French Agency for the Environment and Energy Management), and the French Ministry of Ecology and Energy. The members include 80 organizations and professionals from the financial sector from 8 countries. Our team is based in Paris and Beijing.

The name of the initiative relates to the objective of connecting the dots between the +2°C climate goal, risk and performance assessment of investment portfolios, and financial regulatory frameworks.

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