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Executive Summary

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Disclosure of climate risks and ESG information

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Referent adviser Alberto Borgia

Working Team "Mission Intangibles®"

Project Leaders and Authors

Andrea Gasperini Project Leader Aiaf "Mission Intangibles®"

Federica Doni PhD, University of Milano-Bicocca i quaderni aiaf online Direttore Responsabile Ugo Bertone

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Corso Magenta, 56 - 20123 Milano
Tel. +39 0272023500 r.a.

Fax +39 0272023652 sito Internet: www.aiaf.it—e-mail: info@aiaf.it

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Project Leaders and Authors

Andrea Gasperini, Project Leader Aiaf "Mission Intangibles®"

After his degree in Economics, obtained with the highest honours in Italy at the University of Verona and the qualification of chartered accountant, he began his professional career in 1987 in a leading International Company operating in IT sector (IBM Italia). Later, he worked for a Consulting and Financial Audit Company (Arthur Andersen & co.), for a Real Estate Brokerage Company (Gabetti Holding) and Senior Credit Officer for an international banking group (Banca Leonardo SpA).

Since 1993 is Italian Association of Financial Consultants and Analysts member and in charge of research projects and study of the working group Aiaf "Mission Intangibles" whose role is to guide, motivate and critical compare analysis on methods for measuring and communicate intangible assets and enhancement of Environment, Social and Governance information (ESG). Since 2006, he is member of EFFAS CIC (now CESG) and since 2011 promoter of WICI Europe and since 2016, he is responsible for the AIAF's ESG Observatory.

He is author of three books: "Il vero Bilancio Integrato – Storie di creazione del valore a breve, medio e lungo termine" (2013), "Capitale Umano e performance di business. Misurare il ROI del capitale umano" (2008) and "Il valore del Capitale Intellettuale. Aspetti teorici e casi aziendali di reporting" (2006), published by Ipsoa Wolters Kluwer. He published over one hundred articles and essays for important business and management issues, on intangible resources, sustainability, ESG factors, responsible investments (SRI), United Nations Sustainable Development Goals (SDGs), financial analysis and acting as a teacher in masters and training courses and as a speaker at conferences organized on these topics.

Federica Doni, PhD, University of Milano-Bicocca

Assistant Professor in Accounting and Business Administration at the Department of Business Administration, Finance, Management and Law, University of Milano-Bicocca.

She teaches Financial Accounting at the University of Milano-Bicocca. Her main research topics include International Accounting, Intangibles and Intellectual Capital, Accounting History, Integrated and Sustainability Reporting, Corporate Governance and Business Valuation. She has presented papers on the abovementioned topics at several national and international conferences. Member of SIDREA (Italian Association of Scholars in Accounting and Business Administration) and Deputy member of the Auditors of SISR (Italian Association of Accounting History), member of EAA (European Accounting Association), EURAM (European Academy of Management), CSEAR (Centre for Sustainable & Environmental Accounting Research, UK) and BAFA (British Accounting and Finance Association, UK).

Introducing an energy transition

It started with food as fuel, and muscle as engine/prime mover. Food was multiplied through agriculture; and muscles through animal domestication. Except for mills and the contribution of wind and water, the source and the mover remained strictly organic for most of human history. The Agricultural Revolution translated in growth of wealth and population. But there was an implied cap (the finiteness of earth as organic energy source provider) in the ability to grow. And once it was approached, Europe's economy and population remained substantially stagnant through centuries.

Then came the great energy transition. Fossil met Technology, and was turned into fuel. The source turned fossil; and the engine a true (and inorganic) machine. In the shift the ability to produce useful work, which is what energy is all about, became virtually unlimited. Classical economists and their idea of the economy leading to a stationary state (Stuart Mill for the definition; but Ricardo and Malthus for the concept) went good for academic reference only. In a century world, population multiplied by 700%; and (consolidated) GNP by an even superior magnitude. You may in part thank (as far as population is concerned) penycilline. You may then thank finance, and its ability to multiply money and therefore capital available for investment. But take the energy transition, i.e. fossil fuels, off the picture, and very little if any of the

Schumpeterian embarrass de richesse would remain on the XX Century table.

Today we are discussing a new energy transition. From fossil to renewables. To sun, water, wind, organic fuels. A backwrd transition, so to speak. For the first time in history a transition from a higher (fossil) to a lower energy density source. Which implies more room (earth, classical economists would say...) needed for production; and an inherently less efficient energy process. We need T (as "Technology") to develop fast to be able to avoid the gap.

There is nothing in the market that mandates the transition. The lower density of the "new" sources make them, gross of their direct and indirect infrastructure costs, marginally more expensive than fossils. A strong argument could be made that this is so simply because historically we have failed (or refused) to incorporate fossil negative externalities into fossil sources price. True, but the fact remains that (over 100 years after the publishing of Pigou's Economics of Welfare) negative externalities, except for so far marginal cap and trade/ carbon tax schemes, are still not priced and that therefor price signals, left alone, would bend in favor of fossils.

Here comes the second feature of the transition to be. At this stage of T, it cannot be a market byproduct. We cannot as a rule predict the timing and the direction of the improvements in Technology (which largely explains the ex post inability of business as usual models to explain anything). But the

energy density gap should allow us to predict that the increase in sector investments and consumption which would be needed to drive the process, and the size thereof, will not properly materialise unless regulation and public intervention will massively intervene.

The transition, we are told, is mandated by climate change. Except for a small minority (less than 5% of the existing literature may be defined as "negationist") peers do endorse the idea that anthropogenic emissions be primarily responsible for the increase in the atmospheric concentration of carbon dioxide that has been recorded since the blossoming of the Industrial Revolution; and that this concentration as part of the overall concentration of GHG be a primary actor of the global warming drama. Herefrom the push towards a transition out of fossil fuels as the main primary energy source.

To get there the governments, or rather the States need to intervene. The density and (in case of sun, water and wind) the intermittency gap must be pricewise closed. The energy

NOTE

1 The amounts at stake are difficult to estimate. A 2015 IMF working paper labels the refusal to price fossil negative externalities as a "subsidy" to the industry ("post tax consumer subsidies") and estimates the 2015 yearly worldwide subsidy (i.e. the amount that should be captured through a proper carbon tax) at \$ 5,3 trillion. Coady D.; Parry I; Sears, L; and Shang, B., How Large Are Global Energy Subsidies?, IMF Working Paper, 15/105

transition is (also) a matter of appropriate public policies.

The State armamentary available for this purpose is customarily composed of three main tools. Taxes, incentives and prohibition.

Prohibition has mainly to do with environmental standards. Zeroing i.e. the allowance for sulphur dioxide emissions at sea, where implemented, has the secondary effect to promote gas (Ing) propelleded engines over traditional fuel oil diesel; i.e. to substitute oil with a less polluting (although hydrocarbon) fuel. Incentives are what made photovoltaic possible, and sometimes like in Italy even too possible. Taxes in turn could and should be used as the tool to incorporate externalities in pricing.

The tools are there. But the will to use them in a coordinated manner, and towards accountable goals, is apparently below expectations. COP 21 execution is predicated upon a voluntary non-enforceable mechanism of Nationally Determined Contributions (NCD).² But the tendering of the actual Contributions

since appears to be less than enthusiastic.

The issue with government action on climate change has much to do with what Governor Mark Carney in 2015 defined "The tragedy of horizons". "The catastrophic impacts of climate change will be felt beyond the traditional horizon of most actors imposing a cost on future generations that the current generation has no incentive to fix".3 Damage will materialise in years to come; but to prevent it you must spend money today. Investing in prevention implies asking your constituency to have their taxation spent to avoid something they do not (yet) suffer from; or else (i.e. via carbon tax) to pay more to buy what they are used to buy for less. The climate drama will take some decades: and elections are tomorrow. Worse, and more, if you apply to your model a high discount rate you may even end up showing that fixing the climate change damage in 2050 will be less expensive than preventing it today. Which is exactly the argument that English conservatives opposed to the findings of the 2006 Stern Review.4

ndings of the 2006 Stern Review.⁴
Stability Board has promoted the Task Force on Climate-Related Financial Disclosures, which aims at developing "voluntary, consistent climate-related financial risks disclosures for use by companies in providing information to

4 Under the system, the plan to contribute to emission reduction and the specific targets thereof are decided at individual State level. Control and enforcement are thereafter also fully in the hands of the individual State, with no mechanism for

investors, lenders, insurers and other

stakeholders".

Deciding over a policy that needs to arbitrate between today and tomorrow is ultimately a decision as to a selected discount rate. Applying (underlying) high discount rates is a popular electoral exercise. Discounting low is one of the conditions for the transition to materially progress.

Can a majority constituency gather around a low discount rate policy, i.e. take on itself instead of delegating to future generations?

There are, contrary to expectations, some indications that this may start to happen.

The first is that the tragedy of horizons is already coming on stage; and so in the form of issues for today. The combined growth of population and GNP worldwide is multiplying the impact of fossil's negative externalities; and imposing a cost on budget not for preventing the evil of tomorrow, but just to remedy the evil of today. China at COP 21 has not "converted" to the environmental cause; it simply cannot withstand the consequences and potential further growth of the pollution it suffers

NOTE

- 2 Under the system, the plan to contribute to emission reduction and the specific targets thereof are decided at individual State level. Control and enforcement are thereafter also fully in the hands of the individual State, with no mechanism for international sanctioning.
- 3 Speech given by Mark Carney, Governor of the Bank of England, to the Lloyd's of London, 29 September 2015, www.bankofengland.co.uk Mark Carney as Chairman of the Financial

international sanctioning.
Speech given by Mark Carney, Governor of the Bank of England, to the Lloyd's of London, 29 September 2015, www.bankofengland.co.uk
Mark Carney as Chairman of the Financial Stability Board has promoted the Task Force on Climate-Related Financial Disclosures, which aims at developing "voluntary, consistent climate-related financial risks disclosures for use by companies in providing information to investors, lenders, insurers and other stakeholders".

today. President Trump election may not necessarily contradict this trend. It is too early to call; but even the "America First Energy Plan" of his administration recognizes that "our need for energy must go hand in hand with responsible stewardship of the environment". Whether this recognition will then in practice translate into an oxymoron only time can tell. In all likehood, the transition process may just come forward slower than it would have been with the support of a proactive policy; but still leaving room for a manageable process.5

An energy policy is for a constituency to endorse. Not even the Trump Energy policy can go immune from endorsement. And here comes the second indication that a proper transition policy may still be a politically viable possibility. The indication is ultimately an issue of "mood". A mood that in segments of the western societies seems to gradually shift, to put it rhetorically, towards the acceptance of the idea to pay more today to win a better planet tomorrow. And a mood that extends so far as to buy widgets on the market on the basis of considerations other than just the price or the efficiency or

the specific product. When i.e. the Tesla Powerwall hit the market, it did generate a pile of literature pretending to demonstrate its economic inefficiency. Nonetheless, it sold. True, like other storage appliances in some countries it was made economically efficient through preferential tax treatment. But in the States it did find a market niche also in the absence of public support.

There are thus in the "green sector" market niches that, even in the absence of public policies, are being established and growing. Supply, apparently, is starting to create demand. Alone it may not suffice. But it may help establishing consensus for a transition policy.

Still, however, the path we are on is doubtful. The targets for GHG emission reduction may be met, but also and still (failing a massive public action) largely missed. The potential scenarios are virtually unlimited; and the winners and the losers impossible to identify. The lesser the mitigation of climate change, the stricter in principle the look we should keep amongst others on the insurance sector, in terms of its ability to cover the increasing wheater related liabilities allegedly associated with

progressive global warming. The quickest the transition, the highest the danger for the carbon industry, who may inter alia face the necessity to write off its net worth reserves that are no more producible ("stranded assets"). As there is not, however such thing as a long-term portfolio (the rule being still that operators just act opportunistically...) these issues are mostly still too early to call.

Transitions need time. Changing the energy source implies in most cases changing its prime mover; and building the infrastructure needed for the change. "Energy transitions taking place in large economies are inherently protracted affairs". 5 Take as an example electric cars. Today we are still below 1% worldwide. The International Energy Agency calls for reaching 1,7 in 2020, and 10% in 2030. Others are less optimistic. Crude oil energy density seems difficult to displace from the transport sector; and if you want to change the source, you need to change the car.

The good news here are that reaching the COP 21 emission targets does not call for a too accelerated transition. The 2016 World Energy Outlook 450 scenario (which is deemed to be consistent with the objective of

NOTE

5 There are a number of assumptions that should be factored in before passing judgment and forecasting future impacts. The call for energy independence is a call for maximising fossil production, i.e. to sustain an industry which has always been playing an upfront role in the economy of a number of US States both in terms of workforce and of magnitude of the

stakeholders; but trying to boost production may not and does not translate automatically into an increase of (national) consumption. Coal production has been environmentally rehabilitated; but gas in recent years has materially displaced coal in US power generation not because it was cleaner but simply because it was cheaper, and the "rehabilitation" will not by itself revert the process.

Individual States, further, will in the absence of Federal standards retain an ability to regulate at State level; and it is difficult to see how the Federal Energy Plan may impact upon, i.e., California environmental policy and standards, And so on...

6 SMIL,V, Energy Transitions, Praeger 2010, viii.

limiting the average global temperature increase in 2100 to 2 degrees Celsius above pre-industrial levels) projects fossil source as still representing 74% of world's primary energy sources in 2025, and to progressively decrease thereafter to 58% in 2040. We still seem to have room to drive a process made up of progressive steps, and avoid the brutality of sudden change.

Step one. While and before substituting for fossils, we have still wide room to consume less by consuming more efficiently.

Energy intensity (i.e., energy consumption per unit of Gross Domestic Product) has decreased on world average by 32% between 1990 and 2015; and historically the trend appears as a continuum with rare yearly exceptions. In practical terms, this implies that i.e. within EU 28 GDP may increase by almost 2% per annum without increasing year over year our energy consumption.

We can do more. The decrease in energy intensity has been so far largely market driven. But there is still a lot that public policies may do to stimulate energy efficiency, i.e. our ability to reduce the energy consumption of a system in the performance of a specific function. Transportation, housing and industries have each still large room for improvement even under already existing technology. The time of the improvement is however largely a function of the financial availabilities of the final user. Here, too, we have a prime mover issue. To make your

heating more efficient you must invest in changing your boiler. Public policies here seem responsive, or at least so in Europe; and tax incentives (via tax credits) have been elected as the favorite policy tool. Investing in energy efficiency may induce a positive economic stimulus; and makes for an emission reduction policy where the tragedy of the horizon is of no or at least limited application.

Step two. We can for the time being substitute fossils with (lower emission) fossils. Here we have a priority issue crossing both sectors and sources. As to sectors, the priority is mandated by existing technology. We can compress quite substantially the share of carbon sources in power generation (by resorting to nuclear generation, we could in fact technically already do without fossils); while the energy density issue makes it a long way to go in the transportation sector.

As to source priority, natural gas is the obvious choice. The transition power generation mix would ideally be natural gas plus renewables, with natural gas fully substituting coal as the flexible provider. The substitution costs would in principle be sustainable by the consumer; but this notwithstanding nothing or little seems so far to materialize in this direction. In principle, graduating a carbon tax so as to tilt consumers choices towards the less emissive source would do the priority job. But it is nowhere to be seen.

In "green" Germany, just by way of example, in 2016 over 40% of the electricity was coal produced (with

lignite accounting for 60% of it) while gas was at 12,4%. Renewable expansion is constant (in 2016 up to 29%); but notwithstanding the Energiewelde in the choice of the base fuel price so far takes over environment. It may not be a straight example of tragedy of the horizons; but compared with the public policies applied to energy efficiency it looks at least like a next akin.

Transportation, whatever the policy, will be a longer business. Attempts are made to favor substitution of oil with gas as transportation fuel; but they are basically for bulk cargoes (ships and heavy trucks) and are subject, at least in Europe, to a favorable taxation bridging the implied cost gap with diesel. Electric cars are here to stay; but it may take decades before their spreading becomes emissions-wise material (and so provided they are not fueled with coal generated electricity). Policy here is (partially) impotent if not matched by a substantial technology development.

Which takes us to the last but first driver. Step three. Technology will have a great say in the timing and the feasibility itself of the transition to come. Where it will go is by far impredictable. But one of the game changers will be its ability to economically overcome the shortfalls of renewables intermittency. Electricity storage progress will mark the transition progress. So far, the last years learning curve has been impressive. But it was also a creaming curve. Further progress may thus prove slower; and harder.

Mix public policy with technology, wrap into energy efficiency, season with the less emissive of fossils, and you have the receipt for the energy transition. Except that, there being no free lunches, the receipt needs to be financed. Guesses about the bill are proliferating. The authority of Professor Paul Ekins⁷ suggests that we are talking about generating some 3 trillion USD per year in low carbon investments. The recipe, in other words, does not work without finance.

Public policy will not make up. It can facilitate low carbon investments; but in no scenario these may be sustained only or even predominantly via States budget. Private investment is already

playing and will play a major role. But to be generated, private investments needs the perspective of a reasonable and risk commensurated rate of return. Which in turn calls for the State tools to be deployed so as to accelerate the bridging of the cost/price gap and create a framework for low carbon sources to become price winners.

This is where the energy amateur must leave the floor to the finance professionals. Within an appropriate framework, the technology of choice as well as the infrastructure of choice or the small/distributed generation of choice will be neither priced nor prized according just to their technical merit.

Marketing, consumers inclinations, affordability, integrability into existing systems and other factors will play a role in the beauty contest. The ability to attract capital will ultimately decide; i.e., like it or not, it will be for finance to pick up the winners.

Massimo Nicolazzi

President Centrex Italia SpA
Director, ISPI Energy
Watch Professor, Economics of Energy
Sources, University of Turin

Disclosure of climate risks and ESG information

Executive Summary

Today, we are living in a world where Environmental, Social and Governance (ESG) issues and sustainability are gaining more attention to such an extent that they are becoming mainstream issues. Companies are beginning to recognize that there is an effective interest on questions on the part of institutional investors who have a long-term vision, such as pension funds, sovereign funds, insurance companies, and, more recently, religious orders.

Long-term institutional investors have always focused not only on creating value, but also on other considerations like sustainability, ESG factors, climate risk and natural capital⁸ because they believe these may potentially have a significant, material impact on their

NOTE

- 8 IIRC "all renewable and non-renewable environmental resources and processes that provide goods or services that support the past, current or future prosperity of an organization. It includes air, water, land, minerals and forests, biodiversity and eco-system health".
- 9 European Fund and Asset Management Association (efama), "EFAMA Report on Responsible Investment", "... There is no statistically relevant outperformance or underperformance of Responsible Investment strategies", September 2016, http://www.efama.org/Publications/EFA MA_Responsible%20Investment%20Repo rt_September%202016.pdf
- 10 UN Environment Programme Finance Initiative and Mercer, "Demystifying Responsible Investment Performance", 2007, http://www.unepfi.org/fileadmin/docum ents/Demystifying Responsible Investme

nt Performance 01.pdf

investment decisions in that these things can overcome the initial skepticism which has created the idea that socially responsible investment (SRI) often results in a poor⁹ or penalizing¹⁰ return.

Many asset owners are starting to take into greater account the metrics of environmental, social and governance issues (ESG) by which a company's sustainability can be assessed. A specific focus is aimed at organizations attempting to implement innovations that will have a more positive impact on the ongoing problem of climate change, and which are also adopting divestment strategies on fossil fuels while paying attention to the risks and opportunities involved in the transition to a low-carbon economy in

order to reduce high greenhouse gas emissions, including carbon dioxide CO2, N2O nitrous oxide, methane CH4, and F-gases, thus pursuing a decarbonisation strategy.

The climate agreement reached in Paris in December 2015 (COP21) has set the ambitious goal of maintaining [...] the average global temperature rise well below 2° C compared to pre-industrial levels and to try to limit this increase to 1.5° C above pre-industrial levels. This is therefore an unprecedented agreement in an effort to limit global warming on the planet.

In the future, it is likely that the management strategies of those climate-sensitive companies will be rewarded, which enable the achievement of even greater opportunities from the initiatives of the World Government (from COP21 in Paris 2015 to COP22 in Marrakech 2016) and from the new settings for climate standards, which may, however, also have an

Disclosure of climate risks and ESG information



Image I

impact on current fossil fuel reserves (... oil, natural gas and coal) in that these could become "stranded assets"¹¹.

COP21 is also an important step in moving towards a better and more comprehensive non-financial reporting that companies can use to communicate additional standardized information to investors, rating agencies, insurance companies, lenders, and other stakeholders highlighting their exposure to climate risks.

Acknowledging climate change as potential threat to investment performance, a growing number of investors are measuring and publicly disclosing the climate impact of their portfolio. The main driver behind this trend has to be sought in a set of regulatory measures that, in line with international climate policy efforts, are increasingly pushing for mandatory, standardized climate disclosure frameworks.

It is therefore necessary to integrate current corporate reporting models with non-financial information on environmental and social impacts and to connect financial capital with natural capital. This step is made possible through the use of a reporting

NOTE

11 Carbon Tracker Initiative, 2014,
"Unburnable Carbon - Are the world
financial markets carrying a carbon
bubble?", "...The fossil fuel reserves held
by the top 100 listed coal companies and
the top 100 listed oil and gas companies
represent potential emissions of 745
GtCO2. ... If the 2°C target is rigorously
applied, then up to 80% of declared
reserves owned by the world's largest

Transition to a low-carbon economy



Image 2

framework that allows disclosure of "investment grade" environmental and social data, that is complete, coherent, reliable, comparable and transparent, and which has the same consistency as 'pure' financial results. In turn, this framework helps to provide investors with useful and usable information for decision-making on sustainability, thus improving the process of value creation.

However, not all institutional investors are convinced that ongoing climate change is able to significantly affect the value of their portfolios and others investors, while recognizing that high-carbon investments could be subject to a permanent relevant decrease of

listed coal, oil and gas companies and their investors would be subject to impairment as these assets become stranded.,

http://www.carbontracker.org/wp-content/uploads/2014/09/Unburnable-Carbon-Full-rev2-1.pdf

12 See the interesting thoughts on these topics written in the contributions for the Aiaf White Paper entitled "Disclosure of climate risks and ESG information" by

value, have taken any initiative because they consider these risks still very far.

These risks may seem even more remote nowadays as US President Donald Trump has already issued executive orders aimed at reversing former US President Barack Obama's climate policies, has named Oklahoma attorney general Scott Pruitt, a climate change denier and supporter of the fossil fuel industry, to head the US Environmental Protection Agency (EPA) and could also be willing to assemble his advisers to decide on whether or not to withdraw from the Paris Agreement.¹²

Lucy Di Rosa and Ryan Elivo, Fossil Free Indexes – Solutions for Carbon-Responsible Investing, "Tracking the Movement Towarsd a Clean-Energy Economy in the Era of Donald Trump" and Maximilian Horster and Patrizio Trapletti, South Pole Group – Pioneers in Climate Action, "Climate Risks, Disclosure, and Opportunities: the Financial Sector is an Industry in Transition".

On one side, Trump could potentially cause a series of harmful consequences, such as stopping payments to climate change funds, reinforcing the climate-skeptical movement as well as causing markets to overreact to his provocative statements. Any consequent disinvestment in companies with a high carbon footprint index and reinvestment in Clean-Energy companies may cause the risk of achieving lower than benchmark performance for as long as climate change mitigation policies are postponed. As well as these financial markets will expect that, the adoption of such regulation is likely to remain low.

On the other hand, however, Trump cannot directly influence State and Regional laws, "cancel" the Paris Agreement and, most importantly, hinder natural gas from being more cost-efficient than coal and prevent renewable power technologies from becoming more competitive.

Despite the complexity of the current policy landscape, climate change has unquestionably started to influence investment decisions across the financial industry.

NOTE

13 Bob O'Brien, "A New Way It's Going to Be Easy Being Green", "... In a follow-up interview since the US election results Ian Monroe, President Etho Capital, said "Yes, I think US federal policy is going to change dramatically - but local and international sustainability policies will keep advancing, and clean technologies will only become more cost-competitive. Efficiency almost always pays off, and it's even more of an advantage with rising energy and

Investors are questioning whether their existing investment strategies are compatible with a 2-degree world, and seeking to tackle financial risks and opportunities associated with this transition to a low carbon economy and, whatever the political rhetoric, businesses will act based on financial and economic conditions and those suggest that capital will continue to flow toward solutions with the perspective of a reasonable, risk adjusted, rate of return. ¹³

Whether ethical and financial arguments for moving away from fossil fuels are compelling or not, the fact remains although it is unlikely that Donald Trump's executive orders of March 28th could be modified in the short to medium term, there are clear signs that the transition to a low carbon economy is inevitable and if the new path of the US economy does actually lead to a Slowdown in environmental regulation investors will have to be alert to the "timing" with which to make certain divestment/reinvestment decisions.

commodity prices. Over 90% of our process is finding efficiency and sustainability leaders, and we've seen that these leaders have outperformed for more than a decade, irrespective of what's happening with policy and energy. Sustainability is really all about mitigating risk, and it's much more about efficiency and innovation than policy. Innovation is always disrupting the market landscape. For example, with cheaper batteries, solar cells, and electric vehicles hitting the

Comments on the relevance of climate risks and ESG information

The final section of the Aiaf White Paper No. 174 focuses on the presentation of comments expressed by several organizations belonging to many industries, financial sectors, ESG index providers, long-term investors such as pension funds, insurance companies and, more recently, religious orders, financial think tank, associations, asset managers, carbon research centers and investing companies, ESG research companies, Sustainability Investing Specialists, whose statements, numbering more than thirty at the Summit at University of Milano-Bicocca, on May 3rd, 2017, are here given in alphabetical order simply on the basis of their sector, leaving the interpretation of their logic, if there is any, to the reader itself.

These are professional and corporate opinions that embrace a vast horizon in different cultural and operational contexts, both international and national, and we believe that this "diversification" of experiences is the crucial topic that significantly increases the value of the comments disclosed.

market, the end of our oil era may be much sooner than many investors think. Sustainable investing can drive financial outperformance and decrease risk. Investors are realizing they therefore have a fiduciary duty to take sustainability seriously, regardless of what's happening in Washington", The Street, Dec 27, 2016 6:00 AM EST,

https://www.thestreet.com/story/139290 96/1/a-new-way-it-s-going-to-be-easybeing-green.html