

No Firm is an Island:
using the SDGs to bridge
modern portfolio
management to the future

Companies don't operate in seclusion; they are part of a larger inter-related system made up of variables that interact in unpredictable ways. Yet, traditional models used in portfolio construction do not sufficiently account for companies' interaction with, and impact on, other firms, actors and variables within the system.

These impacts can have serious and far-reaching consequences for both the business ecosystem and society. When viewed in the long-term, many un-sustainable companies are, at present, over-valued and many sustainable companies under-valued.

The SDGs provide a useful framework to help companies and investment managers implement a systems-thinking approach that considers the impact of decisions on future resources. Company performance assessed holistically in this way safeguards portfolio returns by better synchronizing the short-term assets with the long-term liabilities of universal asset owners.



Michael van der Meer
CFA, Senior SI Analyst,
Emerging Markets,
RobecoSAM

The Firms grows up


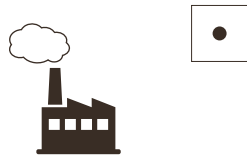




In this paper, we continue on a theme highlighted in last year's RobecoSAM yearbook regarding the importance of adopting social responsibility into a company's business strategy. Initially, companies adopted a firm-centric view of the world in which their existence revolved around solely maximizing profits; and good behavior was only to avoid government

fines. Later, as companies recognized their roles as agents within a larger economic ecosystem, they began to accept and adopt basic principles of corporate responsibility (see Figure 1).

Still, corporate responsibility was associated with corporate philanthropy. Corporations are now beginning to recognize the merits of a fully-integrated approach to sustainability — one that incorporates corporate responsibility and strategic decision-making — as an imperative to ensure long-term success.¹

Perceived short-term inefficiencies (e.g. paying above the minimum wage) increase the longer-term durability of portfolios and should therefore be integrated into investments.

Figure 1: Stages of moral development

| The individual in society | | The firm in society |
|---|---|---|
|  | <p>Pre-conventional morality: where self-interest dominates and “being good” means avoiding punishment.</p> |  |
|  | <p>Conventional morality: children come to understand rules and authority as part of a larger framework of social norms.</p> |  |
|  | <p>Post-conventional morality: capable of defining a personal code of conduct that integrates personal autonomy within a wider social order.</p> |  |

A firm's role in society should parallel those of a maturing child coming of age; from self-interested individuals driven by narrow self-interest to those of actors with agency within a complex and inter-dependent ecosystem.

Source: Kohlberg (1958); RobecoSAM (2017)

¹“Capitalism coming of age: using the SDGs to bridge business strategy and social responsibility”, Hengerer (2017) <https://yearbook.robecosam.com/articles/capitalism-coming-of-age-using-the-sdgs-to-bridge-business-strategy-and-social-responsibility/>

We expand on this view here by arguing that, to meet their return requirements in the long-run, investors also need to be aware of the inter-dependencies of the environment in which companies operate. In this context, the UN's Sustainable Development Goals (SDGs) are a useful framework for helping evaluate whether companies are producing products and

services that have long-term value for society. Only these companies will have the potential to adapt and thrive in the long run, making them sustainable investment choices.

We further argue that perceived short-term inefficiencies (for example, paying above the minimum wage which contributes to a number of SDGs including no poverty, decent work, as well as good health and well-being) increase the longer-term durability of portfolios and should therefore be integrated into investments.

To meet their return requirements in the long-run, investors also need to be aware of the inter-dependencies of the environment in which companies operate.

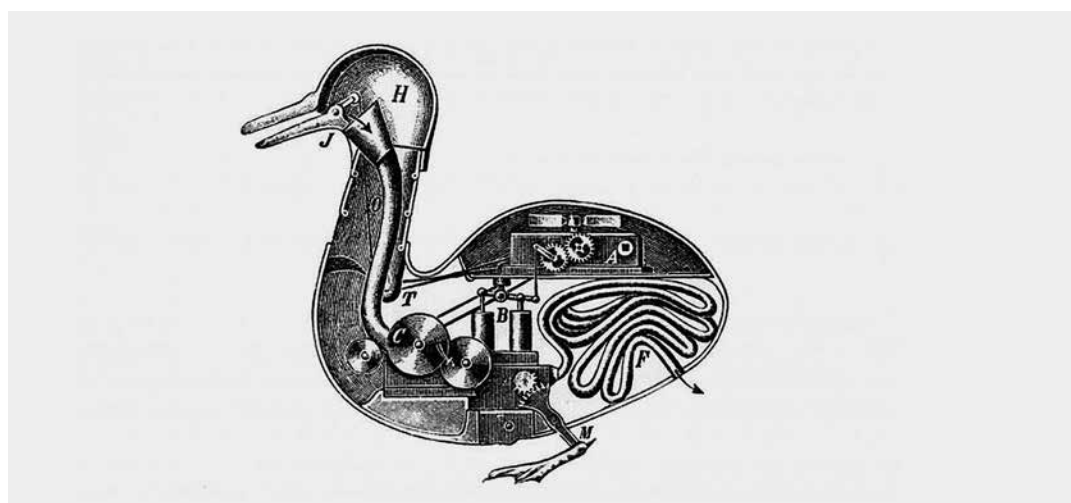
Reductionism vs complexity

Fair criticism has been leveled at the SDGs for being too broad and complex for effectively setting priorities, especially for governments.² Yet, the SDGs' evolution from the simpler Millennium Development Goals (MDGs) provides more complete coverage of the world's challenges and their interdependencies. From this perspective the SDGs are a useful investment framework for long-term portfolio construction as it moves us beyond the traditional "reductionist" world view that prevails in finance. This reductionist worldview, which is based on a determinism exemplified by Newtonian physics, in which all things

can be known given enough information.³ Problems scale linearly - like adding grains of sand to a bucket, and the total mass of a bucket of sand is simply the sum of the mass of the individual grains.

It is a simple process – additive, linear, and completely predictable.⁴ This concept is caricatured in Figure 2, where, if true, a duck's nature (its actions and behavior) are reduced to the sum of its parts (a hose and series of mechanical gears) and therefore should be completely explainable and predictable. Reality, however, proves otherwise.

Figure 2: Reductionist model of a duck



A duck's nature and actions reduced to the sum of its parts—a hose and series of gears. Until recently prevailing models have largely described the world in linear and mechanistic ways. Current theories based on mounting evidence from across life, environmental and economic sciences, have added non-linearity and complexity to this simplistic view of the world.

Source: Descartes (1662)

² "The 169 Commandments", The Economist, (March 26, 2015)

³ See also Cartesian rationalism and Laplace's demon, the concept in which if someone (the Demon) knows the precise location and momentum of every atom in the universe, their past and future values for any given time are entailed; they can be calculated from the laws of classical mechanics.

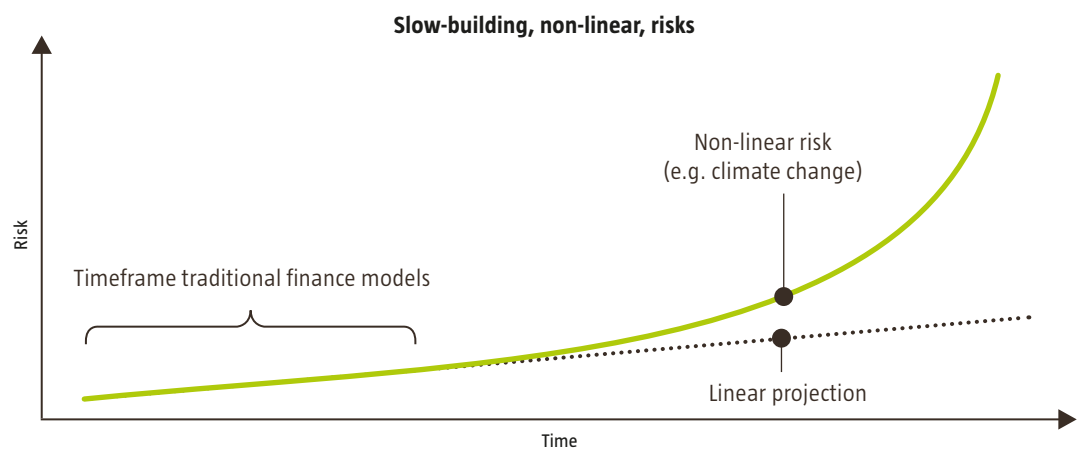
⁴ Example borrowed from a presentation by Dr. Uttam Kumar Sarkar "Financial Markets and Complex Systems" (undated)

In traditional finance investments are assumed to be independent and uncorrelated. This thinking is exemplified in firm-specific analyses, such as a discounted cash flow model applied in isolation.

While straightforward to implement, such models suffer from short-term time horizons (3-5 years) which means that non-linear events materializing in the long-term typically get excluded (see Figure 3).⁵

In traditional finance investments are assumed to be independent and uncorrelated.

Figure 3: Theory and Reality Diverge



Traditional discounted cash flow models tend to project risks linearly. But reality is far from theory. Risk can rise exponentially and unpredictably in very short time frames.

Source: 2degrees Investing Initiative (2°i) & The Generation Foundation (2017)

⁵ 2°i & The Generation Foundation (2017) "All Swans are Black in the Dark"

⁶ Markowitz (1952)

⁷ In physics the adoption of Einstein and Heisenberg's Uncertainty Principle were the first steps beyond determinism; in the biological sciences the shift moved from molecular to a more fundamental science (C. Woese, 2004)

⁸ Polyani (1968); North (1990)

⁹ Taleb (2007) describes this as a shift away from what he calls "Mediocristan" towards "Extremistan" in which the bell curve is a reductionist model inappropriately applied to a complex system. In investing this trend is apparent from the increasing contribution of intangible factors to company performance (Haskel & Westlake, 2017).

Modern portfolio theory (MPT)⁶ made progress by understanding that different assets behave and interact differently. This recognition of basic inter-dependencies is what we now consider conventional finance. Other approaches which broaden the analysis include looking at country-risk or other exogenous factors which influence expected returns.

But systemic inter-dependencies and non-linear risks have yet to be integrated into fundamental analysis. In science, the shift towards a systems-thinking approach already occurred in the first half of the 20th century.⁷ Economics too, adopted a systems-thinking approach as demonstrated in the idea that all economic activity

is "embedded" within formal and informal institutional constraints.⁸ From this perspective it is counter-productive to disassociate economic activity from other societal objectives.

This embeddedness of business activities within a wider economic and social system, only recently became recognized in the investment world by accounting not just for the economic factors considered in MPT, but also environmental, social and governance (ESG) factors. This approach, usually called sustainability investing, recognizes that systemic factors interact in unexpected ways with investments increasingly producing "fat tail" outcomes.⁹

It is counter-productive to disassociate economic activity from other societal objectives.

Universal Owners—central to aligning investors and society goals

“Universal Owners” are institutional investors with highly diversified, long-term portfolios that are representative of global capital markets - for example pension funds.¹⁰ It is said that Universal Owners have a disproportionate interest in ensuring the sustainability of their portfolios because they must achieve returns not just today, but essentially in perpetuity. For example, in the US, investors with such long-term liabilities (more than 10 years) own nearly half of domestic equity markets.¹¹

Universal Owners can only be expected to be aligned with societal goals when their broader fiduciary duties, which include ESG factors, are fully integrated in their governance structures.

Ultimately though, as the direct and indirect beneficiaries (or perhaps the ultimate liability holders) of the decisions of Universal Owners, all of society has a stake in their ability to achieve a sustainable return on capital invested. In other words, Universal Owners are embedded within wider societal goals, and should evolve along with societal goals.

Using regulations to force universal owners to align investment policies with society’ interest, is overly prescriptive and doesn’t allow for an appropriate and diverse set of solutions to be implemented. Universal Owners can only be expected to be aligned with societal goals when their broader fiduciary duties, which include ESG factors, are fully integrated in their governance structures.¹²

The Universal Owner’s Dilemma

One complicating factor is the free-rider problem¹³ where some managers may achieve short-term advantage by borrowing against future, longer-term, performance. The free-rider problem is illustrated when a fund manager outperforms the index by investing in tobacco stocks. Here, short term financial performance borrows from the future health and well-being (never mind the medical expenses) of its citizens.¹⁴

This moral hazard¹⁵ explains why investment portfolios still, on aggregate, borrow from the future in order to outperform in the present. Such portfolios have a net present value (NPV) that is negative if stretched into perpetuity ($NPV_{\infty} < 0$). The mistake being, following from MPT, that all non-market risks were assumed to have been diversified away.

However, accounting for all systemic risks (not just market beta) would recognize that the portfolio may not have addressed the resource needs of other current, or future, portfolios (possibly even owned by the same Universal Owner!). An example of this is where a company pays below a living wage, which is perhaps a good financial decision in isolation, but which then takes away purchasing power from the workers on which other current or future portfolio companies may rely.¹⁶ For a discussion on how investments in human/social capital can positively impact firm profits, see the article, “Fair Wages - a key to effective social capital management” within this Yearbook issue.

Investment portfolios still, on aggregate, borrow from the future in order to outperform in the present.

¹⁰ “Universal Ownership: Why environmental externalities matter to institutional investors” (UN PRI 2011)

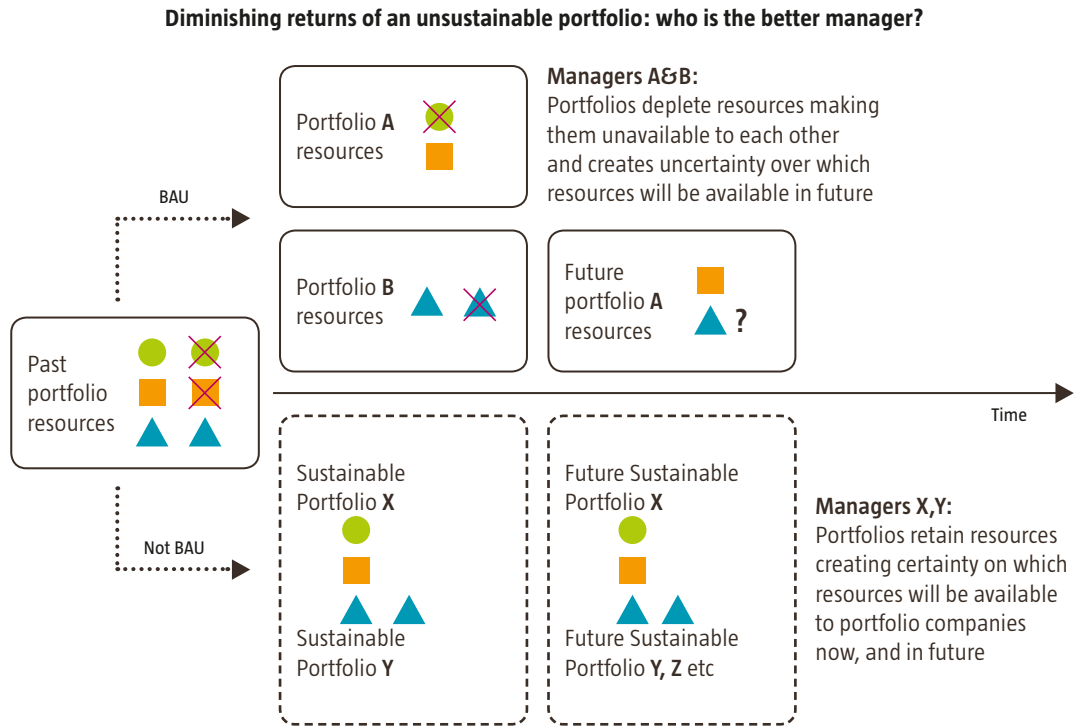
¹¹ “The Long and Winding Road” (Mercer, 2degrees investing initiative (2°ii) & The Generation Foundation, 2017)

¹² Regulators are recognizing this as reflected by the Final Report 2018 by the High-Level Expert Group on Sustainable Finance which states that the fiduciary duties of institutional investors and asset managers includes explicitly integrating material ESG factors and long-term sustainability.

¹³ In economics, a free rider is someone or something who benefits from a good or service without paying (or bearing the cost) for it.

¹⁴ It is for reasons such as this that Robeco and RobecoSAM recently made the decision to adopt a company-wide exclusion of the tobacco industry from its mutual funds.

Figure 4: Managing both returns and resources



¹⁵ In economics, moral hazard occurs when someone increases risky behavior because they are protected from bearing the costs of the consequences (e.g via insurance schemes).

¹⁶ To the question “Why are you paying your workers so well?” Henry Ford famously replied, “Well, if I don’t pay them well, they won’t be able to buy a car”.

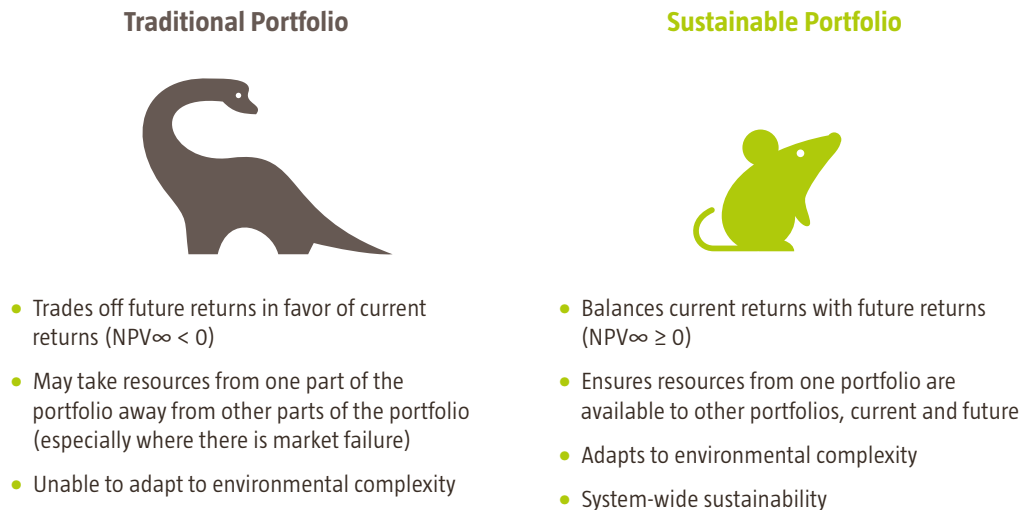
¹⁷ Hawley and Lukomnik echo this approach by calling for a shift away from a narrow alpha-only approach towards embracing system-wide issues representing a paradigm shift away the company specific (and occasionally sector specific) focus which has dominated governance activism for the past quarter century; “asset management ought to move from modern portfolio theory to modern systems theory as its dominant paradigm.” “The Third, System Stage of Corporate Governance: Why Institutional Investors Need to Move Beyond Modern Portfolio Theory” (Hawley & Lukomnik, 2018)

Reductionist silos
 Systems stewardship
 ✕ Resource depletion

For this reason it is in the interest of Universal Owners to align manager incentives with a broader range of metrics so that a manager who outperforms financially, but then underperforms on other sustainability metrics,

is recognized as potentially having not created net long-term value (see Figure 4).¹⁷ Figure 5 below summarizes some of the differences in characteristics between a traditional and sustainable portfolio.

Figure 5: The nimble mouse and the colossal dinosaur



Source: RobecoSAM (2018)

Thus, over the long-term, where sustainable portfolios are not adopted, Universal Owners may potentially fail to meet their (i.e. society's) long-term liabilities. Failure to account for long-term risks and opportunities implies

a mispricing of assets today, with capital allocated sub-optimally. This leads to underinvestment in projects that benefit society in the long-term or may induce the formation of bubbles, which, as they burst, often impose tremendous costs on society.¹⁸

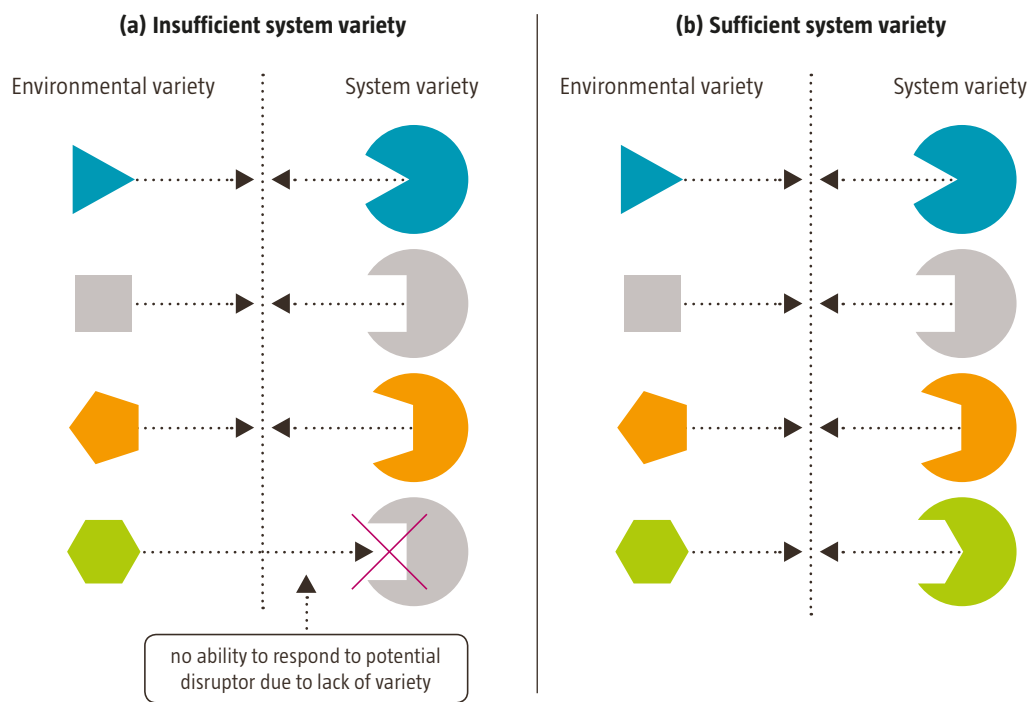
Failure to account for long-term risks and opportunities implies a mispricing of assets today, with capital allocated sub-optimally.

We must adapt, to stay the same... and in the game

So how do we achieve these aims? For starters, we need to integrate diversity and robustness to future-proof our portfolios. According to Ashby's law¹⁹ a system needs to match its environmental complexity in order

to survive. As illustrated in Figure 6, a system which does not contain sufficient diversity to respond to diverse environmental challenges will fail.

Figure 6: System diversity and robustness



According to Ashby's law, a system needs to match its environmental complexity in order to survive. Only a diverse system with enough variety can survive the complex challenges found in its environment.

Source: Norman and Bar-Yam 2016

¹⁸ See also—2degrees-investing initiative (2021) & The Generation Foundation (2017), "All Swans are Black in the Dark"

¹⁹ First Law of Cybernetics, a discipline that studies the control and communication in the animal and the machine.

The challenge is that, superficially at least, this diversity can appear as redundant when challenges are not (yet) visible. Robustness is thus improved by the built-in “redundancy” for unforeseen circumstances in a system. This approach is contrary to the traditional goal of efficiency (though superficial) within companies as well as in MPT more generally.

Examples of apparent redundancies in a system may include: the Precautionary Principle; paying staff above the market rate; ensuring gender diversity; fostering biodiversity; rolling out renewable energy and decentralized governance institutions. In traditional finance where second-order effects are underestimated, these are dismissed as inefficient.

Diversity can appear as redundant when challenges are not (yet) visible. In traditional finance where second-order effects are underestimated these are dismissed as inefficient.

However, as Table 1 below illustrates, redundancies may be beneficial to the sustainability of a system and therefore efficient from a systems-theory perspective. It is no coincidence that many of these examples can be linked back to the SDGs, which are an attempt to improve the sustainable trajectory of global development.

Table 1: Appearances can be deceiving

| “Redundancy” | Systems-(and portfolio) advantage | SDG |
|--|---|---|
| Precautionary Principle | Do not unnecessarily create exposure to unexpected consequences which damage or may even destroy the system. Do not transfer the consequences of this risk to others. ¹ | 12. Responsible Consumption and Production |
| Fair and Living Wages- Paying staff above the market rate | People within the system are more resistant to shocks in their lives and within their community. They are also in a better position to reinforce the system in a distributed manner (through good health, savings, local investment or consumption) which does not require government intervention (in the form of socialized healthcare). This also helps prevent inequality which is a systemic source of societal stress. ² | 3. Good Health & Well-Being 8. Decent Work & Economic Growth 10. Reduced Inequalities |
| Gender diversity | This may come at the short-term cost of (e.g. maternity/paternity cover); however, with diversity, institutions (including companies) are better able to respond to the opportunities and challenges presented by its equally diverse environment. | 5. Gender Equality |
| Ensuring biodiversity | Prevent shortages elsewhere (transfer of fragility) or systems-wide failure due to unexpected inter-dependencies. ³ (e.g. Avoiding a mono-culture of crops makes habitats less exposed to systemic risks). | 14. Life Below Water 15. Life on Land |
| Renewable energy | The non-linear reduction in the cost of renewable energy has led organizations such as the International Energy Agency (IEA) to systemically underestimate the growth potential of renewables. While technologies such as coal and nuclear present highly concentrated power sources, they also create systemic fragility which a distributed power grid of renewables helps mitigate. | 7. Affordable & Clean Energy |
| Tax Policy Complying with the spirit rather than the letter of tax laws | Regulators are increasingly favoring a principles- over a rules-based approach, particularly where loopholes are perceived such as in cross-border transactions. This creates a scenario where companies must comply (adapt) with the demands of a larger system rather than with individual countries/jurisdictions. | 10. Reduced Inequalities 16. Peace, justice and strong institutions |
| Decentralized institutions | While decision-making in decentralized systems can appear less efficient, they benefit from shorter feedback loops which enhance accountability and make the transfer of fragility harder. ¹ Note: The 169 targets associated with the SDGs repeatedly call for locally-appropriate action. | 16. Peace, justice and strong institutions |

¹ Taleb (2012) “Antifragile: Things That Gain From Disorder”

² Schiller & Hacker (2011) <https://insights.som.yale.edu/insights/is-economic-inequality-too-big-risk>

³ Chairman Mao’s “Four Pests Campaign” is a well know example of unanticipated inter-dependencies leading to systems failure.

Source: RobecoSAM

Conclusion

We have argued that systemic factors are increasingly being recognized and will be part of future sustainable portfolio construction. While the SDGs alone do not cover exposure to all systemic sustainability risks, they are a useful framework with which sustainable portfolio construction can be realized. In this context it is also important to note that the SDGs do not put a hierarchy on the goals, appreciating their complex inter-dependencies.²⁰

While the SDGs alone do not cover exposure to all systemic sustainability risks, they are a useful framework with which sustainable portfolio construction can be realized.

This means there is an opportunity for asset managers to take the initiative and align their portfolios with sustainable goals in a manner which is suitable to their clients.

Asset managers (on behalf of their clients) can thus be incentivized to manage their portfolios sustainably in a manner which does not take away from economic or societal interests elsewhere, present or future.

Moreover, company performance assessed holistically in this way safeguards portfolio returns by better synchronizing the short-term assets with the long-term liabilities of universal asset owners.

Questions or comments for the author can be sent to:
Yearbook@robecosam.com

²⁰ For example, the short-term realization of "Zero Hunger" may be in conflict with longer term goals of biodiversity on land and below water.

DISCLAIMER

Important Legal Information:

No Warranty: This publication is derived from sources believed to be accurate and reliable, but neither its accuracy nor completeness is guaranteed. The material and information in this publication are provided “as is” and without warranties of any kind, either expressed or implied. RobecoSAM AG and its related, affiliated and subsidiary companies disclaim all warranties, expressed or implied, including, but not limited to, implied warranties of merchantability and fitness for a particular purpose. Any opinions and views in this publication reflect the current judgment of the authors and may change without notice. It is each reader’s responsibility to evaluate the accuracy, completeness and usefulness of any opinions, advice, services or other information provided in this publication.

Limitation of Liability: All information contained in this publication is distributed with the understanding that the authors, publishers and distributors are not rendering legal, accounting or other professional advice or opinions on specific facts or matters and accordingly assume no liability whatsoever in connection with its use. In no event shall RobecoSAM AG and its related, affiliated and subsidiary companies be liable for any direct, indirect, special, incidental or consequential damages arising out of the use of any opinion or information expressly or implicitly contained in this publication.

Copyright: Unless otherwise noted, text, images and layout of this publication are the exclusive property of RobecoSAM AG and/or its related, affiliated and subsidiary companies and may not be copied or distributed, in whole or in part, without the express written consent of RobecoSAM AG or its related, affiliated and subsidiary companies.

No Offer: The information and opinions contained in this publication constitutes neither a solicitation, nor a recommendation, nor an offer to buy or sell investment instruments or other services, or to engage in any other kind of transaction. The information described in this publication is not directed to persons in any jurisdiction where the provision of such information would run counter to local laws and regulation.

© 2019 RobecoSAM AG

RobecoSAM AG

Josefstrasse 218

8005 Zurich, Switzerland

T +41 44 653 10 10, F +41 44 653 10 80

www.robecosam.com