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Review Paper

Challenges and opportunities to scale up sustainable finance after the COVID-19 crisis: Lessons and promising innovations from science and practice

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ABSTRACT

Transitioning to a sustainable future with inclusive, green economies and resilient ecosystems requires huge investments. The rescue packages imposed by the COVID-19 crisis make the pursuit of global sustainability goals even more dependent on urgent investment decisions to be taken by the public and private sector. This article examines some of the basic conditions for scaling up sustainable finance, focussing in particular on decision-support tools (DSTs) that guide investment decisions, such as metrics, rankings, ratings and standards. It identifies key DST strengths and weaknesses via a literature review of 100 publications containing expert opinions of sustainable finance scientists and professionals. This is complemented by a comparative analysis of three DSTs that represent the state of the art in their respective typologies: RobecoSAM’s Country Sustainability Rankings, IFC Performance Standards, and ETH’s Impact ÆSSURANCE Sovereign Ratings. The analysis reveals that: (i) experts express a strong, persistent criticism of current sustainability assessment practice, (ii) three main weaknesses characterize most DSTs: credibility deficit, narrow focus, and time-horizon limitations, and (iii) by using an integrated impact assessment framework, superior forecasting capacity and distributed verification techniques assisted by artificial intelligence, the Impact ÆSSURANCE rating model is a promising solution to scale up sustainable finance.

1. Introduction

Over the past few years, the international community adopted important policy frameworks to foster an inclusive green economy that acknowledges the value of ecosystem services, protects natural resources and promotes sustained societal wellbeing. Without finance in the tune of trillions of dollars per year, these objectives and commitments will remain on paper.

To amplify this challenge, the coronavirus pandemic and disease that originated in 2019 (COVID-19) has deflected the attention of governments away from long-term sustainability objectives by imposing unparalleled injections of resources to rescue national economies, with the risk of putting the achievement of the Sustainable Development Goals (SDG) many years behind schedule (UN, 2020). In this context, the survival of global environmental and socio-economic sustainability priorities becomes more than ever dependent on sustainability-oriented investments from the public and the private sector.

Promoting responsible or sustainable investments in the aftermath of the pandemic requires a progressive rather than defensive financial system. Key will be to embrace the best examples of responsible behaviour, circularity, and solidarity that emerged during the health crisis. In turn, this demands a profound rethinking of financial instruments, practices, metrics and tools in use prior to the crisis, which were evidently failing in their ability to mobilize sufficient public and private capital to accomplish the sustainability transition and convince stakeholders of progress made.

This article provides a review of some of the leading decision-support tools (DSTs) that are used to guide sustainable investment. Its main objective is to highlight the main issues and gaps in sustainability assessment practice, which can explain the challenges and failures observed prior to the COVID-19 crisis. This review contributes to the exploration of the role of finance in reviving sustainable development ambitions through an analysis of lessons learned from some of the most promising financial products, instruments, and metrics that have been
Secondly, land is a natural capital asset that is crucial to life as it sustains a set of socio-economic and environmental sustainability considerations. Ecosystem services (Giger et al., 2018). SLM has been described as a key factor and possible change conditions necessary to promote sustainable development (Foley et al., 2005). For these reasons, over the past thirty years of significant sustainability-oriented investment from the private and financial sector and that “projects are not reaching scale” (Coppus, 2019). Despite evidence of their high synergistic value and attractiveness to multiple funders (Quatrini and Crossman, 2018), land restoration projects have not succeeded to mobilize sufficient public finance, either (Chasek et al., 2019). At the same time, the costs of land degradation continue to rise, as illustrated in Box 2.

This funding gap is not due to the lack of suitable investment

**Box 2. Estimated financial impacts of land degradation and investment gaps**

The economic costs of land degradation are estimated by the UN at 490 billion US dollars/year. Annual investment needs for preserving or restoring terrestrial ecosystem services range between 150 and 440 billion US dollars (Arlaud et al., 2018), against an average annual funding flow of approx. 65 billion US dollars (UNCCD, 2015). More broadly, SDG implementation is estimated to require 5–7 trillion US dollars/year, of which with at least a half (i.e. 2.5 trillion US dollars/year) is chronically underfunded, including a gap of 1.4 trillion US dollars/year in developing countries (UNCTAD, 2014; Schmidt-Traub and Shah, 2015). Total official development aid (ODA) reached a peak of 147.5 billion US dollars in 2015, but registered a steady decline since then, ending up at 143.2 billion US dollars in 2018. Preliminary ODA figures for 2019 released by the Organization for Economic Co-operation and Development (OECD) show a 1.4 percent increase in real terms from 2018, but revealed a downward trend in relative terms, i.e. as a proportion of the Gross National Income (GNI) of all donor countries combined (OECD, 2020). This trend is likely to continue in 2020 due to the effects of the COVID-19 pandemic, which have already resulted in a slowdown of the global economy (IMF, 2020), and are diverting political attention and resources away from longer term sustainability goals and foreign aid, except for health-related rescue activities (OECD, 2020b).
vehicles. Since 2009, when the World Bank (WB) issued the first green labelled bond for a group of Swedish pension funds (Richardson and Reichalt, 2018), the market of sustainable investment products has considerably evolved, expanded and diversified with the introduction of new structured financial instruments. In addition to green bonds, the market now offers blue bonds, social bonds, sustainability bonds, catastrophe bonds, green loans, sustainability-linked loans, as well as debt/equity instruments (e.g. green convertible bonds), equity or multi-asset instruments (e.g. private equity funds, investment trusts, exchange traded funds), blended finance instruments (e.g. layered investment funds established as public–private partnerships), risk sharing instruments (e.g. guarantees, weather-indexed insurances, first loss capital) and other instruments that raise public and/or private sector capital for specific development purposes (e.g. debt for nature swaps, technical assistance facilities, crowdfunding schemes, etc.), often linked to the achievement of SDGs or other environmental or social commitments (e.g. Ferri and Acosta, 2019).

The spectrum of sustainability-oriented financial offerings is vast, and potentially accessible to many more investors than was the case just a few years ago (Ghosh, 2020). But while total assets under management in what is labelled “green”, “responsible” or “sustainable” have, reportedly, more than doubled since 2012 reaching 30.7 trillion US dollars in 2018 (IISD, 2020), investments intended to do good and produce positive impacts amounted to only 502 billion US dollars in the same year (Mudaliar and Dithrich, 2019). The growth of the industry has been driven by asset owners and asset managers (HBR, 2019; KPMG, 2020) mainly applying norms-based and negative screening approaches rather than more engaged, purpose-driven and pro-positive-impact investment strategies (GSIA, 2019). At the same time, conventional investment strategies and mainstream asset management approaches are pushing towards a 4°C global warming scenario according to several observers (Mudalier and Dithrich, 2019). The growth of the industry has been driven by asset owners and asset managers (HBR, 2019; KPMG, 2020) mainly applying norms-based and negative screening approaches rather than more engaged, purpose-driven and pro-positive-impact investment strategies (GSIA, 2019). At the same time, conventional investment strategies and mainstream asset management approaches are pushing towards a 4°C global warming scenario according to several observers (Mudalier and Dithrich, 2019).

There is preliminary evidence that COVID-19 has refocused the global attention on a number of sustainability and resilience aspects that were not considered financially material before the crisis. For many investors, this is creating more appetite for more engaged and positive, impact-driven investment strategies (Greenwich Associates, 2020) i.e. those that pursue objectives that go beyond avoiding harm, as portrayed towards the right side of the spectrum illustrated in Box 3.

Navigating the broad landscape of sustainable investment instruments demands not only a detailed knowledge of the underlying assets, experience in different asset classes, and familiarity with

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**Box 3. Sustainable investment strategies for different investor profiles**

| PROFILE | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------|---|---|---|---|---|---|---|
| Investment approach | Traditional | Responsible | Sustainable | Impact-driven | Philanthropy |
| Risk-return profile | Accept risk-adjusted financial returns | Accept below-market returns | Accept partial capital losses | Accept full loss of capital |
| Impact objectives | None: may have significant negative outcomes for people and the planet | Avoid harm: try to prevent significant effects on important negative outcomes for people and the planet | Benefit all stakeholders: generate important positive outcomes for various people and the planet | Contribute to solutions: have a material effect on important positive outcome(s) for underserved people or the planet |
| Sustainable investment strategies | None: limited or no regard to sustainable investments | Norms-based screening: exclusion of investable assets (e.g. companies and projects) with a business practice not in line with international norms | Negative screening: exclusion of certain sectors, practices or companies from the investable universe based on ESG criteria | ESG integration: explicit and systematic inclusion of ESG factors in financial analysis and investment decision making | Shareholder engagement: Active shareholder engagement with companies to influence their corporate ESG behaviour | Positive/best-in-class screening: including assets that have a superior ESG performance relative to their peers | Sustainability-themed investing: investing in themes and economic activities that are directly related to sustainability |
| | | | | | | Impact investing: investments with the intention to achieve positive impact | Community investing: investments in underserved and poor local communities |
| | | | | | | Venture philanthropy: first loss capital, technical assistance |
| | | | | | | Grantmaking, charitable |

Sources: adapted from KPMG, 2020; IISD, 2020; Nordea, 2020; UKNAB, 2017.
The main strengths and weaknesses of some of the most advanced DSTs in the sustainability assessment landscape (Rihoux and Ragin, 2009) have been reviewed. A wide range of sophisticated tools is available to investors. For practical purposes, the analysis included only a limited number of representative examples (Tilly, 1984), as described in Table 1, which are however illustrative of a much broader set of tools in their respective typology and class.

Specific criteria for selection of case-study DSTs included: (i) access by the author to methodological material and historical data, (ii) evidence or claims of comprehensive coverage by the DST of all sustainability dimensions, and/or (iii) evidence of widespread use (e.g. market share).

DST classes were defined in accordance with Douglas et al., 2017, which distinguish between “ratings”, (defined as “assessments of ESG performance […] based on a unique methodology” leading to comparisons using a common scale), “rankings” (broadly defined as comparisons between different items directly to one another (Krosnick et al., 2003) based on sustainability considerations), and “indices” (defined as “listings [or portfolio assessments] based on selected sustainability factors [to assess] investors’ exposure to sustainability profiles”), and “rules & safeguards” (broadly defined here as a set of mandatory or voluntary guidelines to prevent and mitigate harm, following a similar approach suggested by Horne, 2009).

Two out of the three DSTs included in the analysis focus specifically on the sovereign level, giving the particular relevance of country-level performance measures when dealing with sustainability issues of national or international concern (such as the COVID-19 crisis, for example). Focussing on the country-level was also a practical choice, giving the availability of comparable data at this level. More details about the selected DSTs are provided below.

RobecoSAM’s Country Sustainability Rankings have been jointly developed by Robeco – a Dutch investment management firm founded in 1929, owned by ORIX Corporation N.V., a subsidiary of ORIX Corporation – and RobecoSAM AG – an asset management company established in Zurich (Switzerland) in 1995 and focussing exclusively on sustainability investing. Their Country Sustainability Rankings are updated semi-annually and advertised as “a comprehensive framework for analyzing countries’ ESG performance”. The ranking methodology and historical rankings starting from June 2015 (archive data) were publicly available on RobecoSAM website (RobecoSAM, 2015). RobecoSAM’s Country Sustainability Rankings focus on aspects such as aging, competitiveness, and environmental risks to “offer a view into a country’s strengths and weaknesses”. According to RobecoSAM, these rankings provide investors with “a powerful tool to enhance risk analysis [… enabling them to make better decisions].” The company itself allegedly uses its rankings to inform its investments and “to determine country weights within the S&P ESG Sovereign Bond Index Family.”

Reportedly, RobecoSAM indices are considered among those with the highest quality and usefulness by both investors and experts (Sustainability, 2019, 2020).

The IFC Performance Standards on environmental and social sustainability have been developed by the International Financial Corporation (IFC) – the largest multilateral financial institution focussing on private sector development in developing countries – member of the World Bank Group. The IFC Performance Standards define the responsibilities of IFC clients in terms of environmental and social risk management. Specifically, the IFC Performance Standards give guidance to investee companies or project developers on how to identify such risks, establish mitigation measures, and reduce project impacts. They focus specifically on the following categories of sustainability performance: (PS1) Risk Management, (PS2) Labor, (PS3) Resource Efficiency, (PS4) Community, (PS5) Land Resettlement, (PS6) Biodiversity, (PS7) Indigenous People, and (PS8) Cultural Heritage. These categories have been gradually added to the initial version of the

Table 1
DSTs included in the analysis

| DST Type          | DST Class                  |
|-------------------|----------------------------|
| Sustainability Indices | Rankings                  |
| Voluntary Sustainability Standards | Rules, safeguards |
| ESG Performance Ratings | Assessments               |

(1) RobecoSAM AG (https://www.robecosam.com/en/key-strengths/country-sustainability-ranking.html); (2) IFC International Financial Corporation – World Bank Group (https://www.ifc.org/wps/wcm/connect/Topics_ExClntnt/IFC/External+Corporate+Site/Sustainability-At-IFC-Policies-Standards/Performance-Standards); (3) EIH Zurich, Transfer Office. (4) RobecoSAM Country Sustainability Rankings focus on aspects such as aging, competitiveness, and environmental risks to “offer a view into a country’s strengths and weaknesses”. (5) According to RobecoSAM, these rankings provide investors with “a powerful tool to enhance risk analysis [… enabling them to make better decisions].” The company itself allegedly uses its rankings to inform its investments and “to determine country weights within the S&P ESG Sovereign Bond Index Family.”

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Environmental and Social Review Procedure (ESRP) issued by the IFC in December 1998 as part of its pre-investment due diligence process. The current version of the IFC Performance Standards has been released in 2012. Methodological documentation, historical data, and background material (e.g. disclosure policy, safeguard policies, guidance notes, exclusion lists, Environment, Health, and Safety (EHS) guidelines, etc.), are made publicly available on the IFC website. Over time, the IFC Performance Standards have become a widely accepted reference framework, and are used as benchmark for managing environmental and social risks by a large number of financial institutions. Adherence to IFC Performance Standards is considered an “international good banking practice” (KFW, 2020). Together with the voluntary Equator Principles’, the IFC Performance Standards are currently applied by almost 90 banks and financial institutions worldwide, as well as 32 export credit agencies, the Multilateral Investment Guarantee Agency (MIGA), and the International Bank for Reconstruction and Development/International Development Association (IBRD/IDA) branch of the WB itself. It is estimated that in total, these institutions manage more than 80 percent of all project finance transactions worldwide.

Impact ÆSSURANCE is a proprietary rating model developed in 2018 at the Swiss Federal Institute of Technology of Zurich (ETH) and deployed via the ETH spin-off company AEDIS.Earth GmbH under an ETH license agreement. The rating model is designed to assess the impact worthiness of organizations and underlying assets (e.g. projects, landscapes, investment portfolios, etc.) by looking at the full spectrum of social, environmental and financial impacts – positive and negative – affecting the organization as well as the surrounding socio-economic and ecological system. The impact worthiness assessment is based on multi-criteria analyses of a range of performance and impact fundamentals that characterize the rated object, its dependencies, liabilities, and broader operational context. The model combines quantitative and qualitative metrics and uses composite indicators as proxies of environmental, social and financial performance and impact. Reference data are collected from multiple, authoritative sources. This includes, for instance, the WB development and governance indicators, Earth observation data, environmentally-extended input-output tables (e.g. Koellner et al., 2007), supply chain data, and ESG data disclosures. The computational structure, analytical methodology, and historical data-sets are accessible by the author, who has been involved in the development of the Impact ÆSSURANCE rating model since its inception (Crossman et al., 2017).

2.2. Literature review

The abovementioned comparative analysis was complemented by a systematic review of scientific and grey literature, structured according to the works of Russell et al. (2009), Seuring (2013) and Jabbour (2013), adapted to this research. The review aimed to collect, from a broad and diverse set of sources, recent evaluations of sustainable finance DSTs as well as independent reviews of sustainability assessment practice, and distil the main lessons from their findings. To this end, different types of knowledge resources were identified using a snowballing technique (Wohlin, 2014) and screened against exclusion criteria. As a result, a total of 100 knowledge resources were retained for the analysis, including 33 scientific reviews, 29 reports, 27 articles, 9 databases, and 2 seminars/webinars. Most of them (40) were academic studies published in peer reviewed scientific journals. Another 10 were reports published by governmental or intergovernmental regulators, including the European Securities and Markets Authority (ESMA). The rest were publications collected from institutional investors or investment advisors (19), credit rating agencies or ESG assessment entities (13), private sector companies and associations (9), as well as non-governmental organizations and specialized press (9). The vast majority (85 percent) of the resources included in the review were published over the past 10 years (2011–2020). Of these, 74 percent (63) were published in the past five years (2016–2020). The full list of documents reviewed can be found in Table A of the Supplementary Material annexed to this article (Appendix A). From the abovementioned material, statements that express value judgments or opinions in relation to specific aspects or characteristics of DSTs were extracted. For each of these aspects, statements were categorized as positive, negative or neutral. This screening process also allowed to characterize the overall sentiment of each publication.

3. Results

3.1. Complementarities between decision-support tools are understudied

While each DST class (i.e. rankings, ratings, rules & safeguards) was addressed by at least 40 percent of the resources collected, only 28 resources discussed at least two DST classes despite their complementarities. Within these classes, 46 percent of all resources were found to focus on sustainability indices, including related assessment models and metrics. Another 42 percent focused on ESG performance assessments or ratings, and related methodological approaches and challenges. Lastly, 29 percent of all resources focused on Voluntary Sustainability Standards (VSS) and industry-level standards, including good and bad practices, some of which presenting results from application. Only 4 resources covered the three DST types simultaneously. The overlaps are illustrated in Fig. 1.

It should be noted that the presence or absence of overlaps in itself is not necessarily indicative of more or less comprehensive analysis, since a publication can go into great depth on a particular topic rather than discussing multiple topics. However, the limited number of studies focussing simultaneously on different types of DSTs indicates that the

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16 https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/safeguards-pre2006.
17 https://equator-principles.com/.
18 https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/company-resources/sustainable-finance/equator+principles+financial+institutions.
19 https://firstforsustainability.org/sustainability/external-initiatives/sustainability-frameworks/equator-principles/.
20 https://ethz.ch/.
21 https://www.aedis.earth/.
22 ETH Zurich, Transfer Office. Assignment of Employee Invention (no. 2018-208). 11 April 2019.
full potential of harnessing complementary characteristics of different DSTs may be relatively unknown or underutilized, as also emerges from a variety of investor surveys (e.g. SustainAbility, 2014, 2019, 2020). This could be an interesting topic for further research.

3.2. Strong, persistent criticism of current sustainability assessment practice

Despite acknowledging that sustainability-oriented DSTs have made significant improvements in the past 10 years, as testified by several surveys of investors and experts23 (e.g. GlobeScan, 2013; Amel-Zadeh and Serafelm, 2018; SustainAbility, 2019, 2020), the literature reveals an overall strong and persistent criticism throughout the period under review. This criticism refers not only to aspects such as “reliability”, “timeliness”, or “systemic bias” that have been extensively discussed by scholars and practitioners for some time already (e.g. Chatterji et al., 2016; Eccles et al., 2012; ImpactAssets, 2015a), but also to other, less known aspects that indicate a much deeper and more acute credibility deficit than what has been documented already (e.g. Diouf and Boiral, 2017; SustainAbility, 2014; SustainAbility, 2019; SustainAbility, 2020). Notably, 28 percent of the literature reviewed portrayed an overall negative picture of sustainable assessment practice, with reference to specific ratings, rankings, standards or safeguards. This percentage increases significantly (55 percent) when removing from the analysis those publications issued by the rating agencies themselves, or by business corporations, advisors, standard setting organizations and associations with declared or potential vested interests. To illustrate this sentiment, Table 2 provides a list of some of the statements contained in the reviewed material.

Table 2 provides a list of some of the statements contained in the reviewed material.

These statements can be grouped into three broad topic clusters:

- Credibility: refers to the capacity of the evaluated sustainable assessment instruments to serve as reliable DSTs to inform sustainability-oriented investment decisions;
- Scope: refers to the capacity of the evaluated sustainable assessment instruments to address and adequately measure relevant interdependencies, liabilities and trade-offs that are inherent to complex socio-economic and ecological systems, and/or related impact distribution issues (e.g. across different spatial scales or stakeholders);
- Time: refers to the capacity of the evaluated sustainable assessment instruments to adequately take into account different time horizons (e.g. acceptable investment length for stakeholders with different risk profiles), and integrate time-dependent variables such as inter-generational values, life-cycle considerations and/or the causality between immediate results (outputs), behavioural changes (outcomes), and broader societal, economic or environmental effects (impacts).

The most recurring aspects that stand out more prominently – either positively or negatively – among the various characteristics discussed in the reviewed publications are illustrated in Fig. 2.

While only 2 percent of all publications expressed a negative judgement on all of the aspects illustrated in Fig. 2, none contained a positive judgement across the board. All in all, 45 percent of all reviewed publications expressed a negative judgement on at least two aspects (chart 2a). When removing from the analysis those publications with a declared or potential vested interest (chart 2b), this percentage increases to 65 percent. For the rest, the patterns emerging from the analysis of the two publication subsets remain very similar, with negative opinions prevailing for most of the aspects assessed. One notable difference is that the more independent set of publications (N = 58) shows a prevalent negative opinion also about the way in which DSTs interpret and/or

23 https://sustainability.com/rate-the-raters/.

### Table 2

| TOPIC | FOCUS | STATEMENT | REFERENCE |
|-------|-------|-----------|-----------|
| Credibility | Indices | “None of the existing benchmarks includes both a multi-system scope of companies and is independent from the industry” | WBA 2020 |
| Credibility | ESG, Indices | “We hope non-financial disclosure will become mandatory after the COVID-19 crisis” | Reuters 2020 |
| Credibility | ESG, VSS, Indices | “Long-time impact investment voices also worry that charlatans are moving in, offering products with questionable impact credentials” | The Economist 2020 |
| Credibility | ESG, Indices | “Credit ratings are assessments of creditworthiness of an issuer or entity, they are not sustainability assessments” | ESMA 2019b |
| Credibility | ESG | “Corporations are no longer the sole authors of their own narratives, and therefore, self-reported and unaudited information has severe limitations” | Chang et al. 2019 |
| Credibility | ESG, VSS, Indices | “Investors should be aware that about 20 percent of SPSRFs [Self-proclaimed socially responsible funds] don’t live up to their self-proclamation” | Tornero 2019 |
| Credibility | ESG, Indices | “It is important to introduce in the MiFID II Delegated Regulation a clear reference to the need for firms to identify conflicts of interest” | ESMA 2019a |
| Credibility | ESG | “If it hasn’t already, fund manager greenwashing will continue to erode investor trust” | Krosinsky 2019 |
| Credibility | VSS | “The outcome of the review determined that there is a need to revise the Credibility Principles” | ISEAL 2019 |
| Credibility | ESG | “Companies are left to determine for themselves which ESG factors are material to their business performance and what information to disclose to investors” | SSGA 2019 |
| Credibility | ESG | “S&P Global Ratings does not perform an audit and undertaken no duty of due diligence or independent verification of any information it receives” | SAP 2019 |
| Credibility | ESG, VSS, Indices | “ESG scores from different providers do not measure exactly the same thing” | Barclays 2018 |
| Credibility | VSS, Indices | “Only through access to credible and independent information can less-developed country stakeholders build strategies to benefit from Voluntary Sustainability Standards” | Potts 2018 |
| Credibility | VSS | “The mainstreaming of certification to date can largely be explained by buyers’ use of certifications as a cost-effective traceability and reputation management tool” | Grabs 2018 |
| Credibility | VSS | “Because of its nature the EPI&L cannot achieve the accuracy of financial results nor can it be subjected to financial audits” | Kering 2018 |
| Credibility | VSS | “Rather than being an accelerator for positive change, this ‘flood’ of certification creates confusion for consumers and the industry is

(continued on next page)
### Table 2 (continued)

| TOPIC | FOCUS | STATEMENT | REFERENCE |
|-------|-------|-----------|-----------|
| Credibility | VSS | “The ability to make claims is [should be] underpinned by an appropriately robust assurance programme” | ISEAL 2018a |
| Credibility | ESG | “The [ESG] ratings themselves are actually insufficient for the current purposes” | Cash 2018 |
| Credibility | ESG | “The correlation between the two major rating systems, Sustainalytics and MSCI, is just 0.32” | Krosinsky 2018 |
| Credibility | ESG, Indices | “Lack of consistency and transparency from these rating agencies currently exists, impeding greater efficiency in the capital markets” | Lin et al. 2017 |
| Credibility | ESG | “A wide range of approaches are called SRI or ESG, and it is not clear what exactly is meant by that label” | Schramade 2016 |
| Credibility | Indices | “The majority of reporting being done at this time is self-reported” | ImpactAssets, 2015b |
| Credibility | VSS | “Very limited credible evidence has been found on regional level impacts of certification initiatives” | Waarts and Judge, 2013 |
| Credibility | ESG | “[G] Firms often have different ratings for the same country” | The Economist 2013 |
| Credibility | ESG, Indices | “The conflict of interest issue is not unique to the United States” | Eccles et al. 2012 |
| Credibility | VSS, Indices | “As with financial reporting, there is the demand for assurance regarding the sustainability of companies” | Muller 2011 |
| Credibility | Indices | “Current regulations in the credit rating market have not gone far enough” | OECD 2010 |
| Credibility | Indices | “The first binding regulations deriving from the EU Action Plan on Sustainable Finance demand that financial institutions adopt a series of policies, management processes, marketing materials, and disclosure processes by 2021” | ECOFACT 1998 |
| Scope | ESG, Indices | “To be sustainable, transition-related investments must be consistent with emissions-reduction pathways throughout their entire economic life” | TEG 2020 |
| Scope | Indices | “The current level of environmental impact reporting is basic and limited, in contrast with abundant and detailed guidance on appropriate metrics, and therefore lower risk, and consequently higher risk-adjusted returns” | Negra et al. 2019 |
| Scope | ESG | “An investment product’s sustainability hinges on two main factors: the issuer and the underlying” | Voestobel 2019 |
| Scope | ESG | “Fitch states that these scores do not reflect judgments as to whether an entity has positive or negative ESG practices” | Huber and Zilberberg 2019 |
| Scope | Indices | “Decision-making should be done on scales comparable with the ecosystem service. […] The use and provision of ecosystem services varies over time as well as space” | Congreve and Cross, 2019 |
| Scope | VSS | “Shortcomings concerning market access barriers that are brought to light by the utilization of VSS must not be overlooked” | UNFSS 2018 |
| Scope | VSS | “There are no basic methodologies, certifications or standards to identify and assess impact investing funds, or to distinguish” | PRI 2018 |

### Table 2 (continued)

| TOPIC | FOCUS | STATEMENT | REFERENCE |
|-------|-------|-----------|-----------|
| Credibility | VSS | “ESG investing from impact investing” | ISEAL 2018b |
| Credibility | ESG | “While the promise of ‘scaling impacts’ is enticing, how to achieve this in a credible and transparent way through landscape and jurisdictional initiatives remains an open question” | Hofer 2017 |
| Credibility | ESG, Indices | “The more superficial approach towards standardization of industry-building organizations such as the GIIN and the B Lab […] ultimately results in difficulties to compare impact investments” | Galafassi et al. 2017 |
| Credibility | ESG | “What gets measured and how it gets measured, matters. […] ESG data must improve if it is to meet its potential” | Douglas et al. 2017 |
| Credibility | VSS | “ESG factors bring lower volatility and therefore lower risk, and consequently higher risk-adjusted returns” | Ashwin Kumar et al. 2016 |
| Credibility | Indices | “Impacts need to be considered not only at the field level but also at the landscape, regional and global levels” | ISD 2014 |
| Credibility | Indices | “There is a ‘distributive deficit’ in the policies applied to environmentally significant decision making” | Beretta 2012 |
| Credibility | Indices | “Current assessment processes, particularly for country ratings, is to be reformed” | WEED 2012 |
| Credibility | Indices | “The aim of the future work is the development of a proposal for a rating system that includes social, environmental and corporate governance” | Escrig-Olmedo et al. 2010 |
| Scope | Indices | “None of the metrics and tools discussed in this paper seems to be capable of assessing the progress towards sustainability in a holistic manner. […] Reductionism has been criticized in the past as inadequate for sustainability policy making” | Gasparatos et al. 2008 |
| Scope | ESG, Indices | “[ESG ratings] are a rearview mirror — they only tell you the past. […] We would love to see more frequent ratings (cycle and updates)” | SustainAbility 2020 |
| Scope | ESG | “The success dimension behavioral effectiveness is poorly addressed in the scientific discussion” | Tröster and Hiete 2018 |
| Scope | ESG | “We consider the paucity of time series data a major gap in understanding the processes and effects of certification” | 3Keel and U. Oxford 2018 |
| Scope | ESG | “Some data are available only annually, and there can be delays with obtaining this (dated) data. […] ‘Technological advances have the potential to make analysis and data available in near real time unlike most current raters and rankers’” | Hawley 2017 |
| Scope | VSS | “One important limitation of the GEP Measurement Framework is the lack of data for a large group of countries and for a long period of” | PAGE 2017 |
integrate materiality aspects.

Aspects such as transparency (e.g. of the assessment models) and quality of outputs (e.g. of input data and metrics) have clearly permeated the mainstream debate over the past few years (see e.g. Delmas and Blass, 2010), as testified by the fact that they are present in the majority of publications. More than one third of reviews report remarkable improvements on these topics. On the other hand, 44 percent of all publications still question the reliability of existing tools, often providing evidence of conflicts of interest and/or lack of credible, independent verification processes. Furthermore, reviewers are pinpointing other aspects that are perhaps less visible or detectable from the rather succinct methodological descriptions that are typically disclosed by rating, ranking, or standard-setting agencies, but which could severely impair their ability to deliver, particularly in terms of comprehensive non-financial impact. This includes the integration of trade-offs and externalities (e.g. between ecosystem services), off-site effects (e.g. greenhouse gas emissions, broader socio-economic and environmental footprints and liabilities, etc.), and output-outcome-impact causality at different spatial and temporal scales. Lastly, a growing number of recent publications have started to mention more or less explicitly the advantages of harnessing the power of new technologies, such as advanced data analytics, machine learning, and Artificial Intelligence (AI), to improve the analytical capacity of DSTs, mainly in a forward-looking perspective.

3.3. Comparative analyses reveals more weaknesses, but also promising solutions

3.3.1. The IFC Performance Standards

Despite having become a reference benchmark for the financial industry, the IFC Performance Standards on environmental and social sustainability fail to address all sustainability dimensions with an equal weight. Ecosystem services, for instance, feature in only two out of the eight Performance Standards, namely PS4 “Community Health, Safety, and Security” and PS6 “Biodiversity Conservation and Sustainable Management of Living Natural Resources”. Ecosystem services are not mentioned at all within PS3 “Resource Efficiency and Pollution Prevention”, PS7 “Indigenous Peoples’, or PS8 “Cultural Heritage” (IFC, 2012).

As regards, PS4 and PS6, the IFC employs a rather restrictive interpretation of ecosystem services, mainly focussing on provisioning ones, and to a lesser extent, regulatory services – i.e. two out of the broader set of ecosystem services and “nature’s contributions to people” recognized by the international scientific community (MA, 2005; Haines-Young and Potschin, 2012; Díaz et al., 2018). In other words, the IFC recommends to prioritize financial performance over environmental and social performance when managing sustainability risks.

![Fig. 2. Critical aspects of sustainable finance DSTs found in the literature. This chart illustrates the most recurring DST aspects criticised in the literature reviewed (x axis). Aspects related to the “credibility” cluster are underlined in black, those related to the “scope” cluster are underlined in blue, and those related to the “time” cluster are underlined in red. Stacked columns show the number of publications providing a positive or negative evaluation for each aspect. The upper part (chart 2a) shows the distribution of opinions across the entire set of publications assessed (N = 100). The lower part (chart 2b) shows the distribution resulting from the subset of publications without any declared or potential vested interest (N = 58). While 75 percent of the literature evaluated more than one aspect, overlaps between the aspects addressed are not shown in the chart.](chart.png)
Furthermore, the IFC Performance Standards do not give any guidance on how to quantify or assess ecosystem services, nor the positive or negative impacts that can be generated by the project or investee thereon. This crucial assessment is left to the discretion of the “client,” i.e. “the party responsible for implementing and operating the project” (IFC, 2012), who is effectively allowed to decide how best to reduce, compensate or offset its self-declared impacts. Lastly, with the only exception of PS6, the IFC Performance Standards do not demand any independent verification, thus exposing those who claim compliance with the standards – as well as their funders and investors – to potential risks of collateral damage and reputational effects, as emphasized in the literature (Table 2, Diouf and Boiral, 2017).

For these and other reasons, over the years several organizations have expressed concerns with the fragmented approach and limited effectiveness of the IFC Performance Standards in securing sustainability outcomes. These concerns are often substantiated by examples of failure or misapplication leading to environmental and social damage (e.g. EIPR, 2014; Euromoney, 2019). For example, with reference to an earlier version of the IFC Performance Standards, in 2010 the World Resources Institute (WRI) published the following statement:

“An ongoing criticism of the IFC Performance Standards is that many clients reduce them to a checklist of the minimal activities necessary to receive financing. IFC, in turn, lacks effective ways to ensure that these activities lead to actual, improved environmental and social performance on the ground.” (WRI, 2010).

The improvements introduced by the IFC in the newer versions of the Performance Standards have not solved these issues, reportedly. To the point that in 2016, the Overseas Development Institute (ODI) called for a “deep rethink” of the environmental and social safeguard approach adopted by major multilateral development banks (MDBs), adding that:

“Performance standards mainly serve as a more efficient way of moving IFC projects ahead compared to safeguard processes of other MDBs, while still protecting IFC from criticism and leaving country systems undisturbed” (Humphrey, 2016).

3.3.2. The impact ÆSSURANCE rating model

By contrast, the Impact ÆSSURANCE rating model uses the full spectrum of ecosystem services as defined in the Millennium Ecosystem Assessment of the UN (MA, 2005), i.e. provisioning, regulating, cultural, and supporting (MA, 2005; Haines-Young and Potschin, 2012). It also embraces the inter-generational vision of sustainable development enshrined in the Brundtland Report of the World Commission on Environment and Development (Brundtland et al., 1987), as well as the double and dynamic materiality perspectives introduced more recently by the EU (NFRD) and the World Economic Forum (WEF, 2020), in line with the “dual focus” recommendations of the Task Force on Climate-related Financial Disclosures.

The Impact ÆSSURANCE model considers both what is material for the entity being rated (e.g. a financial institution, a business corporation, a sovereign state, a local authority, a landowner, etc.) - i.e. “outside-in” impacts - and what is material for the stakeholders and ecosystems impacted by the entity itself - i.e. “inside-out” impacts (double materiality), as well as what can become financially material in the foreseeable future (dynamic materiality). To this end, it integrates environmental and social life-cycle analysis considerations, using environmentally extended input-output tables, supply chain data, and resource consumption data, among others. The computational structure of the model is scalable, allowing the assessment of different types of rating objects (e.g. balance sheets, investment portfolios, underlying assets, activity-level operations, etc.) at different geographical scales. It also foresees the application of distributed ledger technology (DLT) for peer-to-peer stakeholder-level inputs and verification of disclosures. As such, it claims to have launched the next generation of sustainability assessment and rating models, departing from conventional rating practice.  

The ratings generated by the Impact ÆSSURANCE model consist of three scores, one for each sustainability dimension: economic, environmental, and social (Brundtland et al., 1987). The social score encompasses the governance dimension, which is intended in its broad connotation to also include ethical, reputational, transparency, accountability, effectiveness, efficiency, responsiveness, equity, participation, and inclusiveness aspects. Scores are expressed in small or capital letters ranging from a triple E (i.e. EEE) as the top impact worthiness score, to a triple H (i.e. HHH) as the lowest impact worthiness score. A background colour scheme is applied to each score to guide sustainability-oriented investment decisions, ad interim to monitor positive or negative effects generated during implementation, and ex post to assess actual impacts or verify sustainability claims.

### 3.3.3. Significant differences in predictive capacities

When comparing Impact ÆSSURANCE Sovereign Ratings with conventional DSTs, some important differences can be found in terms of predictive capacity, i.e. forecasting accuracy and responsiveness to changes in the underlying impact fundamentals. By looking at a time series of real-world country-level data publicly available for the period 2015 - 2019, this research reveals that Impact ÆSSURANCE ratings are more responsive than other DSTs to changes in factors that affect sustainability performance. As an example, Fig. 3 summarizes the main findings from a comparison between RobecoSAM’s Country Sustainability Rankings and Impact ÆSSURANCE Sovereign Ratings for countries affected by important sustainability shocks in the past five years, namely Australia (which lost nearly 19 million hectares during the Black summer of 2019 due to large-scale uncontrolled bushfires25), France (hit by a nationwide social protest movement called Yellow vests26).

| Score | Description | Symbol | Projections |
|-------|-------------|--------|-------------|
| Excellent | Highest impact worthiness supported by many excellent indicators of performance and impact. High probability of delivering expected results under normal conditions | F | ++ |
| Fair | Moderate impact worthiness supported by a higher number of good indicators of performance and impact than bad indicators. Risk few unsatisfactory results under normal conditions | F | ++ |
| Grievous | Limited impact worthiness due to fewer good indicators of performance and impact than bad indicators. High risk of unsatisfactory results under normal conditions | G | ++ |
| Hazardous | Lowest impact worthiness due to numerous indicators of bad performance and impact. Unlikely to deliver expected results under normal conditions | H | ++ |

24 https://www.list.lu/en/event/so-you-think-you-are-a-green-investor/.
25 https://www.en.wikipedia.org/wiki/2019%E2%80%99s_Bushfire_season.
26 https://www.en.wikipedia.org/wiki/Yellow_vests_movement.
started in late 2018 and continued throughout 2019), Germany (whose car industry’s credibility was severely shaken by the Dieselgate emission scandal that hit the Volkswagen group following the violations notified by the US Environment Protection Agency in late 2015), Switzerland (where pro-environment political parties registered a rather unexpected increase in parliamentary seats at the October 2019 elections, in what has been termed a Green wave), and the UK (exposed to the uncertainties of the Brexit process since the British referendum on withdrawal from the EU held in June 2016).

Included in chart 3b are the final, three-letter ratings generated by the Impact ÆSSURANCE model at the beginning (2015) and the end (2019) of the study period. For each sovereign rating, coloured backgrounds are displayed only for the rating dimension that has been mostly affected by the sustainability shock, i.e. the economic (first letter), the environmental (second letter), or the social dimension (third letter). The evolution of these scores throughout the study period has been well predicted by the Impact ÆSSURANCE model with a 95 percent confidence level (chart 3b). This was clearly not the case with the RobecoSAM Country Sustainability Rankings (chart 3a).

4. Discussion

This review was designed to increase our understanding of some of
Box 4. The LDN Fund Environmental and Social Management System (ESMS)

The LDN Fund Environmental and Social Management System (ESMS) defines the principles, policies, safeguards and standards that the fund commits to upholding in the investment process. The ESMS also describes the implementation framework and due diligence procedures that will be followed to ensure compliance and adherence to the positive impact objectives of the fund. The ESMS was developed as a result of a public consultation involving international organisations, civil society organisations and potential investors that took place between October and November 2016 (UNCCD, 2016). As disclosed in August 2017 (Mirova, 2017), the ESMS consists of the following components:

- **Environmental & Social Standards (ESS)**, including seven IFC Performance Standards (PS2-PS8), plus an additional ad hoc standard on Land Tenure developed specifically to protect land tenure rights of project-affected parties. This latter foresees the application of the principle of Free Prior and Informed Consent (FPIC) and the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries, and Forests related to land tenure and land use (FAO, 2014);
- **Assessment and Monitoring Procedures (AMP)** to screen potential investment opportunities against possible risks, track actual benefits and impacts generated during implementation (Mirova, 2017, Chancellor, 2019);
- **Complaints and Compliance Mechanism (CCM)**, expected to operate as a redress mechanism for project-affected populations (Mirova, 2017, EIB, 2018, Chancellor, 2019).

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the mechanisms that could potentially unlock more sustainable finance from public and private investors in the wake of the COVID-19 global crisis. Specifically, it aimed to assess the effectiveness of three typologies of DSTs that are used by investors and sustainable finance professionals, namely rankings, safeguards, and ratings – focussing on three representative examples: IFC Performance Standards, RobecoSAM Country Sustainability Rankings, and Impact ASSURANCE Sovereign Ratings.

At the outset, it should be noted that beyond these three DST classes, a broader set of instruments are also used to guide, inform, prescribe or even ban certain funding and investment decisions. From a governance and institutional perspective, for example, a broad distinction can be made between regulatory instruments (also known in the literature as “command and control” mechanisms), incentive instruments (e.g. payments for ecosystem services) (Hahn et al., 2015; Davies et al., 2018; Wunder et al., 2018), and information instruments (Vedung, 2010). This latter in itself is a vast category, including qualitative, quantitative, and multi-criteria appraisal tools (e.g. for cost-benefit analysis, life-cycle assessment, ecosystem services valuation, etc.), reference frameworks (e.g. EU taxonomy for sustainable activities, natural capital accounting, ISO standards, etc.) and supporting technology (e.g. business intelligence software, remote sensing, etc.), which find application in a variety of sustainability domains (see e.g. Babashamsi et al., 2016; Ekardt et al., 2020). Although this broader set of instruments was outside the scope of this analysis, its influence on sustainable finance flows may deserve additional research.

The literature reviewed reveals a variety of aspects that can explain the reasons why sustainability-oriented DSTs are considered more or less effective or reliable by scientists, investors and experts. These aspects mainly revolve around issues of credibility deficit, narrow focus (i.e. lack of adequate breadth of scope), and time-horizon limitations. A more in-depth comparative analysis of representative DSTs further highlights some distinctive features that signal their differential capacity to direct finance towards sustainability objectives, such as the different integration of material issues, life-cycle dynamics, and ecosystem services in their respective conceptual frameworks and analytical methodologies.

The IFC Performance Standards, for example, use a too narrow definition of ecosystem services, largely focussing on provisioning services alone. Investees are given ample room for interpretation of what is or is not material, which can result in high degrees of self-complacency when making sustainability claims. Reportedly, this situation has led to considerable environmental, social and reputational damage (WRL, 2010; EIPR, 2014; Euromoney, 2019). Paradoxically, it appears that compliance to IFC Performance Standards does not necessarily guarantee sufficient safeguard against those very risks that they are expected to manage, as observed by authoritative sources, such as ODI (Humphrey, 2016).

Having been designed for preventing or mitigating environmental and social damage, the IFC Performance Standards cannot be used as mechanisms for incentivizing virtuous, doing good behaviour, either. At best, they can promote voluntary compliance with a set of minimum conditions on the seven topics they focus on. In other words, the IFC Performance Standards cannot adequately serve the purpose of driving positive impact, as frequently reported in the literature (e.g. Chang et al., 2019; Krosinsky, 2019; PRI, 2018; Schramade, 2016, etc.). Therefore, their prominent use as the bedrock of sustainable investment strategies by a large number of banks, investment insurance institutions and credit enhancement facilities is bizarre.

Often, the IFC Performance Standards are complemented with additional safeguards, monitoring procedures, assurance systems, and compliance mechanisms - which further signal their limitations. In the case of the LDN Fund, for instance, the IFC Performance Standards are part of a broader Environmental and Social Management System (ESMS) that includes other components, as described in Box 4.

The COVID-19 crisis has demonstrated in the most dramatic way the full spectrum and magnitude of material factors that have been overly neglected in sustainability assessment practice and mainstream market transactions (OECD, 2020b). The crisis urges all investors and sustainable finance professionals to re-prioritize engagement, combat precariously and inequalities, promote long-term environmental resilience, and employ all the means at their disposal to strengthen preparedness against the climate emergency and other economic and social threats (PRI, 2020). If sustainability is taken seriously by investors, asset managers and financial intermediaries, and if investment strategies are to be truly informed by ESG considerations, then using DSTs that integrate all available knowledge of risks and impacts becomes inevitable, if not quintessential (Schramade, 2016; Amel-Zadeh and Serateim, 2018).

In this connection, one interesting aspect that stands out from this research in terms of prospects for improving the effectiveness of sustainability-oriented DSTs is the use of AI-assisted technology. AI enables near real-time data collection and processing of big data, including for example social media feeds, that can complement, though not fully substitute, financial and non-financial disclosure obligations.

According to several analysts, the disruptive potential of AI can enable the evolution from the conventional data push (e.g. driven by producers in pursuit of sustainability claims) to a data pull approach (i.e. driven by consumers and other stakeholders) in sustainability disclosure (Reuters, 2020).

A wide array of DSTs and business intelligence applications are used by investors and sustainable finance professionals (SustainAbility,
The impact assessment model fares much better than RobecoSAM’s Country Sustainability Rankings in terms of predictive capacity. The company admits to “recalculate all previous scores” at each semi-annual release of its rankings, in order to “provide a more accurate picture of real progress or regress and thus facilitate historical comparisons” (RobecoSAM, 2018). By contrast, the sovereign ratings generated by the Impact Assessment model stayed within the confidence band throughout the study period for all five countries, showing a better response to sustainability shocks and higher forecasting accuracy. The Impact Assessment colour coding applied to each sustainability score on the basis of historical trends (see Table 3) confirms the robustness of its projections and further strengthens its predictive value.

These findings corroborate earlier evidence of lack of correlation and poor sustainability scoring by leading ESG rating agencies (IMF, 2019; The Economist, 2019). The fact that conventional ESG ratings show little sensitivity and responsiveness to changes in the underlying environmental and social impact fundamentals, is symptomatic of their limited usefulness and effectiveness in terms of driving sustainable investment and portfolio management decisions (SustainAbility, 2020).

It should be noted that the Impact Assessment model uses hundreds of indicators, as well as 27 composite indices, 9 performance and impact rating dimensions, and covers the full spectrum of ecosystem services typologies: provisioning, regulating, cultural, and supporting. RobecoSAM’s Country Sustainability Rankings, on the other hand, use 40 indicators in total. Seven of these indicators cover environmental aspects, 16 indicators cover social aspects, and 17 indicators cover governance aspects. In the final country-level score, expressed as a numerical index ranging from 0 to 10, they are assigned an arbitrary weight of 20 percent, 30 percent, and 50 percent, respectively (RobecoSAM, 2019). Furthermore, no reference to ecosystem services can be found in the Country Sustainability Ranking methodology (RobecoSAM, 2015).

When it is not due to scope or time-horizon limitations of the analytical models, or to bottlenecks in data processing capacity, the comparatively lower responsiveness of conventional ratings to sustainability-relevant material issues appears to be a deliberate choice made by the rating agencies themselves. In response to the well-known dilemma between scoring accuracy and stability, rating agencies usually prefer “stability” over “volatility”, simply because portfolio adjustments “imply costs” (Cantor and Mann, 2007; SRA, 2020). Evidently, not all costs are taken into consideration.

5. Conclusions

The notorious “grow now and clean up later” development paradigm (Stockhammer et al., 1997) has led to an increasing degradation of natural resources and ecological systems, resulting in huge and often irreversible losses in terms of natural capital, biodiversity and ecosystem services. The economic costs of land degradation alone, amounting to 490 billion US dollars/year according to the UN (UNCCD, 2015), are illustrative of the broader losses - or “costs of inaction” (Kendall et al., 1996) – in terms of ecosystem services. Long before the pandemic, it was estimated that these costs ranged between 10 and 17 percent of global GDP (Costanza et al., 2014; ELD, 2015). These figures are likely to be much higher today.

Transitioning towards a greener and more resilient economy requires massive public and private investments (Rhode, 2017). Examples of instruments for scaling up sustainability efforts (Mills, 2008), raising sustainable finance, and generating positive impacts (Scholens, 2006) exist at all levels. These include structured financial products such as green-labelled bonds, and special-purpose blended finance vehicles such as the LDN Fund (Quatrini, 2018), to name but a few. However, these are niche products that move relatively low volumes of financial flows, while traditional financial products and larger investment portfolios contribute directly or indirectly to natural resource depletion, environmental degradation, and a 4 °C global warming scenario (see e.g. _
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Schroders, 2020). This article argues that the sustainability transition is hampered by the limited effectiveness of conventional, sustainability-labelled DSTs in directing finance towards doing good. A literature review of 100 specialist resources, mostly published in the past 10 years, reveals a strong and persistent criticism of current sustainability assessment practice by scientists, investors, and regulators. It also reveals important weaknesses, particularly in terms of credibility, scope, and time-horizon limitations, in those DSTs that are broadly considered as “best in class”. This includes the IFC Performance Standards and RobecoSAM’s Country Sustainability Rankings, which are widely used as reference frameworks by institutional investors and financial intermediaries, globally (KFW, 2020; Sustainability, 2019, 2020).

A comparative analysis between these two DSTs and the emerging Impact AÆSSURANCE shows several aspects where the next generation of sustainability assessments can make a difference. Some of these aspects have been known for quite some time, as testified by the literature review. Others, such as integration of the double and dynamic materiality concepts, use of AI technology, and predictive capacity, are less known. The Impact AÆSSURANCE rating model has been designed to specifically address the main weaknesses and gaps found in current sustainable assessment practice. It has benefited from the know-how and experience of sustainable finance professionals, sustainability experts, and natural and social scientists. If combined with coherent policies to level the playing field by disincentivizing unsustainable consumption and production, the Impact AÆSSURANCE model can be used to monitor, accelerate, and scale up the transition to a sustainable future.

The prospects for this body of evidence to trigger a change in the status quo have become stronger now, at a time when the COVID-19 crisis is forcing a profound reflection about the strengths and weaknesses of the global financial system. In the wake of the pandemic, this research emphasizes the urgent need for sustainability assessment practitioners to (i) measure more accurately and comprehensively all relevant material risks, dependencies, liabilities, and trade-offs in the short, medium and long-term, and (ii) harness the power of AI to increase reliability, readiness and responsiveness to predictable and less predictable events that affect the sustainability transition.

The famous quotation ascribed to Albert Einstein “insanity is doing something over and over again and expecting a different result”, forcefully applies here. The finance industry can and should do much better in order to claim the sustainability label. The world is calling for a system update & reboot. Evidently, it is time to change. Regulators and investors wishing to contribute to a more resilient, inclusive and sustainable economy and society should demand better information about sustainability risks and impacts.

Declaration of Competing Interest

The author declares the following financial interests/personal relationships which may be considered as potential competing interests: the author has been closely involved in the development of the Impact AÆSSURANCE rating model at ETH Zurich. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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Appendix A. Supplementary data

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