Guiding the integration of sustainability in valuation

A primer providing a framework for integration, research examples and reflections

World Business Council for Sustainable Development

Content

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1. Introduction

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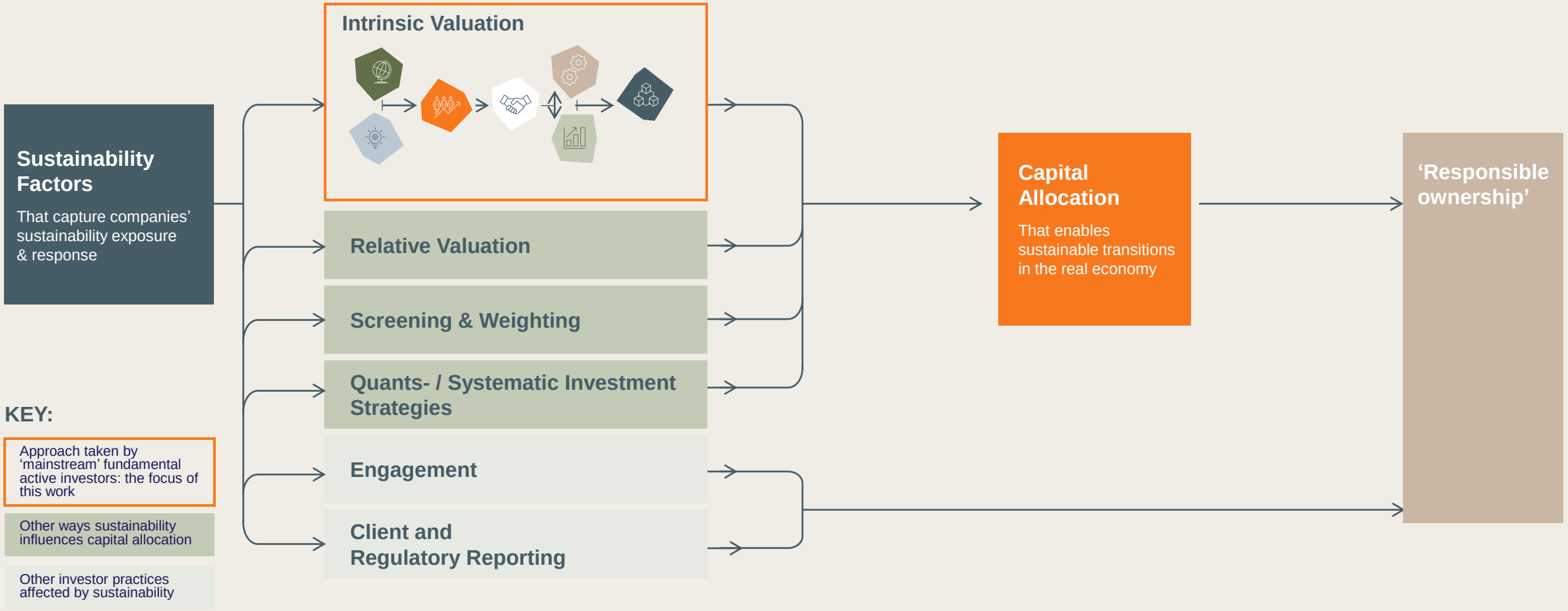
Sustainability factors in investment decision-making

Sustainability factors are used in many ways in different investment practices.

In this guide, we focus on sustainability in intrinsic valuation using a framework derived from our evaluation of the practice of fundamental investors and research providers.



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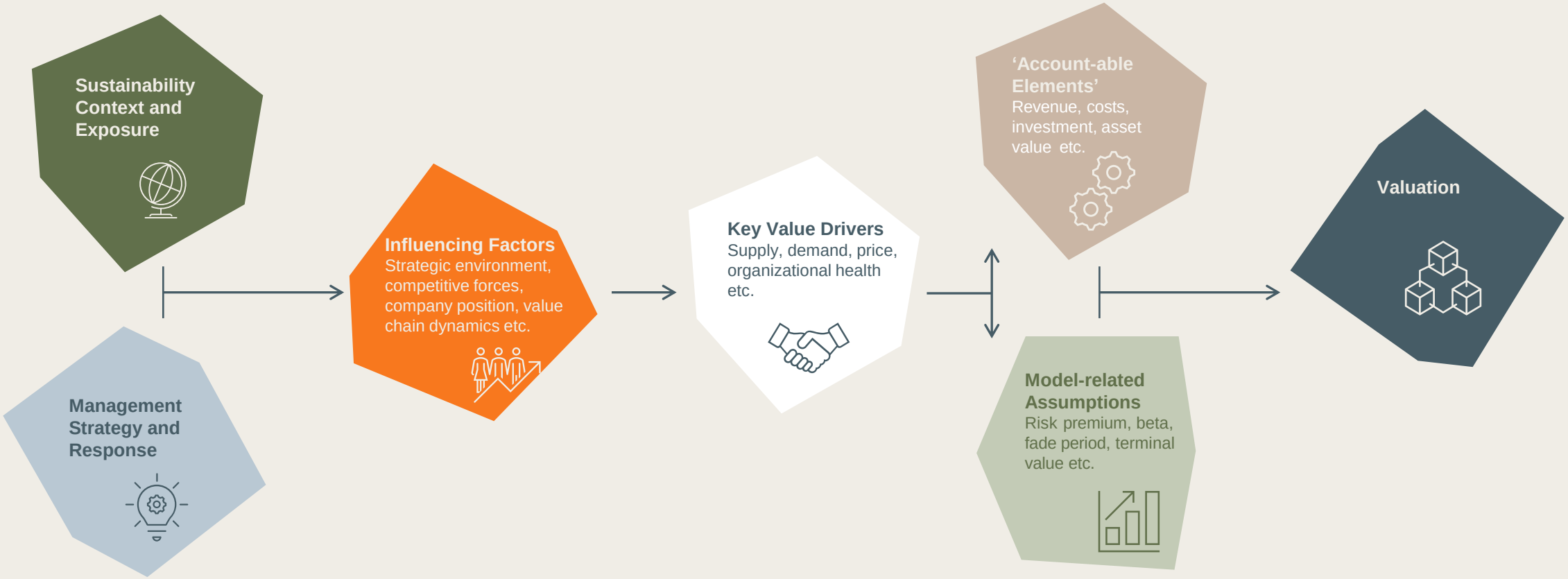
A framework for Sustainability in Intrinsic Valuation (SiiV)

Sustainability factors can be integrated into intrinsic valuation (and hence capital allocation) at different points in the process.

This framework - derived from a review of current investment practice maps these different points.



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Aims and rationale

The framework and examples presented in this guide highlight how investors are already integrating sustainability factors into valuation. This understanding will enable companies with exposure to sustainable transitions to present relevant information to investors and research providers thereby facilitating their access to capital.

Context

In recent years we have seen:

- A significant growth in assets under management linked to sustainability factors.
- Regulatory pressure on asset managers to report on their exposure to - and integration of - sustainability factors.
- A stronger commitment to integrate sustainability factors into investment processes.

Significance

As a result:

Sustainability factors are becoming more influential in valuation and investment decision-making.

However, sustainable thematic funds are not at the size required to significantly impact price and passive funds follow rather than lead prices.

So, sustainability in intrinsic valuation is the only investment practice that can support the flow of significant amounts of marginal – hence price-setting - investable capital towards sustainability.

Content

This guide:

- Presents the Sustainability In Intrinsic Valuation Framework (SiiV).
- Provides evidence that research providers and investors are integrating sustainability factors into intrinsic valuation.
- Identifies the need to evolve and expand valuation practice to incorporate sustainable transitions and strategic resilience.

Action

We encourage:

Companies to:

- Understand how their largest investors are integrating sustainability into valuation.
- Communicate information on their sustainability exposures and management practices in a way that supports further integration.

Investors to:

- Further develop their approach to integration.
- Communicate clearly to all companies (and to clients and to others) what they are doing, to elicit better information from companies and through leadership, driving forward market practice.

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Actions for companies

Go direct

Communicate directly with investors and analysts

SiiV involves a deeper, more complex analytical process that requires analysts to develop a 360 view of companies.

As with 'mainstream' analysis, this is unlikely to be delivered by published data alone.

So, build a programme of direct contact involving webinars, group and 1-on-1 meetings and roadshows to support
investor understanding of your sustainability positioning and response.

See WBCSD tear sheet:
Organising ESG investor roadshows

Target

Connect with investors and research providers advancing valuation integration

Identify those investors and research providers that are developing SiiV.

Exclude passive and quants investors from this and focus on fundamental active investors – particularly those known for a commitment to in-house analysis.

Include ‘mainstream’ investment research providers such as credit ratings agencies and ‘sell-side’ brokers.

See WBCSD tear sheet:
Target investors and analysts

Message

Develop a ‘sustainable equity story’

Connect sustainability with value proposition, strategy, market potential and differentiation, business performance and prospects.

Describe to investors and analysts how sustainability factors affect your strategic environment, value drivers and financials. Help them establish a clear line-of-sight between sustainability in your strategy and valuation touchpoints.

See WBCSD tear sheet:
Preparing messages and data

Cross-reference

Go between 'mainstream' and 'sustainability specialists’

Continually cross-reference between the communications on sustainability that you are delivering to 'mainstream' investors and analysts and to 'specialist sustainability' analysts and investors.

Ask yourself:

- Why are they different?
- Could they be more closely aligned?
- Might messages to one group also be relevant to the other group?

Update us

Help us build a body of ‘best practice’

WBCSD will continue to gather examples of best practice (of communications by companies, of published SiiV research by providers and in-house SiiV activity by investors).

Please share your insights with us.

Contact: *blower@wbcsd.org*

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Action for investors

Capacity

To integrate sustainability effectively into valuation, most investors need to:

a. train in-house sustainability analysts in fundamental valuation techniques

b. train 'mainstream' analysts and investors in sustainability integration

c. improve co-operation between these two teams

d. identify third-party research providers that are capable of contextualising sustainability factors within fundamental valuation, 'sell-side' brokers, credit ratings agencies and other research providers are positioning for this

e. ensure that research budgets are appropriately and transparently allocated towards supporting SiiV

Companies

As highlighted in our 'tips for companies', improved communications is a key part of improved SiiV.

Investors that want to receive SiiV-ready information from companies will need to communicate this interest clearly to companies.

To do this effectively, investors will – probably – need to be more explicit with companies on how the sustainability information feeds into their valuation process, whether via key value drivers or influencing factors or other touchpoints.

Clients

For many investors, developing SiiV enables them to advance delivery on the integration of sustainability into investment processes and capital allocation, as expected by clients.

Exploring the SiiV Framework outlined in this guide is the first step to enabling investors to bridge the gap between stakeholder expectations and investment practice.

The second step, however, requires investors to articulate this within the context and priorities of their own investment approach.

Confidence & commitment

Some investors know that sustainability can be applied to intrinsic valuation.

Others, however, will not yet have focussed their integration activity in this area.

This guide should give such investors the confidence to commit further resource to identifying – for themselves - cases where it is appropriate to apply sustainability factors to intrinsic valuation.

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2.

Breaking down the SiiV Framework

Integrating sustainability factors into valuation

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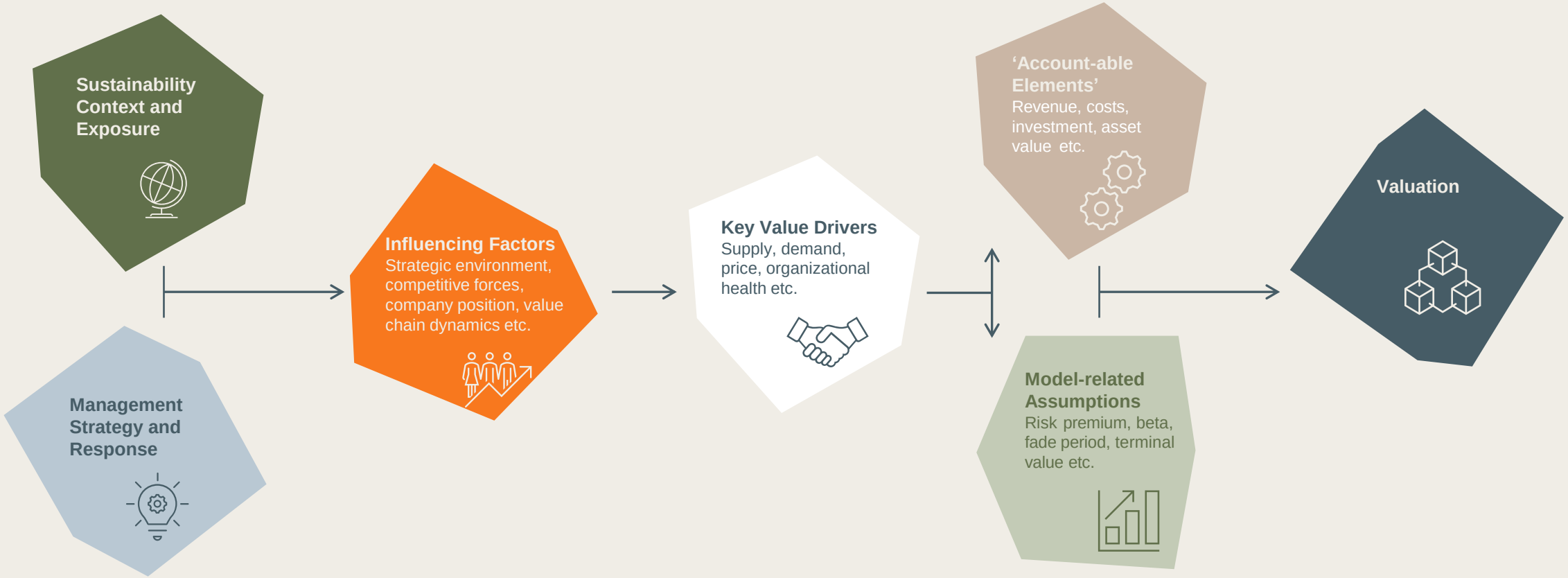
Sustainability in Intrinsic Valuation (SiiV)

Sustainability factors can be integrated into the models that generate investment valuation at six different points.

Each of the following pages summarises the approach taken for each ‘point of contact’.



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Sustainability Context and Exposure

Management Strategy and Response

Sustainability context & exposure | Management strategy & response

Investors exploring valuation links will focus on 'sustainability context & exposure' and 'management strategy & response', making connections to market factors and value drivers.

Understanding companies' exposure to macro sustainability trends and positioning relative to their industry and any transition is foundational.

Sustainability context

How sustainability factors affect a company's operating environment.

Exposure

How exposed a company is to those sustainability factors.

Management strategy

How the company plans to respond to this sustainability-influenced (or driven) operating environment.

Response

How the company is executing / delivering their chosen response.

Investors will look for companies to:

- Identify and accurately understand economic transitions towards sustainability.
- Articulate a value creation strategy in the face of transitions.
- Articulate clear linkages between strategy and the key value drivers for the business.
- Develop metrics that effectively measure its response to this transition.
- Develop a track record on the execution of this strategy.

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Influencing Factors

Influencing factors

Sustainability-derived 'influencing factors' are factors that affect the value drivers of a company. They can be divided into market-related factors and company-specific factors.

Market-related factors:

- Strategic & competitive environment analysis
- Competitive forces within an industry

Company-specific factors:

- Positioning of an individual company
- Management strategy and company response

Strategic & competitive environment analysis

Assessed via analytical frameworks such as PESTLE

PEST(LE) analysis covers the macro factors that have an impact on a company or sector:

Political: policy & legislative change, tax, trade.

Economic: growth, interest rate, exchange rate, inflation, supply & demand.

Sociological: culture, demographics.

Technological: new/evolving technologies (robotics, artificial intelligence, blockchain, internet of things).

Legal: legal aspects affecting employment, operations, consumers.

Environmental: energy, resources, emissions.

Competitive forces within an industry

Assessed via analytical frameworks such as Porter's 5 forces

Investors will look at how sustainability factors might affect:

- Rivalry amongst competitors
- Threat of new entrants
- Bargaining power of suppliers
- Bargaining power of customers
- Threat of substitutes

With a view to understanding how changes to any of these industry forces might affect the key value drivers of a business.

Positioning of an individual company

Assessed via analytical frameworks such as SWOT analysis

Investors can apply a sustainability focus to SWOT analysis by asking:

Strengths

- Do sustainability factors enhance or diminish the strengths of this company (relative to competitors / substitutes etc.)?
- (How) is the company pro-actively taking advantage of these factors?

Weaknesses

- Do sustainability factors exacerbate or diminish the weaknesses of this company (relative to competitors / substitutes etc.)?
- (How) is the company actively mitigating these factors?

Opportunities

- Does a transition towards sustainability create/enhance or remove/diminish business opportunities for this company?

Threats

- Does a transition towards sustainability create/exacerbate or remove/diminish business threats for this company?

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Key Value Drivers

Key Value Drivers

A 'key value driver' for a company is an aspect of the company's market positioning and/or strategic response that is likely to have a material impact on the company's future financial performance, including: supply, price, demand, availability, organizational health etc.

Establishing a clear line-of-sight between sustainability factors and key drivers of value for companies is a primary objective of an investor seeking to integrate sustainability factors into valuation.

Examples:

Customer demand for 'plant-based' food is a key driver (of volumes and margin) for food producers.

The availability (and price) of lithium, nickel and cobalt is a key driver (of costs) for auto OEMs.

The price of energy is a key driver (of demand) for insulation materials, renewable energy equipment etc.

Culture, agility and ability to execute strategy that embeds sustainability supporting organizational health.

Influence of sustainability on revenues of copper miners (below).

Differentiation:

Investors differentiate between sustainability factors that are:

- Irrelevant to key value drivers.
- Relevant, but assumed to be adequately managed.
- Explicit, but priced influencers.
- Explicit, but unpriced influencers.

Sustainability Influence	Key Value Driver	'Account-able' Element
Water availability in copper mining areas.	Supply of copper and therefore price of copper.	Revenues for copper miners with water-constrained/water-rich copper mining activities.
Climate-related transition motivated electrification.	Demand for and therefore price of copper.	Revenues for copper miners.

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‘Account-able Elements’

‘Account-able Elements’

An ‘account-able’ element relates to the financial accounts of a company.

‘Accountable’ elements appear in a company’s financial accounts - so can also be entered directly into a model of a company’s future financial performance.

Key accountable elements (Relevant to valuation that sustainability may influence)

- Revenues
- Margins
- Cost of sales
- Operating costs
- CapEx
- Asset value
- Depreciation
- Taxes

Examples

The following are ‘accountable’ elements that have explicit and direct impact on ‘line items’ within a company’s financial accounts:

- Increasing or decreasing sales forecast in response to changing sustainability-orientated consumer preferences.
- Changing margins associated with a particular technology or product that supports/delivers decarbonization.
- Increased operating costs associated with regulatory requirement supporting safety.
- Increased CapEx to develop capabilities and solutions that support circularity.
- Climate-related transition affects estimates of useful life, residual value, impairment etc.
- Climate-related physical effects on costs and asset values.

Analysts will ask:

- (How) do ‘sustainability’ factors affect direct ‘account-able’ inputs?
- (How) might sustainability factors affect how fast different revenue streams within the business grow?
- Will sustainability factors influence the magnitude or duration of this growth?

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Model-related assumptions

Model-related assumptions

While individual factors may not be significant enough to merit changes to specific line-item inputs (e.g., revenues, margins, CapEx etc), a combination of sustainability factors together may justify flexing the assumptions and operators of a valuation model.

Investors may choose to adjust any of these assumptions or operators. This is largely based on a judgement about which most closely reflects the effect of sustainability factors and the positioning and response by the company concerned.

Assumption / operator	Description	Rationale for sustainability-driven adjustment
Fade period	The fade period is the time over which expected company returns are faded until Return on invested capital (ROIC) = Weighted average cost of capital (WACC).	There is a case to be made that companies that produce sustainable products and/or adopt sustainable processes merit a longer fade period as they should be able to sustain their competitive advantage for longer than ‘unsustainable’ peers.
Terminal value	Terminal value is a one-off representation of the value of the ‘continuing period’ of a company’s operations. The value of the cashflows that the business will generate beyond the end of the ‘fade period’.	Fundamental and abrupt changes to the path of economic and industry development (as required by the transition to a sustainable economy) challenge fundamentally the appropriateness of considering business-as-usual growth to be perpetual or exit multiples to be achievable (within certain industries).
WACC	In this context, the ‘weighted average cost of capital’ to a company is a risk-adjusted discount rate for valuing future cash flows / residual income. It comprises: a cost of equity and a cost of debt.	See next page for rationale for adjusting individual components of WACC.

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Assumption / operator	Description	Rationale for sustainability-driven adjustment
Cost of equity	The cost of equity is (theoretically) the value a firm pays to equity investors to compensate for the risk they undertake by investing capital. Within a Discounted Cash Flow (DCF) model it comprises: a risk-free rate (of interest), an equity risk premium and an asset beta.	See below for rationale for: • Risk-free rate • Equity risk premium and • Asset beta
Risk-free rate	The 'risk-free rate' is the rate of return of an investment with zero risk. It is typically assumed to be the rate offered by sovereign bonds in the market of operation (or as the rate offered by US government debt + a currency-derived risk premium).	Some sustainability factors could theoretically influence the risk-free rate, some analysts are looking at sovereign and macroeconomic factors which may affect model assumptions.
Equity risk premium	The equity risk premium is an excess return expected by an investor for investing in the stock market over a risk-free rate to compensate for the higher risk of equity investing.	The equity risk premium can be adjusted to reflect the overarching sustainability and transition risks faced by the market.

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Model-related assumptions

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Investors may choose to adjust any of these assumptions or operators. This is largely based on a judgement about which most closely reflects the effect of sustainability factors and the positioning and response by the company concerned.

Assumption / operator	Description	Rationale for sustainability-driven adjustment
Asset beta (or sector-risk adjustment)	The sector risk adjustment (or asset beta) is a measure of the divergence (additional risk) between the individual asset being invested in and the wider market.	Social and environmental risks can be seen as additional systemic risk factors, connected to the market risk of the asset class. Company strategy and positioning could lead to a distinctive risk profile.
Cost of debt	The 'cost of debt' is the effective interest rate that a company pays on its debts (including bonds and loans). It is usually approximated by the prevailing interest rate on the company's existing debt but may alternatively be calculated as a risk-free rate plus the company's credit risk premium (CDS rate).	In theory, a company's exposure and response to sustainability factors may make banks more / less willing to lend to the company with implications for the rate available. The integration of sustainability criteria by major credit rating agencies has also provided signals for the issuers' creditworthiness, which affects the cost of debt.

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Model-related assumptions

To justify flexing the assumptions and operators of a valuation model, analysts will ask…

Mature period / fade period

How might sustainability factors affect growth rates during the mature phase of the business?

How might sustainability factors affect the durability of the company's competitive advantage … (and length of the fade period)?

Continuing period

Exit multiple: How might sustainability factors affect the (e.g., EV/EBITDA) multiple that a future acquirer might be willing to pay?

Perpetuity: How might sustainability factors affect the perpetual growth rate that should appropriately be assigned to this company?

WACC

Cost of equity: Sector-risk adjustment: Should sustainability factors be used to adjust or replace the sector-risk premium?

Cost of debt: Are sustainability factors affecting the rate at which this company can borrow (either through adjustment in the rate charged or through policies governing banks' willingness to lend)?

WACC: Are sustainability factors likely to change the risk profile of this company (or the industry within which it operates) in a way that is likely to change the weighting between equity and debt? What are the implications for betas, level of gearing or asset specific adjustment?

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3.

Examples & practical application

Investment research that integrates sustainability into valuation framework

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abrdn: Climate scenario integration & target credibility

With reference to the autos and materials sectors, analysts demonstrate how climate scenarios impair and enhance the valuation of companies through direct costs, abatement costs and demand destruction and creation. Also, they show how credible transition plans from companies impacts significantly the magnitude of any impairment.

Sustainability Context and Exposure

Management Strategy and Response

Influencing Factors

Key Value Drivers

'Account-able Elements'

"Our … approach models transition risk impacts based on current company emissions, revenue exposures and business models. Historic emissions are used to determine company exposure to direct carbon costs, derived from our scenario pathways, which in turn feed into the abatement model.

Meanwhile, current company product revenue shares feed into a model of how demand dynamics are shaped by the energy transition. And both then are incorporated into a model of product market competition, such as how companies can pass on higher carbon costs.

The analysis is then supplemented when we consider forward-looking company climate targets. This illustrates how large the difference in exposure can be when one assumes that a company's transition plan is fully credible.

Starting with Honda and Kia. Not only are Kia's targets less ambitious than Honda's but through our credibility assessment we assign a lower probability to their being achieved."

→ Climate transition scenarios set out the context within which companies are seen to operate.

→ The nature of company exposure is then calculated and translated into value drivers (costs and demand impact).

→ Management strategy and response (transition plans) is then assessed for credibility...

→ … such that the resulting impairment / enhancement of valuation captures exposure and the credibility of response.

Corporate transition plans can make a big difference to estimated impairments if assumed to be credible

Firm	Transition plan	Physical impact	Adaptation	Demand destruction	Demand creation	Direct carbon costs	Abatement	Cost pass-through	Total impact
Honda (auto)	No transition plan	-1.4%	0.6%	-29.1%	0.6%	-3.1%	2.8%	0.4%	-29.3%
	Fully credible transition plan	-1.4%	0.6%	-4.9%	9.5%	-0.9%	0.4%	3.5%	6.8%
Kia (auto)	No transition plan	-2.1%	0.8%	-36.4%	0.8%	-2.6%	2.2%	0.9%	-36.4%
	Fully credible transition plan	-2.1%	0.8%	-28.9%	3.3%	-4.1%	2.3%	2.6%	-26.1%
Compagnie de Saint-Gobain SA (materials)	No transition plan	-0.6%	0.2%	0.0%	0.0%	-33.0%	11.1%	13.6%	-8.7%
	Fully credible transition plan	-0.6%	0.2%	0.0%	0.0%	-4.7%	1.4%	18.0%	14.3%
CRH Plc (materials)	No transition plan	-2.3%	0.9%	0.0%	0.0%	-28.7%	5.8%	4.5%	-19.9%
	Fully credible transition plan	-2.3%	0.9%	0.0%	0.0%	-16.1%	4.0%	46.7%	33.1%

Probability weighted mean scenario
Source: abrdn, October 2022

Access to research: abrdn scenario Pub'n date: October 2022 Contact: Nick Gaskell

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Barclays: Green Steel: From rhetoric to reality

Barclays analysts consider the cost implications for steel production and evaluate the potential incentives from government grants and subsidies.

Management Strategy and Response

Influencing Factors

Key Value Drivers

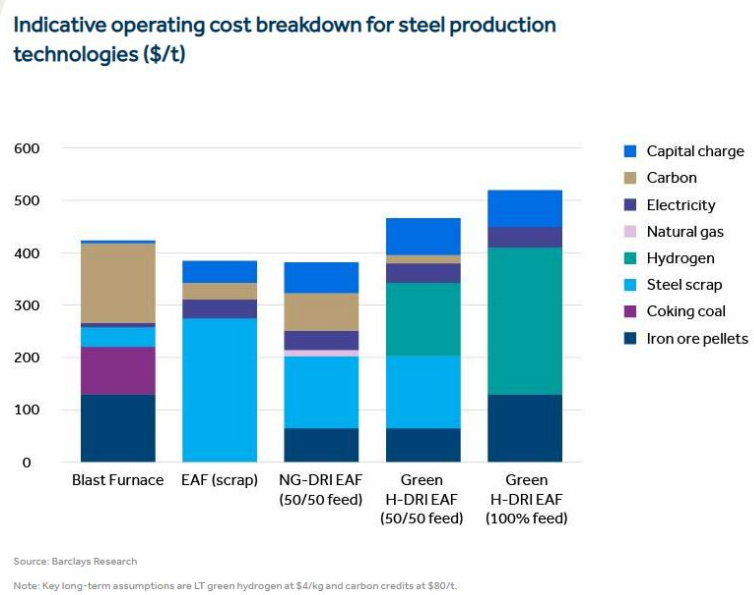
'Account-able Elements'

"Manufacturers recognise that they need to produce more cleanly. Their customers, too, are applying pressure, as they try to hit their own targets linked to indirect emissions."

"At the moment, the costs to produce green steel are formidable. Our Research analysts estimate that a DRI/EAF process using hydrogen would add about $100 to operating costs per tonne of steel produced. That would drive most producers out of business. If, however, the cost of hydrogen were to tumble – to below $1/kg in Europe and 70 cents/kg in the US – then the technique could be viable. That makes it imperative for producers to invest in the development of hydrogen-related infrastructure. Government grants and subsidies will be needed to encourage investment, especially in China, which produced more than half of the world's steel in 2021. In more mature markets, returns to shareholders are likely to fall, as producers fund projects from their cash flows. But there is a real urgency to act, given the industry's long lead times for development. Blast furnaces tend to have an average life of around 40 years but need significant upgrades after 25."

→ Market pressure is being translated into more demand of cleaner steel production.

→ Analysts look at potential business case, costs and support needed to make green steel viable.



Access to research: How the global steel industry can go green *Pub'n date:* 25 Apr 2022 *Contact:* Maggie O'Neal, Tom Zhang

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DWS: Financial implications of water-related externalities

With a focus on the apparel sector, analysts from Ceres, Bluerisk and DWS calculate the cost of addressing water-related externalities before running those costs through DWS' proprietary CROCI (investment analysis) model.

Sustainability Context and Exposure

Key Value Drivers

'Account-able Elements'

"For the companies assessed in this brief, the annual costs of addressing water-related externalities is significant, ranging between 3.5% and 7% of annual revenue.

After estimating the annual cost of addressing externalities, we then used DWS's CROCI© methodology to conduct a sensitivity analysis to evaluate the potential impact that the additional annual expenditure would have on each company's valuation, based on their 2019 financial performance.

The results indicate that the impact of the additional annual expenditure, as calculated in this brief, is significant, moving all companies' valuation (multiples) to expensive territories (higher than equity market average valuation multiples)."

→ Costs of eliminating externalities are calculated…

→ … and incorporated (alongside other costs) in DWS' standard investment valuation model

→ … to deliver adjustments to valuation.

Importantly, sustainability-related costs are integrated into the valuation process in the same way as all other costs.

CROCI Valuation results

Impact of the annual cost to address externalities on the valuation of eight apparel companies using DWS's CROCI Framework (based on fiscal year 2019).

Impact of the annual cost to address externalities	Economic P/E	Accounting P/E	CROCI cash return(pp)	CROCI Cash Flows	Adj. EBITDA	Adj. Net Profit
Burberry Group plc	26.5x	23.7x	-3.7%	-15%	-21%	-44%
Hennes & Mauritz AB	34.7x	29.1x	-5.1%	-22%	-37%	-60%
Hanesbrands Inc.	29.9x	24.0x	-10.4%	-37%	-43%	-71%
Inditex SA	12.9x	11.9x	-6.1%	-19%	-21%	-34%
PVH Corp.	NM	NM	-10.6%	-35%	-47%	-98%
Ralph Lauren Corp.	NM	54.3x	-5.9%	-23%	-33%	-72%
The Gap, Inc.	NM	NM	-5.2%	-30%	-36%	-127%
V.F. Corporation	54.3x	NM	-11.0%	-33%	-45%	-77%

Source: DWS CROCI, Ceres/Bluerisk, company data

Access to research: *Financial implications of addressing water-related externalities in the apparel sector* *Pub'n date: December 2021* in support of the Valuing Water Finance Initiative *Contact:* DWS: Murray Birt

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Edison: Mytilineos — Profiting from energy transition

Analyst focuses on the company's energy transition-related growth and reflects the upside potential in the valuation prediction.

Sustainability Context and Exposure

Management Strategy and Response

Influencing Factors

Key Value Drivers

'Account-able Elements'

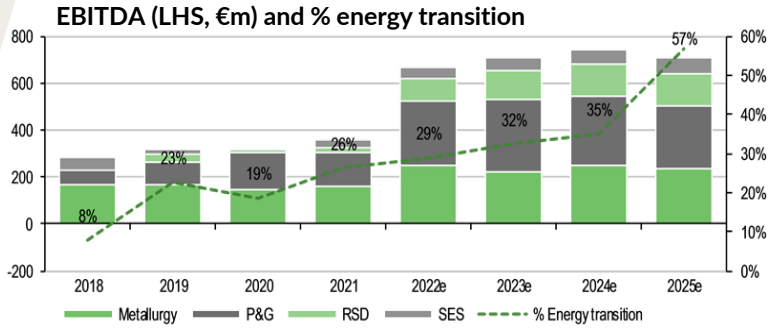
"Mytilineos is well placed to benefit from several energy transition-related themes. Mytilineos's proactive management team has shown foresight in its investment decisions on decarbonization over the last few years. It has built a renewable portfolio of c 8.6GW, including 2.4GW in Greece and 6.2GW of international projects that are mostly being developed for sale; it is decarbonizing its integrated aluminum production facility, such that it should benefit from 'low carbon' aluminum branding from 2025; and it is increasing its activities in sustainable infrastructure projects.

We estimate the share of earnings (EBITDA) derived from energy transition activities will increase from 26% in 2021 to 57% in 2025 (and 60% from 2026), which will help drive a four-year group EPS CAGR of 18%, with Mytilineos continuing to achieve superior returns (c 14% ROCE). It is well funded to support its investment in the energy transition, with financial flexibility of c €1.5bn augmented by strong operating cash flow in all business areas."

→ Recognition for management investment decisions and governance on decarbonization.

→ Analyst incorporates market condition and growing appetite for renewables and low carbon solutions.

→ Predictions highlight that the company can financially benefit from its business activities associated with transition.



Access to research: Mytilineos — Profiting from energy transition *Pub'n date:* 16 September 2022 *Contact:* James Magness

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Edison: Renewi – A circular economy champion

Edison analyst highlights the positioning of Renewi in the drive to increase recycling from both governments and consumers.

Sustainability Context and Exposure

Management Strategy and Response

Key Value Drivers

'Account-able Elements'

"Renewi refers to itself as a 'waste-to-product company' as it looks to align its strategy with the advancing circular economy Management has set a target to achieve a recycling rate of 75% (FY23: 63.6%)."

"The EU adopted a circular economy action plan in 2020 as part of its Green Deal agenda…The overall goal includes a reduction of the material footprint by 50% by 2030…Belgium and the Netherlands are already leaders in waste management and recycling in Europe. This not only ensures a more positive backdrop for Renewi but enables the company to develop processes that may be transferable to other regions."

"Management announced a range of new investment projects in 2020 with the aim of achieving c €20m of additional EBIT from an investment of over €100m."

→ Inclusion of recycling targets are presented as alignment between sustainability context and management strategy and response.

→ Analysts identify both legislative and demand-based drivers as key to the company's future growth.

→ The contribution of circularity-driven investment and its contribution to EBIT is itemized.

Project	Investment	Partner	Expected EBIT	Latest progress
Advanced residual waste sorting	€60m	Stand-alone	€€€€	Three lines approved. Two out of three progressing in line with expectations. Ghent: production started January 2023 and operating as expected; Puurs: civil works started, on track and new baling area ready and in production; Limburg site: new site acquisition delayed due to permitting process
Transition biogas from electricity to bio-LNG		SHELL	€€	Installation completed and operating as expected
Polyurethane recycling	€10m	Chemical recycler	€ – €€€	Technical and commercial feasibility studies ongoing
Expansion of plastic recycling		Stand-alone	N/A	Ghent and Waalwijk investments complete, Acht progress on track: civil works completed and construction of technical equipment progressing well. Commissioning beginning Q2 as planned
Expansion of mattress recycling	<€5m	IKEA	€€€	Investment of chemical recycling of polyurethane foam facility in Lelystad. First international expansion completed with the integration of TFR Group in the UK
Upgraded wood flake supply for low-carbon steel	N/A	Arcelor-Mittal	€€ – €€€€	Project stopped for commercial reasons
Cellulose from diapers and incontinence products	N/A	FMCG major	€ – €€€	Returned to development stage

Source: Renewi, Edison Investment Research. Note: € equates approximately to €2m of EBIT.

Access to research: *Renewi – A circular economy champion* *Pub'n date: 5 Sept 2023* *Contact:* David Larkam

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NINT: Deforestation-related risks in Brazilian meatpacking

Analysts from NINT outline how deforestation-related risks might affect demand for beef and costs for Brazilian meatpacking companies.

Sustainability Context and Exposure

Management Strategy and Response

Influencing Factors

Key Value Drivers

'Account-able Elements'

"Among the biggest meatpacking companies in Brazil, Minerva is most exposed to deforestation-related financial risks in its supply chain. The company has the highest exposure to beef and exported about 140 thousand tons of beef from the Amazon and Cerrado in 2021."

"JBS has the most ambitious commitment regarding deforestation in the supply chain:"

"Consumer behavior, trade defence or political movements may affect the demand for beef that is directly or indirectly linked to deforestation"

"We modelled two scenarios for the three companies covered in the scope of this study, estimating financial impacts from 1) reduced sales due to boycotts; 2) increased cost of capital; and 3) reputational costs related to deforestation in the Amazon and Cerrado biomes"

→ Analyst connects company operations and response with exposure to the sustainability-related market context.

→ Material factors that may impact companies doing business in the sector.

→ Analyst links the deforestation risks directly with the financial impacts.

	JBS	Marfrig	Minerva Foods
Optimistic scenario			
Impact on EBITDA[1]	(0.3% - 0.4%)	(1.0% - 2.7%)	(0.1% - 2.1%)
Impact on EV[2]	(0.2%)	(1.9%)	(0.7%)
Pessimistic scenario			
Impact on EBITDA	(1.6% - 2.4%)	(2.1% - 8.8%)	(5.5% - 13.7%)
Impact on EV	(2.3%)	(4.8%)	(7.7%)

1 The impacts on EBITDA presented along this study refer to the minimum and maximum impacts between 2021 and 2030.
2 The impacts on enterprise value presented during this study refer to the net present value of the impacts on EBITDA (between 2021 and 2030) as a percentage of the companies' EV.

Access to research: www.nintgroup.com NINT an ERM Group company *Pub'n date:* Dec 2021 *Contact:* Cristóvão Alves

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Profundo: Quick charging the share prices

Profundo analysis suggests faster EV adoption by auto OEMs could generate EUR806bn of equity value as battery costs fall and economies of scale improve so that business operating margins (of EV production) surpass those of ICE manufacturing in 2-3 years – with carbon pricing extending these.

Management Strategy and Response

Influencing Factors

Key Value Drivers

'Account-able Elements'

"Among the producers mainly serving the mass market, Volkswagen (VW) and Stellantis are planning to reach at least 50% battery electric vehicle (BEV) sales by 2030."

→ Targets and plans from companies

"Although the production costs and sales prices of EVs are currently at a disadvantage against ICEs, the expected fall in battery costs along with improving economies of scale, will help EVs reach price parity with ICEs… EV business operating margins are expected to reach and even surpass that of ICEs in the next 2-3 years. This while margins of ICEs are set to decline as the product with old technology loses bargaining power against the incoming product."

→ Costs and operating margins are 'accountable elements' that can be applied directly to a financial model

"The key question for the car manufacturers valuation model, is whether carbon costs are introduced as a margin impact or as a liability, reducing the enterprise value of the ICE production activity." As "current regulation does not lead to material pressure on margins of ICEs" … "total cost of ownership approach is preferred way of embedding CO_2 costs into the model".

→ The analysts argue that in addition to operational cash flow projections, possible carbon liabilities can change the valuations quite drastically

"The valuation and scenario studies (excluding carbon cost uncertainty) clearly show that quicker EV adaptation pays off significantly in terms of company valuations."

→ Upside potential identified

Potential / Risk compared to current market value

Potential / Risk (%)	Base Case	Slow Case	Quick Case
VW	159%	104%	253%
Toyota	12%	-11%	70%
Stellantis	267%	148%	388%
Mass market average	**146%**	**81%**	**237%**

Access to research: www.profundo.nl *Pub'n date:* May 2022 *Contact:* gerard.rijk@profundo.nl

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Robeco: Decarbonization Pathway for the Automotive Sector

Both CapEx and costs from possible fines for non-compliance are factored into analysts' valuation of Auto OEMs – with sensitivities applied for differing (Commitment or Convergence) scenarios.

Sustainability Context and Exposure

Management Strategy and Response

'Account-able Elements'

"... true commitment is measured in a company's capex in emission-reducing technologies, namely BEV plants and production platforms. So, in addition to modelling decarbonization pathways, we also assess the capex required to finance those pathways.

Based on our SDP calculations and the automakers assessed so far, we conclude that most companies have surplus funding to reach the Commitment Pathway, but the more ambitious Convergence Pathway is underfunded."

Tighter emission standards not only mean higher capex but also create the potential for higher fines when companies fail to reach targets. In a final step, we estimate potential fines for missing mandated CO2 targets on new car sales in the EU."

→ CapEx is central to constructing the sustainable investment case in this sector.

→ Scenarios (the Commitment Pathway and the Convergence Pathway) lie at the center of the analysts' projections.

→ Context is critical. If society follows a 'Commitment Path', companies' CapEx plans are seen to be adequate. However, further CapEx will be required if a Convergence Pathway becomes expected.

→ Costs from fines are – in our terminology – an 'Accountable Element' that these analysts include within their model.

Measuring OEM capex costs (2022-2025)

OEM	Estimated global capex surplus based on self-reported commitments	Estimated capex surplus based on required decarbonization targets
	EUR bn	EUR bn
	Commitment Pathway	Convergence Pathway
Company 1	0.8	(0.8)
Company 2	1	(5.1)
Company 3	(0.5)	(1.7)
Company 4	5.0	(16.4)
Company 5	7.3	(9.5)

Source: Robeco internal model

Access to research: A Decarbonization Pathway for the Automotive Sector | Pub'n date: December 2022 | Contact: Gabriella Abderhalden

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Robeco: Sector Decarbonization Pathway for the Oil & Gas sector

Analysts evaluate how decarbonization towards 1.5°C of warming will affect the revenues and long-term 'growth' rate of oil and gas companies – incorporating these factors into forecast liabilities and revenue expectations.

Sustainability Context and Exposure

Management Strategy and Response

Key Value Drivers

'Account-able Elements'

Model-related assumptions

"O&G sector constituents which are also more likely to experience significant declines in future revenue. ... To counteract this expected revenue decline, many energy companies are investing in renewable sources of energy. However, in most cases, the new business lines may not be able to fully offset the expected revenue losses, as competition for investing in renewables is high and returns tend to be lower.

Thus, we expect many O&G companies to enter a phase of terminal revenue, profits, and cash-flow decline. The idea of terminal decline stands in stark contrast to the 'going concern' principle used in valuing financial instruments ... Valuation models for O&G companies must thus assume a terminal rate of decline to accurately grasp the impact of Scope 3 carbon emission reduction trends.

"In valuing Company A's equity, two adjustments were made:
(1) we subtracted an estimate for decommissioning (adding it to the company's liabilities), and
(2) we based the terminal decline on a roughly 50-50 split of cash flows coming from O&G (absolute reduction in companies' fossil fuel). The latter results in a real (excluding inflation impacts) decline rate of free cash flow by 2.0% per annum"

→ Robeco's scenarios constitute the 'sustainability context' that explores the impact on future revenue and shape analysis.

→ The analysts adjust liabilities (an 'accountable element' and the terminal growth rate ('a model-related assumption) in their valuation of these companies.

→ In respect of credit securities, the analysts treat "long-term asset retirement obligation" as part of "total adjusted debt" to highlight the potential liability related to a company's obligation to remove such impaired assets.

Equity net present value (NPV) and cumulative impact of decommissioning and terminal decline

Stage	Equity NPV (USD bln)	Change	Upside	Cumulative impact (vs pre-adj.)
Pre-adjustments	100		35%	
Incl. operational, policy, and decommissioning costs of decarbonization	79	-31	7%	-21%
Incl. terminal decline (absolute reduction)	64	-23	-13%	-36%

Source: Robeco

Access to research: A Decarbonization Pathway for the Oil & Gas sector | Pub'n date: December 2022 | Contact: Farahnaz Pashaei Kamali

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Société Générale: Pricing "M&A risk" at Vivendi

Governance risk – a key factor for 'ESG' investors - is valued by SG analysts by applying a discount to reflect the M&A risk to their Sum of the Parts valuation of Vivendi

Management strategy and response

Model-related assumptions

Although Vivendi receives high ESG ratings when E, S & G factors are equally weighted, a focus on valuation emphasises the significance (and weight) of Governance. The issue that is raised most frequently by investors is the involvement of the company's main shareholder, Bollore, in capital allocation - given an active and opportunistic M&A track record, with mixed overall returns (SGe -20%).

We believe the 'M&A risk' can be modelled based a perpetual reinvestment converging to post-dividend FCF, representative of the company's recurring flexibility. As M&A and investments can vary greatly from one year to another, what matters is the annualised average. At the current scope, and assuming a 50% div. payout, this equates to c. €0.3bn p.a.

We also consider a worst case scenario, assuming the -20% loss risk applies to a maximum M&A firepower, including the monetisation of minority stakes.

Our framework highlights an impact on SOP valuation worth between -4% to -11% in an extreme scenario. Rounded to a -5% to -10% range, this input is explicitly used to set our target price.

→ SG analysts are all required to identify which E, S or G issues are most material to the valuation of each company under their coverage.

→ Value destruction "risk" explicit input in target discount to SOP

→ Unlike E&S issues, which are typically valued at the context and input end of analysts' models, governance risk is most effectively valued at the final stages of modelling … as in this example.

NPV of 'perpetual value destruction' (long-term average)

€m	Value -10%	Value -15%	Value -20%	Value -25%	Value -30%	Value -35%
150	-188	-281	-375	-469	-563	-656
200	-250	-375	-500	-625	-750	-875
250	-313	-469	-625	-781	-938	-1,094
300	-375	-563	-750	-938	-1,125	-1,313
350	-438	-656	-875	-1,094	-1,313	-1,531

Source: SG Cross Asset Research/Equity

Value in column heading refers to Value destruction as %age of invested capital

From SOP to target price – €10.9 TP is mid-point of discount range.

	Low	High	
SOP	**€16.2**	**€16.2**	
M&A risk	10%	5%	SG calculations. Also reflects ESG discount
Other drivers	30%	20%	Portfolio structure, liquidity, tax liabilities, CF circulation
Total discount	**40%**	**25%**	**Implied discount mid-point 32.5%**
Implied price	**€9.7**	**€12.1**	

Source: SG Cross Asset Research/Equity estimates

Access to research: https://doc.sgmarkets.com/en/3/0/3914/288312.html?sid=8510f5009efc95a1a5f49a7277dcb5b3
https://doc.sgmarkets.com/en/3/0/3914/301786.html?sid=1b8d3a90493001e7d10ad2f0cebddd48 | *July 2022, July 2023 | Contact: Christophe Cherblanc (Media), Yannick Ouaknine (ESG)*

This document contains opinions of Christophe Cherblanc (Media) and Anne Critchlow (General Retailing), Equity analysts at Société Générale. Opinions expressed are current as of the date appearing in this publication and neither Société Générale nor its subsidiaries or affiliates accept any responsibility for liability arising from the use of all or any part of this document.

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Société Générale: Hot topics in fashion retailing

Tensions in consumer demand for sustainability in fashion are discussed in detail, companies are benchmarked on sustainable materials, carbon emissions and supply chain controversies and premia/discounts applied to target prices

Sustainability context and Exposure

Influencing factors

Model-related assumptions

"There are many surveys showing that consumers, and particularly younger consumers, are concerned about sustainability with regard to clothing purchases. However, what consumers say in surveys does not always match up with consumer behaviour."

"The growth of the second hand ('preloved' or resale) market, driven by online marketplaces such as Depop and Vinted, is an interesting development. Zalando has identified particular interest from younger customers in shopping for second-hand items, and this informed the launch of its pre-owned site. The second-hand apparel market worldwide was worth $177bn in 2022 according to Statista, which forecasts a 15% CAGR over the next five years."

"We now apply a 5% premium to our underlying valuation for Next and remove the 5% premium for Marks & Spencer. This is because Next replaces M&S in the list of the top four companies in our rankings. There are no other changes. H&M, Kingfisher and Zalando retain their 5% ESG premiums, while we continue to apply a 5% ESG discount to Boohoo's underlying valuation to reach the target price."

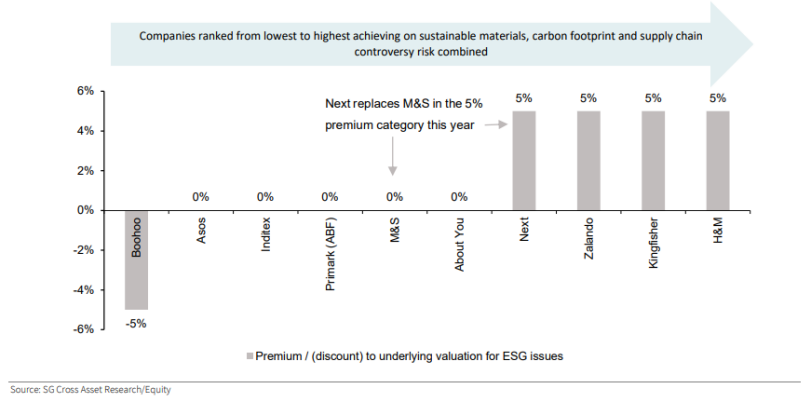
→ In-depth exploration of conflicting forces related to consumer demand for sustainability in fashion are explored in depth including: carbon impact vs speed-to-market and youth demand for sustainability vs youth demand for lower prices.

→ Analyst applies the 10% theoretical valuation range derived from previous SG analysis and applies premia and discounts to target prices.

→ All Société Generale sector analysts are expected to quantify the 'ESG' contribution to valuation of all companies under their coverage.

Report: 'Road to ESG integration: SG walks the talk, embedding ESG into target prices'

Premium / (discount) based on our sustainability rankings, applied to the underlying DCF valuation for each company to reach our target price



Source: SG Cross Asset Research/Equity

Access to research: Clients of Société Générale only | Publication date: 7 Sept 2023 | Analyst: Anne Critchlow (Retail), Yannick Ouaknine (ESG)

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UBS: Cement Abatement Driving Value

UBS analysts take a deep dive assessing the green transition of a heavy industry manufacturer and refresh the valuation impact.

Sustainability Context and Exposure

Management Strategy and Response

Influencing Factors

Key Value Drivers

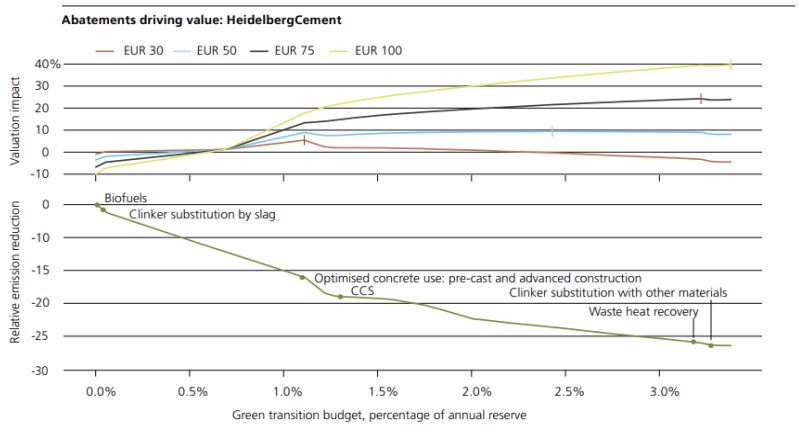
'Account-able Elements'

"Some major players in the cement industry are developing plans to substantially reduce their carbon emissions. We believe the leaders in this effort will realize substantial benefits, for investors and the climate. German HeidelbergCement, one of the world's largest manufacturers of building materials and a top player in cement, has taken such a leadership position.

Our results suggest that so long as emissions are covered by free allowances, the valuation downside risk is limited. A material upside potential can be realized through aggressive emission abatements that allow HeidelbergCement to resell their emission permit surplus. If we assume the EU ETS will reach EUR 75 by 2030, HeidelbergCement should abate 27% of their total emissions by 2030, leading to 25% valuation upside. But it will require significant investments at over 3% of annual revenue."

→ Context of sectoral transformation and positioning of the company.

→ Valuation impact is refreshed to incorporate the upside potential through emission abatement efforts and consequently emission permit rescale.



The top chart shows valuation impacts for increasing levels of green transition budgets. We assume that a flat price of EUR 30 and no green transition are priced in today (the red line starts at 0% valuation impact). The vertical markers show the optimal green transition budget given the EU ETS price. The bottom chart shows the abatements achieved with a given budget and where investments in different levers are initiated.
Source UBS QED. Data as of 15 June 2021.

Access to research: The value of a green transition - A model for including decarbonization in company valuation *Pub'n date:* 1 July 2021 *Contact:* Bruno Bertocci, Adam Gustafsson

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WHEB: Sustainability supercharging semiconductors

WHEB highlight that power semiconductors are the backbone on which the zero-carbon economy is being built. Infineon Technologies AG with exposure to EV, automation and renewable power is expected to see material upside to consensus revenue forecasts.

Sustainability Context and Exposure

Key Value Drivers

Model-related assumptions

'Account-able Elements'

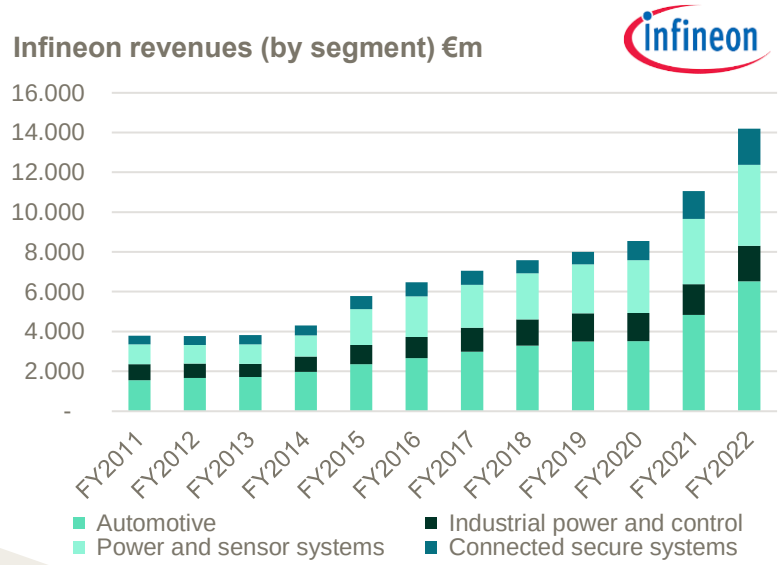
"Infineon manufacture power semiconductors, as well as microcontrollers and radio frequency products and sensors. The products are key enablers for electric and hybrid road vehicles, renewable power generation and efficient power management in industrial systems and other types of electrical infrastructure.

These products represent c.60% of total revenues (2022) but in recent years year on year growth has exceeded 20% in these segments and at higher margins than the group average.

WHEB forecasts continued revenue growth above consensus forecasts by about 5% annually due to stronger growth in key end markets such as electric vehicles and renewable power."

→ Technological and environmental factors affect the market environment into which Infineon sells.

→ The analysts argue that market's expectation of growth does not fully consider the sustainability drivers affecting end markets.



For further information: www.whebgroup.com

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4.

Conclusions, challenges and opportunities

Where we are today, what different stakeholders can do and potential themes to explore

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‘Valuation integration’
is happening with current practices providing building blocks for capital transition towards sustainability.

However, considerable support is needed from companies, investors, research providers and regulators to advance and scale the practice.

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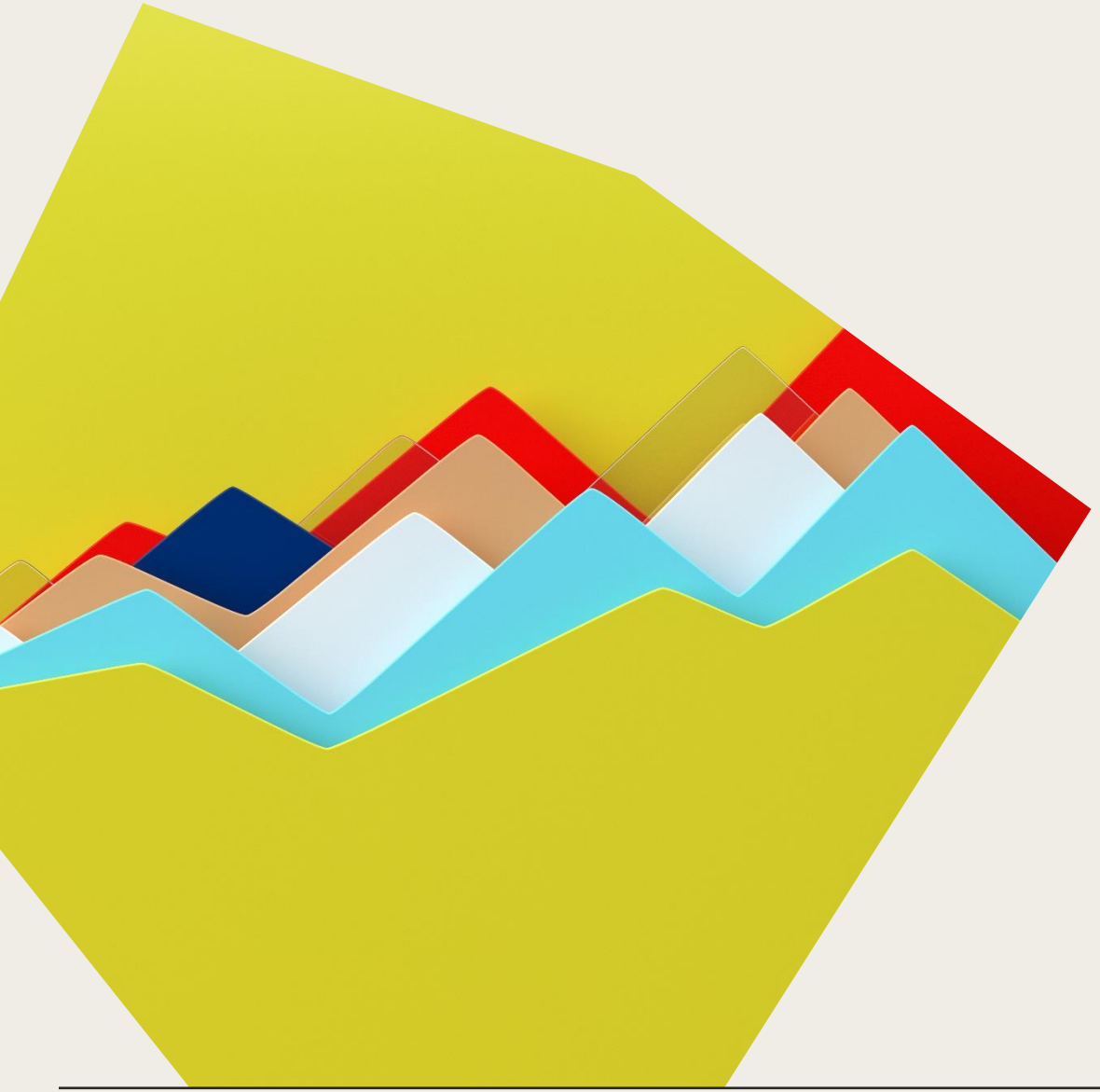

Reflections and next steps

This guide presents the Sustainability In Intrinsic Valuation Framework (SiiV) and provides evidence that research providers and investors are integrating sustainability factors into intrinsic valuation.

It is wholly in the interests of companies with ambitions for sustainable economic transitions to see a strengthening of sustainability in intrinsic valuation.

SiiV is the only investment practice that can support the flow of marginal – hence price-setting investable capital towards sustainability.

Companies that are positioning themselves for sustainable economic transitions should and can support the development of SiiV by communicating and exchanging directly to investors and analysts. By actively doing so, companies can help the evolution of valuation methods and models.

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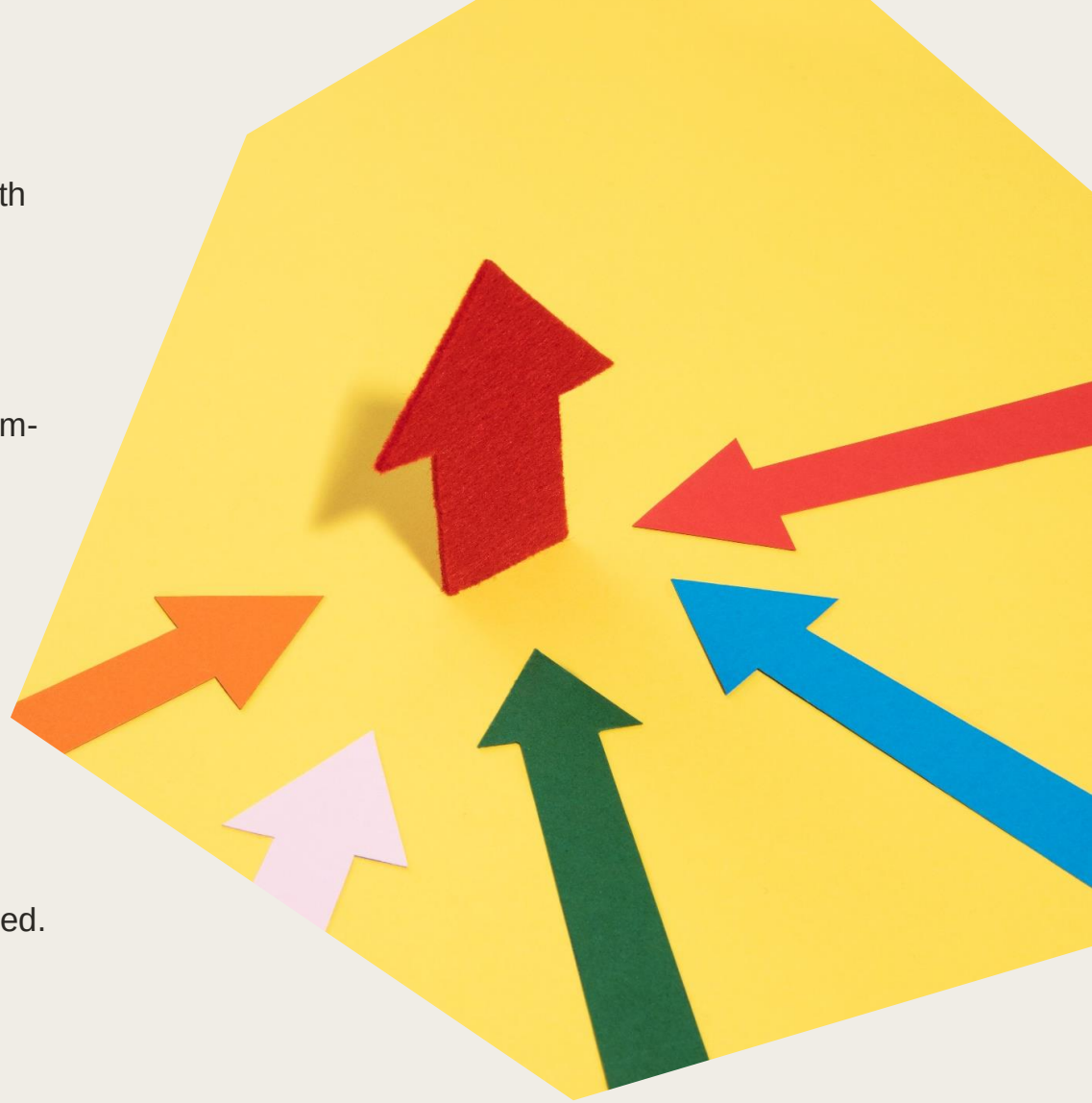
Different stakeholders can contribute to the development of practice:

- Companies should advance the integration of sustainability in their equity stories and prioritize the measurement and management of sustainable value.
- Investors should support the development of company specific investment research, with appropriate resourcing, building valuation and sustainability integration skills among investment professionals.
- Research providers should seek to build demand, capabilities, business models and relationships.
- Regulators should support and provide the enabling environment for fundamental bottom-up analysis that advances research and investment processes for valuation integration.



Many valuation challenges remain, with opportunities to explore:

- How different sustainability factors and topics across E S & G are captured (e.g., climate vs. human capital).
- How transition qualities and characteristics (e.g., adaptive capacity, flexibility, capabilities, relationships, innovation etc.) are incorporated.
- The implications of uncertainty in transition pathways, market potential and enabling environment.
- The role of environmental and wellbeing economics and how externalities are internalized.
- Sector differences (e.g., energy v chemicals v agriculture v real estate).
- Direct cash flow v model assumption adjustments.
- Extending forecast time horizons.
- Transition risk, opportunity and growth rates, magnitude, direction, durability.
- Changing balance structure, debt spreads, cost of debt and debt service capacity.

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World Business Council *for Sustainable Development*

About WBCSD

World Business Council *for Sustainable Development*

Who we are

WBCSD is a global community of leading businesses driving systems transformation for a better world in which 9+ billion people can live well, within planetary boundaries, by mid-century.

Together, we accelerate the required transformation of businesses, their value chains and the systems in which they operate, to limit the impact of the climate crisis, restore nature & tackle inequality.

Our community of business leaders is empowered to raise ambition for a better world, deliver action at speed and scale in their operations & value chains, and sharpen the accountability of their performance.

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Our vision

A world in which more than 9 billion people live well, within planetary boundaries

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