



**An architecture for
sustainable value transition
within social and planetary
boundaries**

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This paper at a glance

Current social and environmental trends of accelerating social inequality and environmental degradation highlight that the current mode of capitalism is placing ever more pressure on an increasingly failing system.

Traditional finance and economic theory suffer from a number of crucial simplifications that do not do justice to the complex reality we are facing. Unless addressed, these simplifications have the potential to prevent or arrest the alignment between the delivery of financial value and the wider transition to social and environmental performance that is urgently needed.

WHAT IS THE PURPOSE OF THIS PAPER?

This paper sets out why sustainable economic and corporate performance within the boundaries of a finite planet is either unlikely or impossible without significant change to the current system. Addressing and reversing these trends requires an evolution of system function and purpose, to move beyond shareholder value and to a new form of sustainable stakeholder value which more effectively represents, balances, and aligns the various types of currently priced, underpriced and unpriced capitals.¹

This paper explores what a global value architecture for driving the delivery of long-term societal value creation (in institutional, environmental, and social dimensions) could look like to deliver a sustainable and equitable future.

We propose such an architecture, with changes to nine key elements of the system: corporate objectives; ownership and control; law; corporate reporting; product information; supply chain reporting; global & national accounts and statistics; taxation and the pricing of externalities; and business school and university education. For the purposes of this paper, we are calling this Sustainable Value Architecture (SVA).

We also articulate the obstacles, considerations and aspects that need to be considered by companies seeking to undertake a Sustainable Value Transition (SVT) – to deliver financial value whilst also maintaining and strengthening other fundamental sources of value.

Our goal is to explore an **architecture for sustainable value which would be capable of supporting a transition of corporate practice towards the sustainable management of long-term societal and shareholder value creation, within social and planetary boundaries.**

WHO IS IT FOR?

This paper is for regulators, systems architects and academics, sustainability practitioners, and activists for a sustainable future. It is intended to contribute ideas and analysis and to support discussion about the challenge of aligning economic and corporate intent, activity and impact with the limitations of a finite planet and the requirements of society.

The emerging response to the climate crisis is demonstrating that global challenges require coordinated responses which are

a mix of bottom-up (e.g., individual organizations setting zero carbon goals and trajectories) and top down (e.g., international conventions and commitments, agreed international data sets, typologies and solutions) approaches.

In the wider context of aligning value with long term sustainable outcomes within the boundaries of the planet, structural changes are required. This paper suggests and explores what these structures might be.

THE STRUCTURE OF THIS PAPER

The first part of the paper describes why a sustainable transition is needed, the goals and implications of an architecture for sustainable value transition, and key questions for applying the architecture at a company level.

In Section 2, we provide a summary of the academic foundations of a sustainable value transition, before going into the detail of what a Sustainable Value Architecture might look like. More detail on this academic background is provided in the appendix.

Section 3 suggests what a system architecture for Sustainable Value Transition might look like while Section 4 explores obstacles which may present challenges to the development of such an architecture and Section 5 describes the information flows required.

This is followed by a brief focus upon resilience in Section 6 and transition perspectives in Section 7. In Section 8 we arrive at possible next steps for establishing the Sustainable Value Architecture, with conclusions presented in Section 9.

Executive summary

Achieving sustainable economic and corporate performance within the boundaries of a finite planet requires significant, fundamental, changes to the way that value is defined, activity is planned and rewarded, and ecological and social system quality and conditions are prioritized.

This paper terms these changes a Sustainable Value Transition (SVT). The structures required to support that transition are termed a Sustainable Value Architecture (SVA).

FOUR STRATEGIC GOALS FOR A SUSTAINABLE VALUE TRANSITION

A successful sustainable transition requires clear strategic goals, representing success criteria in a number of additive dimensions. Figure 1 below proposes four strategic goals for this transition and describes current practice (what we see now) and ideal practice (what we would need to see to achieve the transition).

NINE CRITICAL COMPONENTS OF A SUSTAINABLE VALUE ARCHITECTURE

A Sustainable Value Architecture consists of a set of conditions, mechanisms, and institutions. These should work in combination to enable and utilize the flow of essential sustainability data in order to place companies and investors in a common, shared, information context, support decision making for sustainable outcomes, and align incentives and rewards for sustainable behavior. At a high level, we propose that the architecture could be visualized as follows in Figure 2.

Figure 1. Strategic goals for a Sustainable Value Transition

	Managing for the long-term	Societal & shareholder value creation	Within social and planetary boundaries	Along transition pathways
Current practice	Focus on the short term is visible in incentives, actions and communications; often at the cost of long-term outcomes.	Predominant shareholder value creation focus at expense of social/ ecological value destruction. Emergent and marginally adopted concepts & systems to manage for sustainable value creation.	Companies don't know to what extent they are operating inside/outside social and planetary boundaries.	Transition thinking is sorely missing in most strategic discussions. Lack of phase out strategies.
Ideal practice	Clear view on long-term goals. Short-term actions verifiably in full alignment with long-term goals.	Societal value creation is measured, managed, and accounted for in as rigorous a way as financial value is.	Companies shift to operating within social and planetary boundaries, e.g. with a clear and declining carbon budget.	Transition thinking is an integral part of both strategic discussions and operational decisions. All system participants share an understanding of limits & impacts.

Figure 2. Nine components of a Sustainable Value Architecture



From a corporation’s perspective, a management dashboard would be based on elements 1, 4, 5 and 6, each of which is substantially with an organization’s sphere of control. This would make corporate performance in environmental and social dimensions visible, measurable, and manageable.

In Section 3, we describe and discuss each element in detail as well as exploring their interdependencies and interactions.

The following table presents each element in brief. Fuller details are provided in Section 3.

CONCLUSIONS

For our economic and financial systems to recognize and integrate wider value concepts, significant change is required – not just by and within corporations but also in the context in which they operate. Only then will the various actors which constitute the value chain be able to act in concert to recognize and reward a transition to sustainable value.

We argue that an architecture for sustainable value must encompass a wide range of institutional arrangements. It should outline the potential mechanisms for processing global information on

environmental and social conditions and performance in terms of impact and usage information and also to describe the nature and dynamics of their relationships with corporate activity. This would facilitate the assessment and pricing of actors’ and products’ alignment with social and planetary boundaries.

If new forms of capitalism are to be successful, companies and investors must be able to understand and respond to the needs of stakeholders and a fragile, finite planet. To do this, a clear notion of sustainable transition, and the architecture which might support it, is essential.

ARCHITECTURAL ELEMENT	BRIEF DESCRIPTION
1. Corporate objectives, policies and systems	Development of corporate purpose with an explicit focus upon the creation of balanced, long term, sustainable value which is fully integrated and reinforced through embedding in corporate systems.
2. Ownership and control	Companies take a more strategic approach to their shareholders, seeking an alignment between those with long term focus on the corporate mission, balanced with a free float of non-committed shareholders.
3. Corporate law	Corporate law and fiduciary duties which explicitly align with the delivery of long-term sustainable value creation.
4. Corporate reporting	Balanced sustainability disclosure around standardized core content to allow for consistent reporting of organizational externalities and additional information signaling value creation/ destruction across multiple capitals.
5. Product information	Transparent product level social and environmental impact information which is comparable and verifiable.
6. Supply chain reporting	Interoperability of product level information allows different parties within supply chains (and 3 rd parties) to collate and assemble complete pictures of sustainable impact and value.
7. Global and national accounts and statistics	Global and national accounts act as the connective tissue between true prices, product information, supply chain reporting and the taxation and pricing of externalities allowing a global picture to be assembled of state and trend information in relation to planetary boundaries and social conditions.
8. Taxation and pricing of externalities	Shifting taxation focus and purpose: from labor towards materials; taxing negative externalities at source; removing or disincentivizing the tax-deduction of interest payments; and closing loopholes and incentives for tax evasion and tax shifting.
9. Business school and university education	A transformation in business education focusing on long term value, stewardship and purpose driven enterprise with the corporation understood as a social entity with responsibilities to maintain and strengthen the resilience and capacity of environmental and social systems.

1 Introduction



1 Introduction

Today's modern market-based capitalist system is faced with an existential challenge: how does it serve humanity's needs and wants without feeding inequality and breaching the boundaries of a finite planet?

This challenge is recognized and reflected in announcements and commitments from some significant voices, including the US based Business Roundtable's "Statement on the Purpose of a Corporation"², the World Economic Forum's (WEF) call for stakeholder capitalism in the 2020 Davos manifesto³ and the world's largest investment manager, BlackRock's, strategic commitment to sustainability.

"Purpose is not a mere tagline or marketing campaign; it is a company's fundamental reason for being – what it does every day to create value for its stakeholders. Purpose is not the sole pursuit of profits but the animating force for achieving them." – Larry Fink's annual letter to CEOs, 2019⁴.

WBCSD's Vision 2050: Time to Transform, launched in March 2021, lays out a framework for business action to accelerate the system transformations needed for a net-zero, nature-positive and equitable future.

As part of Vision 2050, "[Reinventing Capitalism](#)"⁵ explores how, at a systems level, capitalism needs to evolve to provide fertile ground for companies to drive transformational change.

WBCSD does not seek to pick a "winner" from the range of suggested approaches to sustainable capitalism, but believes that any reinvented capitalism should be:

1. **Stakeholder-orientated**, rather than shareholder-value-maximizing.

2. **Impact-internalizing**, rather than impact externalizing.
3. **Long-term**, rather than short term.
4. **Regenerative**, rather than degenerative.
5. **Accountable**, rather than unaccountable.

Achieving a successful transition towards such a reinvented capitalism which recognizes, reflects, and operates within contextual limits and delivers equitable value over the long term is a necessity to evolve our systems of price, priority and production so that they are fit for the purpose of delivering a sustainable future.

Such a reorientation requires the involvement and action not just of companies, but of all actors involved including governments and regulators, investors, international institutions and also consumers.

Long-term societal value would imply a shift so that the purpose, assessment, and reward of corporate existence results in a development and delivery of growth in quality of life at scale alongside improvements in the health and resilience of natural systems. Unfortunately, we have seen no clear improvement in well-being in OECD countries since the 1970s⁶ and there is ongoing massive environmental wealth destruction.⁷

While GDP and profits paint a positive picture, dissonance arises between the apparent continuing success of financial and business systems and other signals from people's lives, society, and the natural world. As a result, people increasingly feel that they can no longer trust numbers, experts, and institutions.⁸

Additionally, there is still a predominantly short-term focus in policy making, investing, corporate priorities and decision making. This is ill-suited for achieving long-term outcomes. It becomes particularly stark at a time of massive transitions and system disruption, of which COVID-19 is both a clear example and a likely foreshadow.

Instead of the "financialization" of the planet, we need the "planetization" of finance.⁹ Instead of seeking to retrofit price and value signals to a system which was not designed to recognize social and environmental externalities and systems effects, we need to conceptualize and seek to move towards a system of value which recognizes and responds to the limits of the planet.

We call for the development of concepts of success, value and performance aligned to the realities of a finite planet, to manage long-term societal and shareholder value creation along transition pathways.

This is much more feasible than people tend to assume. Over the past decades, information on environmental and societal value has vastly improved. Unfortunately, very little of this has been consistently translated into decision making. To ensure such information finally does enter decision making in a systematic way, many things will need to change: rules, incentives, conventions, and information flows – a new architecture. This paper explores where difference can be made, and who can contribute what.

Many books and articles have been dedicated to the imperfections of capitalism. This paper seeks to go further by deriving practical suggestions and identifying opportunities for improvement.

Our goal is to explore an **architecture for sustainable value which would be capable of supporting a transition of corporate practice towards the sustainable management of long-term societal and shareholder value creation, within social and planetary boundaries.**

Undertaking the transition to a sustainable future requires confronting the value challenges that currently hold us back. These apply at both systemic and institutional levels and also in the connections between them. Operating a financial system which is in tune with, and responsive to, global limits requires the creation of the means and mechanisms by which companies can locate themselves within a wider system such that they are responsive to signals to and from their activities.

If companies are expected to be able to set and define goals that align their own purposes but also respond to their operating context – that of the defined boundaries of a finite planet – then they will need to know which issues and aspects are important and how they relate to their business models, impacts, intentions, and opportunities.

Companies must also understand how that context manifests in terms of information, data, and signals in terms of possibility and performance. Fundamental questions remain however:

- What elements, systems and processes exist already to support these outcomes;
- What exist but need adaptation to support additional outcomes, and;
- What do not yet exist but need to be built?

This paper does not to provide all the answers. Managing such a complex transition requires

direction rather than precise prescriptions with short expiration dates. Additionally, many of the challenges to relating signals from society and the natural world to clear price and behavior implications which drive sustainable change are larger than can be addressed in one paper. Therefore, in some places we ask more questions than that we provide answers for. Nevertheless, this paper does seek to identify the key components that might be required to effect a sustainable value transition, the obstacles, and issues to be overcome and actions which might be taken now.

WHY TRANSITION MATTERS FOR WBCSD AND ITS MEMBERS

Setting a sustainable path

Clarifying the challenges and exploring the mechanisms by which we can align systems of value with the measurement and recognition of institutional success is a fundamental aspect of WBCSD's mission.

In March 2021, WBCSD published its refreshed Vision 2050. This establishes a set of pathways to a world in which 9+ billion people are able to live well, within the limits of the planet, by mid-century. With regard to the need for new models of capitalism, the Vision 2050 Refresh briefing paper "Reinventing Capitalism" notes that:

"Capitalism as currently practiced is generating both positive and negative outcomes. The goal of reinventing capitalism is to ensure that the power of private enterprise and competitive markets is better directed towards enabling 9+ billion people to live within planetary boundaries. This is not simply about tinkering around the edges of contemporary capitalism: it involves a fundamental shift in the purpose of business and the

global economy as a whole – from the pursuit of financial profits and economic efficiency for their own sake, to the pursuit of true value."

In the future, sustainability performance needs to be assessed through an understanding of a company's relationship to, impact on and performance with regard to the health of social, natural, and financial capitals. However, current reporting systems are not fit for that purpose. Whilst there is global agreement on what constitutes financial disclosure and reporting, the picture for non-financial disclosure (ESG dimensions) remains confused and complex. There is not, as yet, one single, comprehensive approach or standard and there remains a disconnect between reporting for social stakeholders and the sort of disclosures that would allow investors to gain a realistic perspective of company sustainability performance.

Additionally, given impetus by the COVID-19 pandemic, there is an increased focus on corporate viability and resilience and the development of corporate and investor approaches that would allow each party to disclose, and make use of, analysis and information that indicates and rewards corporate resilience.

These approaches are being described within forthcoming suggested guidance. For instance, the UK Brydon Review "Assess, Assure and Inform: Improving Audit Quality and Effectiveness"¹⁰ notes that (p 81): "There is also demand for more information about the likely survival of the company into an indeterminate future. This is a legitimate demand informing capital allocation decisions. Whilst independent analysis may provide such information, often privately, not all those with a legitimate interest in this information are sufficiently informed."

The Brydon Review therefore recommended that companies develop a “resilience statement”, which incorporates, enhances, and builds upon Going Concern and Viability Statements. This recommendation has been picked up in the UK by the Financial Reporting Council (FRC), in the June 2020 Financial Reporting Lab publication, “COVID-19 – Going concern, risk and viability: Reporting in times of uncertainty”.¹¹ This suggests that company reporting should use scenario analysis, combined with the production of going concern, risk and viability analysis, to disclose overall corporate resilience.

WBCSD’s Vision 2050 identifies, as part of its Financial Products and Services Pathway, the following pathway-specific vision, and its critical components:

“All financial capital and financial products and services are mobilized to support sustainable development:

- The financial system recognizes the value social and environmental outcomes alongside financial performance;
- Financial capital allocation enables sustainable development;

- The financial system enjoys access to comprehensive and comparable data on corporate sustainability performance;
- The financial system works for everyone.”

This vision for financial products and services implies significant reform and change in the purpose, context, duties, and modes of operation of all parts of the financial system, including convergent and urgent shifts in fields such as regulation, taxation, national accounting systems and corporate law.

Describing an architecture that would support and drive Vision 2050’s ambition is a contribution towards articulating value system interlinkages and how relevant institutions might adapt towards that ambition.

Identifying near-term benefits

Orientating towards an enterprise system architecture which supports and drives sustainable outcomes is not just a long-term game. Those companies that succeed in managing for a sustainable transition will not only make society better off but will likely enjoy better performance as well.

The financial and non-financial performance metrics of more sustainable companies tend to be stronger. Such companies are likely to have a clearer purpose, a stronger license to operate, longer lifespans, greater resilience, and a better ability to inspire the workforce and attract talent¹². As a result, they also largely perform better against financial performance metrics, including:

- Lower cost of capital / lower share price volatility;
- Enhancement and protection of growth capacity;
- More resilient profitability;
- Stronger stock performance.¹³

In sum, a sustainable transition helps corporations achieve what they are for – to create value, both in the sense of value for society (S) and the environment (E) and also in financial (F) terms. Unless otherwise stated in the remainder of this paper, when using the word value, we will be referring the concept in this broad sense, i.e., the delivery of enhanced performance across a wider set of considerations than purely financial value, including social and environmental system quality, health, and resilience.

Figure 3. Benefits of managing for sustainable value transition



THE GOALS AND IMPLICATIONS OF AN ARCHITECTURE FOR SUSTAINABLE VALUE TRANSITION

The aim of the paper is to propose an architecture that would support sustainable value transition. We suggest that such an architecture should have the following goals.

These goals raise a series of questions which require further exploration:

Managing for the long term

- In order to manage for the long term, how can congruence between short-term performance and long-term trajectories be assured and checked?
- What is the desired future that is sought and how specific should the performance parameters and measures which articulate that future be in order to allow and support transition?
- What kind of institutional arrangements would be required to promote and drive long-term thinking and action?

Societal and shareholder value creation

- What is meant by societal and shareholder value creation and how does it differ from concepts such as price derived from by supply and demand?
- How is societal value creation expressed, quantified, and balanced against shareholder value?
- Should capitals beyond financial only be quantified in their own units – e.g., life expectancy, greenhouse gas (GHG) emissions, quality of biodiversity – or also be expressed monetarily in shadow prices or opportunity costs?
- In what parts of the system is environmental and social information/value least visible?

Within social and planetary boundaries

Planetary boundaries are an expression of the planet's limits in terms of critical thresholds which should not be passed in order to maintain a viable environment. Social boundaries are an approach to expressing the fundamental social

conditions which should be delivered through public and private activity.

Planetary Boundaries (PB): there are nine planetary boundaries that put our living conditions at risk when crossed (Rockström et al. [2009]¹⁴, Steffen et al. [2015]¹⁵). They highlight that radical change in human activity is required in order to maintain planetary integrity i.e., dramatically reduce greenhouse emissions, nitrogen use, etc. This implies boundary budgets at the level of states, industries, companies, and individuals. While translating activity at different levels of the planetary scale is hard, approaches to translating boundaries into behavior and price signals can be undertaken by regulation, taxation and pricing. In addition, the existence and focus of boundaries provide a clear set of fundamental priorities which should be reflected in the development of more sustainable corporate activities and investment allocation.

Social boundaries: these are the minimum social living conditions that need to be observed, such as living wages, access to health and education, etc. in order to support human dignity and equity (Raworth [2017]¹⁶).

Figure 4. Strategic goals for an architecture for sustainable value transition

	Managing for the long-term	Societal & shareholder value creation	Within social and planetary boundaries	Along transition pathways
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Further detail on the boundaries and how they provide clear context for sustainability ambition is given in the appendix.

Social and planetary boundaries place both context and urgency on sustainability goals. For such goals to become meaningful (in terms of indicating and driving the future of an institution and its place and performance within a wider system), they need to be based on what the boundaries tell us is either possible, safe, or necessary – not upon an incremental “less than last year” mindset.

However, boundaries present methodological challenges in terms of translating their implications into policy and practice, raising the following questions:

- How can the limits be translated into practical and useable conceptions of value and value drivers?
- What systems of pricing and value can we imagine that innately reflect scarcity and performance?
- What would be the required information infrastructure needed to do this?

Along transition pathways

Transition pathways articulate the journey from a current state to a desired future state. In the context of sustainable transition and sustainability in general, they refer to a transition from an unsustainable present to a sustainable future.

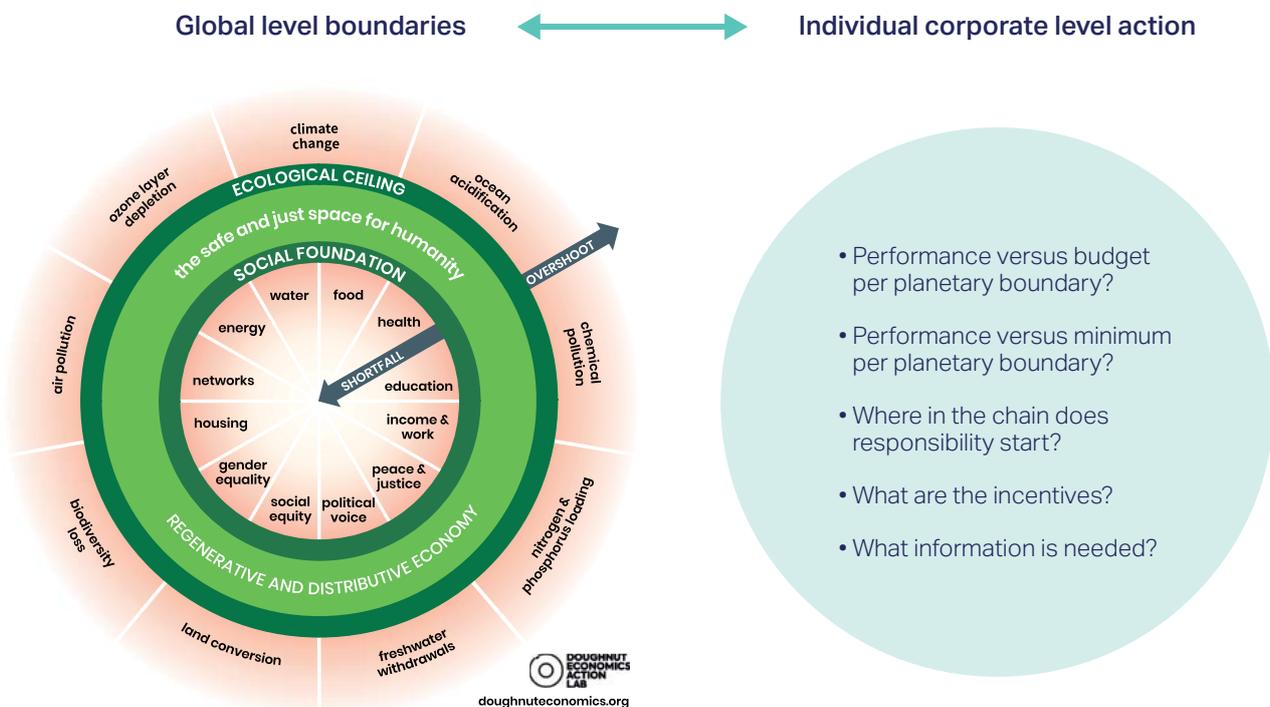
Such pathways are guided by the need to deliver social equity and ensure that the boundaries of the planet are respected, reflected and, where possible, strengthened.

Transition thinking is badly needed in a world of constant change and where business is unfit for a sustainable future. Questions include:

- How do transitions work?
- What are the dynamics of transitions and how can they be managed?
- What needs to happen to build new systems and to phase out old ones?

Figure 5. From global boundaries to individual corporate behavior

Source: adapted from The Embedded Economy, Kate Raworth and Marcia Mihotich. CC-BY-SA 4.0¹⁷



APPLYING THE ARCHITECTURE AT THE COMPANY LEVEL – KEY QUESTIONS

Each of the four goals identified above for the sustainable value architecture raise questions of how they might apply to individual companies and institutions in the following dimensions:

Strategic

- How do the components of the architecture relate to corporate purpose and strategy?
- How do the company's intentions, technologies and activities align with a sustainable and equitable future?

Operational

- How would transition intention and progress manifest across corporate management processes and systems, i.e., in corporate functions, and for auditors, supervisors, investment chains, regulation, etc.?

Geographical and sectoral variation

- How do approaches and responses differ across industries, countries, etc.?
- What best practices are there that come closest to the ideal practices?
- What will decision criteria look like?

Rules, requirements, and guidance

- How should requirements for an evolution of corporate purpose and delivery of societal value creation be embedded in law, regulation, and governance?
- What attempts have already been made to realize the above components and what would they imply for behaviors, technologies, industries, and asset classes?



② A brief summary of the academic foundations of SVT



② A brief summary of the academic foundations of SVT

Several lessons can be learned from the relevant academic literature and theories, a more thorough overview of which can be found in the appendix. Here, we summarize our findings to capture the key elements required for deriving a potential architecture for SVT.

LIMITATIONS OF ACADEMIC FINANCE AND ECONOMICS

There are serious problems with the dominant paradigms in finance and economics for the long-term delivery of sustainability and equity. For example:

- The goal function is typically utility instead of the good. This tends to value quantity over quality, and throughput rather than overall outcome.
- The concepts of value, financial value and price are incorrectly used as synonyms.
- Externalities are typically not priced, meaning that price signals either do not reflect them or only do so partially.
- The Commons¹⁸ as are not acknowledged as crucial sources of value.
- There is no clear distinction between value creation and value extraction – and the latter is incentivized.
- The evolutionary processes of differentiation, selection and amplification are largely ignored.

In short, economics struggles to respond to poorly priced or

unpriced aspects and issues which are critical to the health of social and environmental systems, but which are currently considered largely as externalities. Fortunately, alternative discourses are available – such as evolutionary and behavioral economics – and these have been building a growing body of evidence over the past decades. As a result, we do not need to start from scratch.

THE FAILURE OF SHAREHOLDER VALUE – AND WHY CURRENT APPROACHES TO STAKEHOLDER VALUE REQUIRE CHANGE

Financial systems establish profit generation and distribution as the central goal of private enterprise, imposing no further fundamental requirements on companies and private investors with regard to the health of the system as a whole.

The shareholder value paradigm, whilst powerful and valuable for a number of parties within the economic system, gives rise to a number of problematic consequences:

- The theory is applied in a distorted way, with short-termism resulting from incentives such as compensation based on Earnings Per Share (EPS).
- It does not account for externalities.
- The narrow focus on shareholder value and the belief that markets ‘automatically’ yield desirable outcomes results in a limited sense of responsibility among

executives, and what corporate law professor Jaap Winter calls the “dehumanization of the corporation” (Winter, 2020¹⁹).

The traditional stakeholder model (also sometimes termed the “Rhineland model”²⁰) argues that large companies should act in the interests of a broader group of agents than just their shareholders and optimize stakeholder value (e.g., Freeman & Reed, 1983²¹). This model yields a longer-term perspective but does not bring clear objectives and thus faces an accountability problem. As it is not clear what managers need to achieve. Moreover, the traditional stakeholder model, unless it is subject to substantial development and clarification, only takes current stakeholders into account. It ignores future generations and externalities without clearly identified stakeholders, such as most infringements on natural capital.

MANAGING FOR SOCIETAL AND SHAREHOLDER VALUE TOWARDS MEANINGFUL STAKEHOLDER CAPITALISM

Given the above problems, and in light of the need to conduct economic and business activity within the boundaries of a finite planet, there is an imperative to rethink the objective of the firm and the mechanisms associated with its ability to generate value in order to build a more effective and meaningful stakeholder capitalism.

The solution lies in broadening the objective of the corporation to optimizing total or integrated value (V), which combines financial (F), social (S) and environmental

(E) value (Schoenmaker and Schramade, 2019²²); therefore, for meaningful sustainable transition, $V=E+S+F$, not just F.

Note: while there are multiple capitals, for the purposes of this paper we refer to them in three broad categories, namely F, E and S.

However, there remains a challenge to operationalizing the objective of broader value creation.

Mayer (2018²³) argues that the fundamental vehicle for such change is purpose. That corporate objectives should be chosen by companies based on their own purpose, their *raison d'être*, what they are good at, and where they have a competitive advantage. Purpose should be credible to ensure commitment and trust from stakeholders and should form the basis of a corporation's charter, strategy, business model, operational management, and performance.

Rather than being regarded as a cash printing machine, companies should be understood as prosperity generating networks, with management for sustainable

transition a central requirement of their license to operate. Long-term thinking calls for a sense of mission, committed owners and institutions dedicated to long-term goals. The above ensures that companies are managed for societal value, but they additionally need to be capable of responding to planetary and social boundaries by defining and following transition pathways.

PLANETARY AND SOCIAL BOUNDARIES

We are currently failing to stay within the boundaries. This is not surprising since our systems of value originate in theory which posits unlimited resources (free goods), so that staying within boundaries is not a design or success criteria for capitalism.

It also means that there are no methods by which information concerning the state (quantity and health) of underlying capitals or impacts upon the boundaries can be translated into coherent and consistent signals beyond scarcity impacting price – by which time it may well be too late to prevent the boundaries being broken.

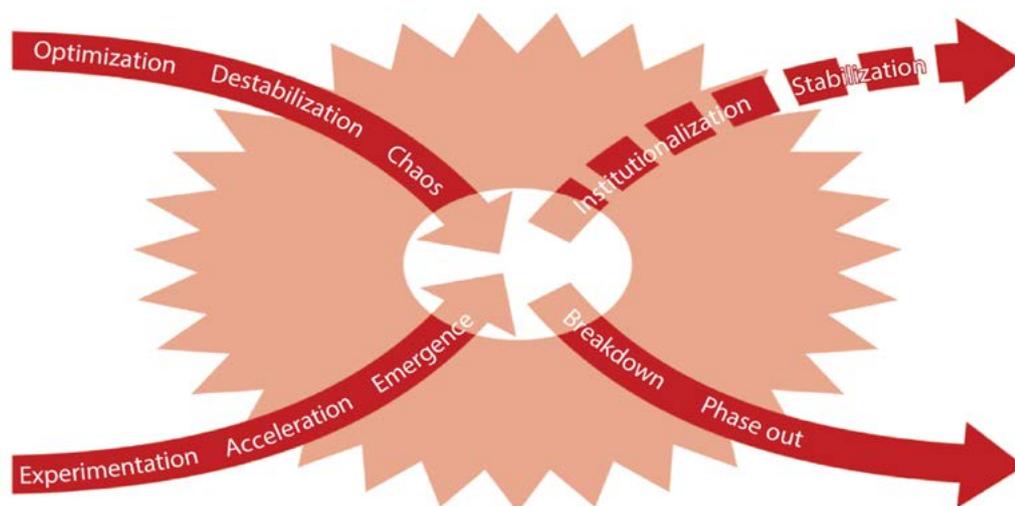
We therefore need a mix of mechanisms that make the boundaries visible, accountable, and prioritized on all levels (i.e., individual, enterprise, national, supranational; organizations and markets). Such mechanisms would include regulation, prices, taxes, and budgets. These, in turn, require the tracking, reporting and transparency of data on performance related to the boundaries.

TRANSITION PATHWAYS

Within the context of systems theory, transitions research investigates how transitions can happen and, to some extent, be managed. Transition theory asks how one can move from the current regime to a new regime. What are the dominant cultures, structures and practices that support the current regime? This dynamic typically creates a path dependency or 'lock-in' within which actors seek to improve the existing system and are unable to fundamentally change course. Transition dynamics can be visualized using the x-curve (see figure 6 below).

Figure 6. The x-curve of transition dynamics

Source: adapted from Loorbach et al. (2017)²⁴



Loorbach D, et al. 2017. *Annu. Rev. Environ. Resour.* 42:599–626

The x-curve can be filled with the events and processes that are interpreted as belonging to specific transition phases and pathways, such as the transition to zero carbon required by the Paris Agreement²⁵ and supported by the Science Based Targets Initiative.²⁶ A version of this model, populated with inputs and outcomes related to sustainable transition is included in the appendix (figure 26).

For each transition, the following questions could be asked:

- To what extent do we observe experimentation, social diffusion, niches, alternative discourses, and indicators of growing destabilization, such as policy interventions, social innovation?

- Phase out policies tend to be neglected by policy makers, but they are very important. How can companies which are currently reliant on unsustainable business models be offered a way out of their predicament?

Both transition and evolutionary perspectives point to the importance of diversity and experimentation.

MANAGING FOR SUSTAINABLE VALUE TRANSITION IN A NUTSHELL

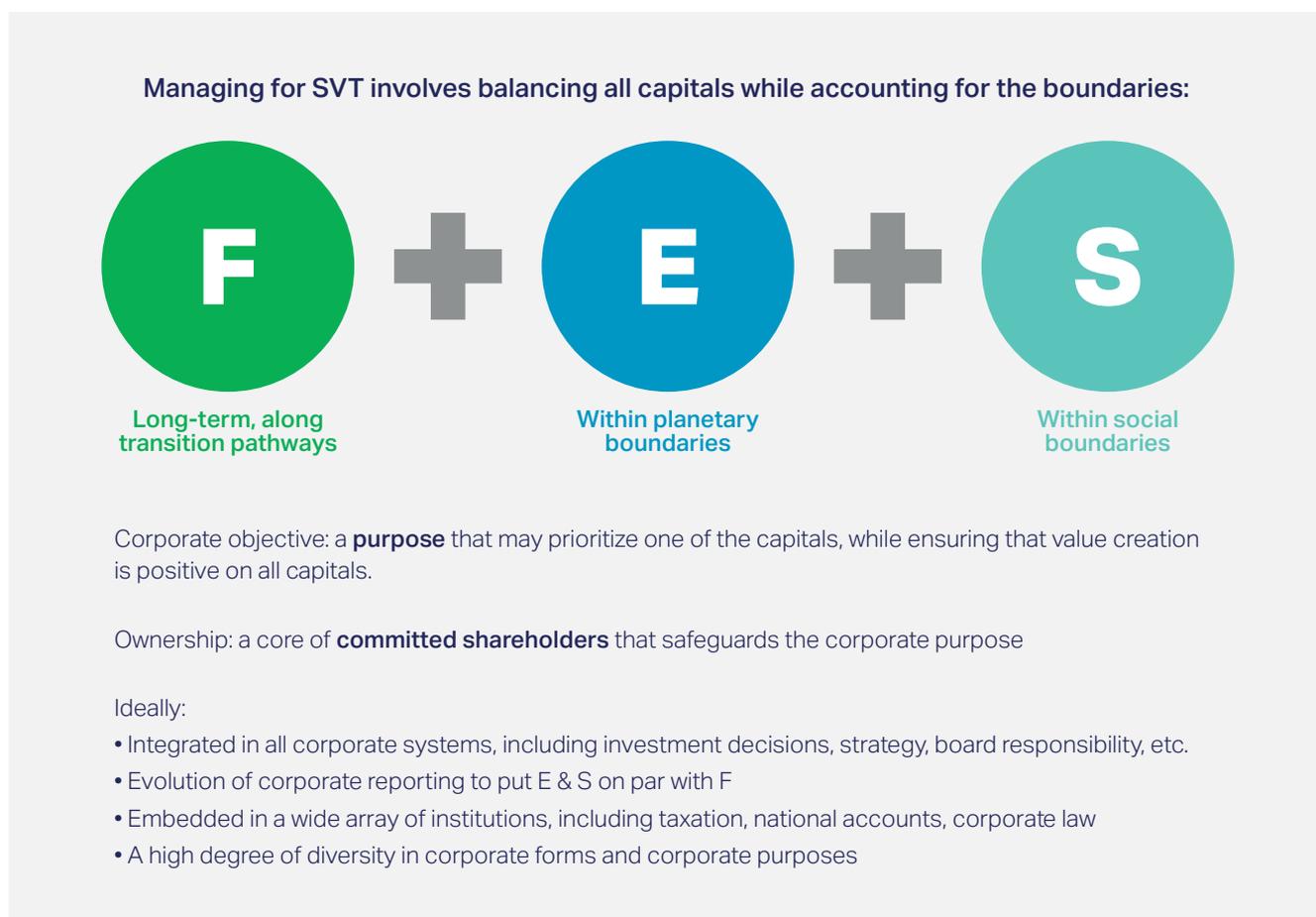
Considering the perspectives of transitions, boundaries and long-term thinking, a summary of the

key elements of managing for Sustainable Value Transition is given in figure 7.

However, even with a vision of an ideal situation, the question remains: how might it be achieved?

In the following sections, we suggest a possible Sustainable Value Architecture for supporting and driving such a transition. We then explore the obstacles towards achieving such an architecture and the information flows which would be required to support it, while keeping the lessons from transition theory in mind.

Figure 7. Managing for SVT



3 What could a Sustainable Value Architecture look like?



3 What could a Sustainable Value Architecture look like?

An architecture for sustainable value would consist of a set of conditions, mechanisms and institutions that enable and utilize the flow of essential sustainability data to place companies and investors in the same information context, support decision making for sustainable outcomes, and align incentives and rewards for sustainable behavior.

This section identifies the conditions, mechanisms, and institutions that such an architecture would need and explores each component in further detail.

These conditions, mechanisms and institutions are written out in figure 9.

Each of these should be specified and determined at levels appropriate to their focus. The set can then be used as a checklist and

benchmark for monitoring progress. The architecture should then outline the potential mechanisms for processing global information on E and S, to assess and price actors' and products' alignment with social and planetary boundaries.

Figure 8. Architecture and goal



Figure 9. Conditions, mechanisms, and institutions that make up an architecture

CONDITIONS	MECHANISMS	INSTITUTIONS
<ul style="list-style-type: none"> • Measurement of what is needed to stay within planetary boundaries – at the global, regional, local, and individual level • Mindsets: awareness and acceptance of the responsibility to ensure staying within those limits • Incentives set accordingly 	<ul style="list-style-type: none"> • Corporate objectives & policies • Corporate law • Corporate reporting • Product information • Supply chain reporting • National accounts & statistics • Taxation & pricing of externalities • Business education 	<ul style="list-style-type: none"> • Embed in existing institutions, such as regulators, corporations, and financial institutions • Found new institutions where the biggest data gaps are, such as in biodiversity and human rights

At a high level, the architecture could be visualized as follows.

Figure 10. Nine components of a Sustainable Value Architecture



From a corporation’s perspective, a management dashboard would be based on elements 1, 4, 5 and 6 (each of which is substantially with an organization’s sphere of control), which would make corporate performance on E and S visible, measurable, and manageable. The following sections consider each element.

CORPORATE OBJECTIVES, POLICIES, AND SYSTEMS

This is the component that should ultimately change to manage for SVT, for which elements #2-9 are enablers. Applied successfully, it would mean that:

- The corporate objective changes from shareholder value maximization to managing for SVT, with a purpose that emphasizes where the company can create most value.
- There is a shift in focus away from efficiency towards resilience and innovation.
- Corporate policies and systems change accordingly, including; strategy information systems; internal and external reporting; investment decisions; financing decisions; management compensation; employee evaluation; and marketing, etc.

For the purposes of practical implementation, each of the suggested changes above could and should be more extensively elaborated. Additionally, these issues tend to be interrelated, changes in one give rise to changes in the others. A blueprint for what those changes would mean for corporate practice is provided by WBCSD’s Future Proof Business guide²⁷.

For example, financial policies should be geared more towards resilience and less focused on efficiency. For most companies, this would imply more conservative financial policies with more cash, less debt, fewer buybacks, and fewer dividend pay-outs.

However, delivering meaningful resilience poses more fundamental questions for strategy and operations. It requires consideration of meaningful and useful metrics for business resilience and should also involve rethinking business models.

The same is true for interdependencies. What are the measures which should be used to indicate a company’s dependence on and contribution to the health of social and natural capital, and how might value chains change, for instance, if they transitioned from a utilization of mineral inputs to a reliance on biological ones?²⁸

Investment approaches for maximizing sustainable value creation

Investment decisions would have to evolve from simple Discounted Cash Flows (DCFs) to valuing all capitals in a way that recognizes their interdependencies. Projects with a value creation profile like the ones in figure 11 (highly value extractive) and figure 12 (mildly value extractive) should not be undertaken.

This might seem like a radical shift, but it is less radical when considered within the context of a wider evolution of priority and policy. Over time, incentives should evolve in such a way that the profiles below will be not financially (or legally) legitimate, in the sense that such negative values on E and S would result in financial penalties that drive down F.

In anticipation of that trend, forward-looking companies would not consider ventures with a highly extractive profile, and they would apply caution to the mildly extractive ones. After all, if externalities are internalized (i.e., the negative E and S disappear), they will likely drive down the F performance of the worst positioned companies.

Figure 11. Highly extractive value creation profile

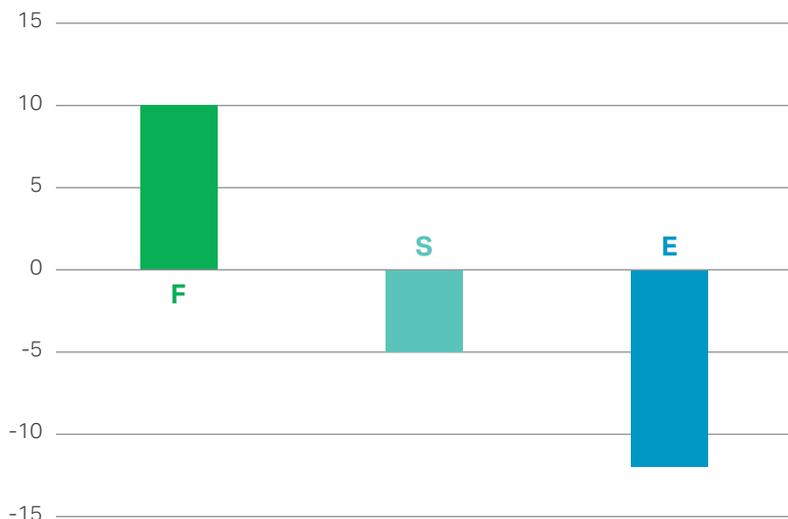


Figure 12. Mildly extractive value creation profile

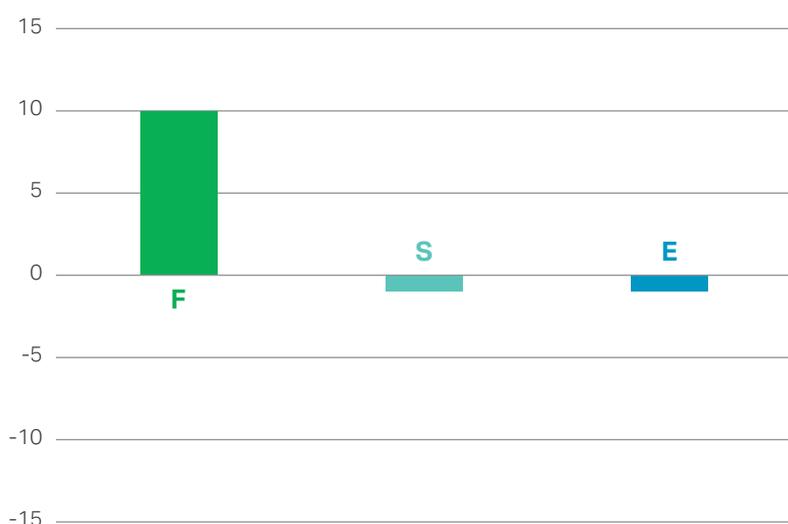


Figure 13. Integrated value matrix

	E&S VALUE DESTRUCTIVE	E&S VALUE CREATIVE
F value creative	Quadrant 1 <i>Exploitation</i>	Quadrant 2 <i>Win-win</i>
F value destructive	Quadrant 3 <i>Collapse</i>	Quadrant 4 <i>Charity/ Concessionary</i>

This applies to both internal (corporate) and external (investor) investment decisions as one can assess entire companies in terms of such value creation profiles. If a company’s overall profile looks like the one in figure 11 (for example if fossil fuels are its core business), then it has a serious problem. Such a company faces the task of building a strategy that maps a credible path towards eliminating the negative E and S within a reasonable amount of time. If it does not, it will probably fare like companies with a core focus upon coal: F will become negative, and the company will go out of business. In other words, getting S and E to acceptable levels is essential for saving F. Companies with a mildly extractive profile (figure 12) may or may not be worried, depending on their ability relative to their competitors to effectively internalize their externalities.

It therefore makes sense for investors to value companies not just on financial (F) value but on their E and S value as well. If they do this for every investment, then they can apply it to their entire portfolio. Another way of putting it is via an integrated value matrix, as set out in figure 13.

Ideally, investments should cluster in Quadrant 2 as those create value across all three capitals. However, many actual (current) investments will be in Quadrant 1 and investors should be concerned enough with where they are headed to ask: will this investment improve sufficiently on E and S to make it to Quadrant 2? Alternatively, will they follow a large part of the coal industry into Quadrant 3 and be forced to cease operations?

Quadrant 4 is interesting in a different way - these investments are value creative for society, but their financial returns do not meet the hurdle rates of institutional investors. For these investments, ways can be devised to move to Quadrant 2 by means of adapting business models or with help from true prices/costs²⁹ or government incentives.

Companies need to build a much better understanding of their own value creation process for all capitals, and how this relates to financial value. Figure 14 shows a fictitious company's profit and loss (P&L) and integrated P&L (IP&L) and shows how the line items are distorted by poor incentives.

Both sales and costs are too low since goods sold and goods bought do not reflect externalities. Interest payments are artificially high due to tax incentives. Negative externalities are not minimized, and positive externalities are not maximized because the company is not incentivized to do so and is hardly

aware of them. If it is supposed that the company's incentives are improved with true prices (on the largest externalities) and the removal of tax-deduction on interest, the picture would change dramatically, as figure 15 illustrates.

Figure 14. P&L and IP&L at current incentives and values

ITEM	QUANTITY	EXPLANATION
Conventional P&L (at current incentives & values)		
Sales	100	Too low as they exclude externalities
Costs	-70	Too low as they exclude externalities
EBIT	30	
Interest	-20	Intentionally high to minimise taxes
EBT	10	
Taxes	-2	Too low due to tax shield
Net profit	8	
IP&L (at current incentives & values)		
Net profit	8	
Interest	20	
Taxes	2	
Positive externalities on E	2	
Negative externalities on E	-17	
Positive externalities on S	5	
Negative externalities on S	-3	
True profit	17	Net positive value for society, but very skewed towards investors

Figure 15. P&L and IP&L with improved incentives

ITEM	QUANTITY	EXPLANATION
Conventional P&L (with true prices in effect and no tax deduction on interest)		
Sales	130	Go up with true prices: may move to hitherto unrecognized value in products
Costs	-90	Go up with true prices
EBIT	40	Improves due to higher base & possibly better competitive position
Interest	0	Company decides to finance without debt as it sees no benefit in it
EBT	40	
Taxes	-8	Higher due to interest no longer being tax deductible
Net profit	32	
IP&L (with true prices in effect and no tax deduction on interest)		
Net profit	32	
Interest	0	
Taxes	8	
Positive externalities on E	5	Better performance due to better incentives & accountability
Negative externalities on E	-8	As above
Positive externalities on S	7	As above
Negative externalities on S	-2	As above
True profit	42	Net positive value for society; negative externalities reported and improving

Sales and costs go up as externalities are priced. Moreover, because this company is better prepared than peers, sales go up much more than costs and margin expands. Taxes are higher and the company uses less debt as it no longer sees the utility of having it. Net profit goes up and the externalities (both positive and negative) improve as the company is rewarded for value creation on E and S. Over time, negative externalities will trend towards zero. As a result, true profit turns from negative to very positive.

Of course, companies should undertake this analysis even before such improved incentives are in place. Those that do will be better able to change and prepare for

external change. Such change can be achieved by leading corporations that pioneer new or adapted methods and systems, and by pressure from financial institutions, clients, lawmakers, and competitive new entrants with new business models.

OWNERSHIP AND CONTROL

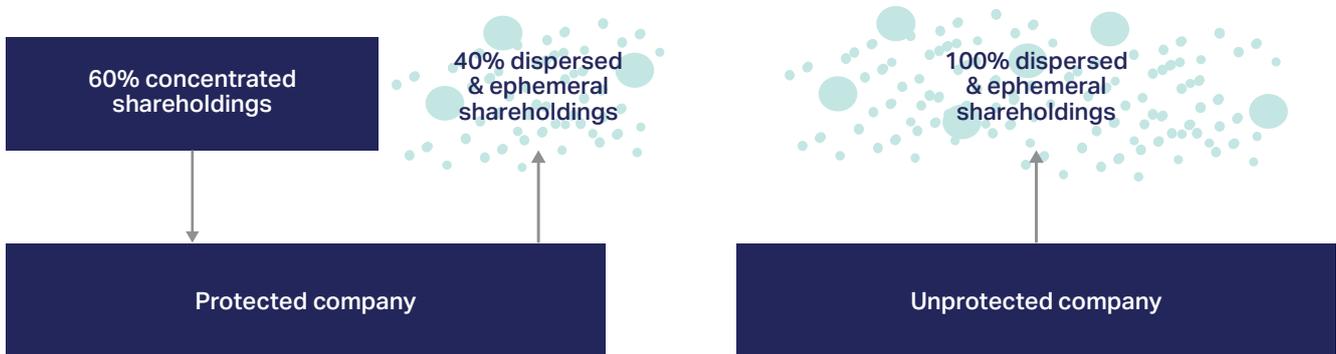
A change in ownership structures can allow companies the leeway to adapt element #1 (Corporate objectives, policies, and systems). Applied successfully, it means:

- A degree of concentrated ownership in which most corporations will have large and committed shareholders

(foundations, families, or institutional investors) which safeguard the corporate mission without overly protecting management; and a still significant free float of non-committed shareholders (retail and institutional investors) who have better information than is currently the norm as they own their shares in shorter investment chains (see figure 16 below).

- Protection of the commons in dedicated new entities.
- Protection of data and human capital by means of new ownership devices.

Figure 16. Protection of company purpose by committed shareholders



CORPORATE LAW

Changes in corporate law can allow progressive companies the leeway to adapt element #1 and would also help rein in companies which are value extracting.

Applied successfully, such changes would mean that:

- Companies would be required by law to manage for SVT, in line with elements of current fiduciary duty³⁰ with a requirement not just to consider sustainability performance but to prioritize it.
- Corporate supervisory boards would need to ensure executives provide direction which maximizes the organization's ability to create balanced sustainable value over the long term.
- Companies would clearly state their purpose in their corporate charter.
- Companies could be held liable for not addressing and removing their negative externalities.

Lawmakers, together with legal professionals and academics, would be the main driving force for this change. A recent statement by 76 academic signatories recently made such a call for legal changes to corporate governance across the financial value chain.³¹ In fact, a group of 25 corporate law professors recently called for the introduction of 'responsible corporate citizenship' in the statutory duties of directors and supervisory directors in the Netherlands.³²

CORPORATE REPORTING

It is important to stress that context specificity makes standardization of data very hard. An effective approach would be to require standardized reporting objectives, namely to at least account for negative externalities in a consistent manner. Progressive corporations would demonstrate leadership by reporting on E and S in a way that gives meaningful signals about their value and value creation/destruction. Subsequently, such types of reporting should become obligatory. Disclosure would move beyond the current focus on performance which has the capacity to affect enterprise value (as currently derived) to include disclosures on corporate relationships with issues of priority to stakeholders, such as biodiversity/nature loss, equality, and societal contribution. Such disclosures should include reporting on the nature, size, and targeted reduction of negative externalities. Under these new disclosure norms, companies would no longer have incentives to avoid higher auditing costs and laggards would be forced to follow suit.

PRODUCT INFORMATION

Transparency of externalities is crucial to inform and empower consumers, establish true prices to eradicate the worst externalities, and incentivize positive behavior. Product information on both intermediate and consumer products should specify sufficient information on planetary and social boundaries to arrive at serious estimates of products' true prices and negative externalities.

In the absence of information, they should not be given the benefit of the doubt. Information should be comparable to that of competing products, ideally verified via independent parties. This will provide a source of competitive advantage for companies with better E and S performance than their peers, allowing them to charge higher prices as they can credibly signal higher quality.

At the moment, the provision of such information is regarded as a cost and this situation will likely persist until it becomes too costly to **not** do it. Clearly, incentives and regulation are needed to drive and support the change required from all parties in the system, including corporations, lawmakers, standard setters, investors, NGOs, data providers/ aggregators and consumers.



SUPPLY CHAIN REPORTING

The type of product information noted above should cover the entire value chain and be sufficiently deep and detailed to allow for true pricing and measurement of sustainable value for each link in the chain. It is likely to be the responsibility of independent data gatherers to identify information gaps in supply chains. A challenge is to design business models which incentivize such data gatherers to obtain meaningful and comprehensive information. The change should come from the same sources as for product information, but with an extra responsibility to be undertaken by specific actors to connect the dots.

GLOBAL AND NATIONAL ACCOUNTS AND STATISTICS

Global and national accounts and statistics can become the connective tissue between true prices, product information, supply chain reporting and the taxation and pricing of externalities.

To be effective, they should:

- include performance data on the social and planetary boundaries;

- detail progress along transition pathways; and
- set a global standard for national and local dashboards that reflect the above.

This agenda should be driven by lawmakers and policymakers.

TAXATION AND PRICING OF EXTERNALITIES

Taxation is a significant and powerful lever for dramatically changing incentives for sustainable value creation. The transition would need to:

- move from taxation focused on labor towards materials;
- tax negative externalities at source;
- remove or disincentivize the tax-deduction of interest payments, and;
- close loops and incentives for tax evasion and tax shifting.

This agenda should be driven by lawmakers and policymakers.

BUSINESS SCHOOL AND UNIVERSITY EDUCATION

For the preceding elements to find fertile ground in economic and business norms, significant evolution of current financial and business education is required. This must incorporate a significant update of corporate, business school and university training across all fields.

There is a vast professional community of people involved in producing financial information (e.g., controllers, auditors, etc.) and those who are exposed to that information (investors, managers, etc.). These people and others need to develop a similar body of knowledge and experience in producing E and S information.

This is a major training challenge. Education institutions will need to investigate and teach the ways to manage for SVT in fields such as finance, accounting, strategy, marketing, public management, and tax. Business schools and universities should take up this role under pressure from corporations and society.



④ Obstacles to managing for SVT and potential solutions per actor



4 Obstacles to managing for SVT and potential solutions per actor

Section 3 identified the current and ideal states of the system and what SVT would look like. In this section, we consider obstacles to achieving these idealized states and suggest ways they can be addressed by different actors. The obstacles identified are derived from the process undertaken as part of WBCSD's Vision 2050 Refresh project.

The following figure identifies these obstacles and highlights their interrelations.

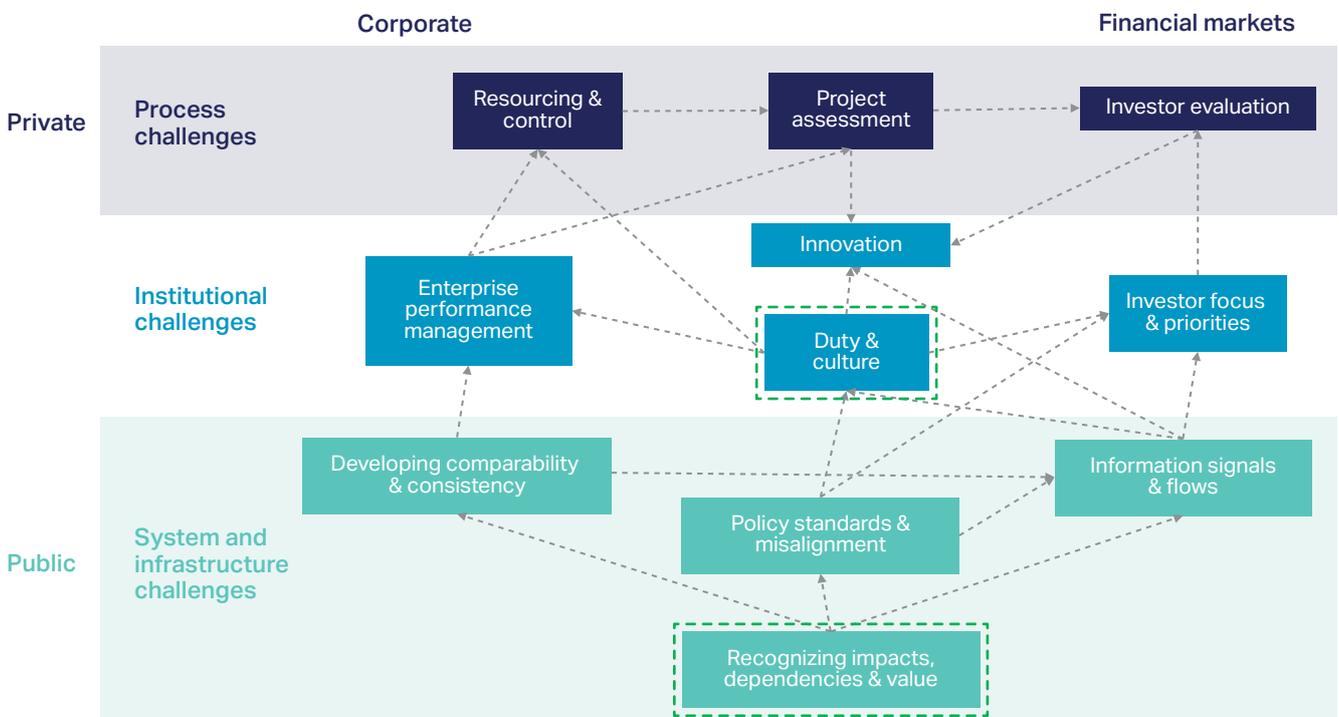
Understanding these obstacles allows a degree of specificity for the identification of tangible solutions. For example, the obstacle 'recognizing impacts, dependencies and value' begs the question of who needs to recognize what impact, what dependencies and what value? And how, in what context and with what means?

Conceptualizing the obstacles as parts of an interrelated system highlights how improvements made in one area can apply pressure in others. As a result, making improvements or reforms in more

than one area will raise the overall direction of the system towards long-term, sustainable outcomes.

In terms of the will (or just seeing the need) to get there, the central obstacles are 'recognizing impacts, dependencies and value' and 'duty and culture'. It is helpful to split the barriers by actor and to work from desired states and main challenges to more specific obstacles and solutions per group.

Figure 17. Obstacles to SVT – identifying interrelationships



The figures below provide a more granular analysis for four groups of actors: a) people; b) corporations; c) financial institutions; and d) governments and supranationals.

While each group of actors has its own specific issues to deal with, better information flows are a common thread across each group. We explore this further in the next section.

Figure 18.a. From obstacles to solutions per group of actors. A) People



Figure 18.b. From obstacles to solutions per group of actors. B) Corporations

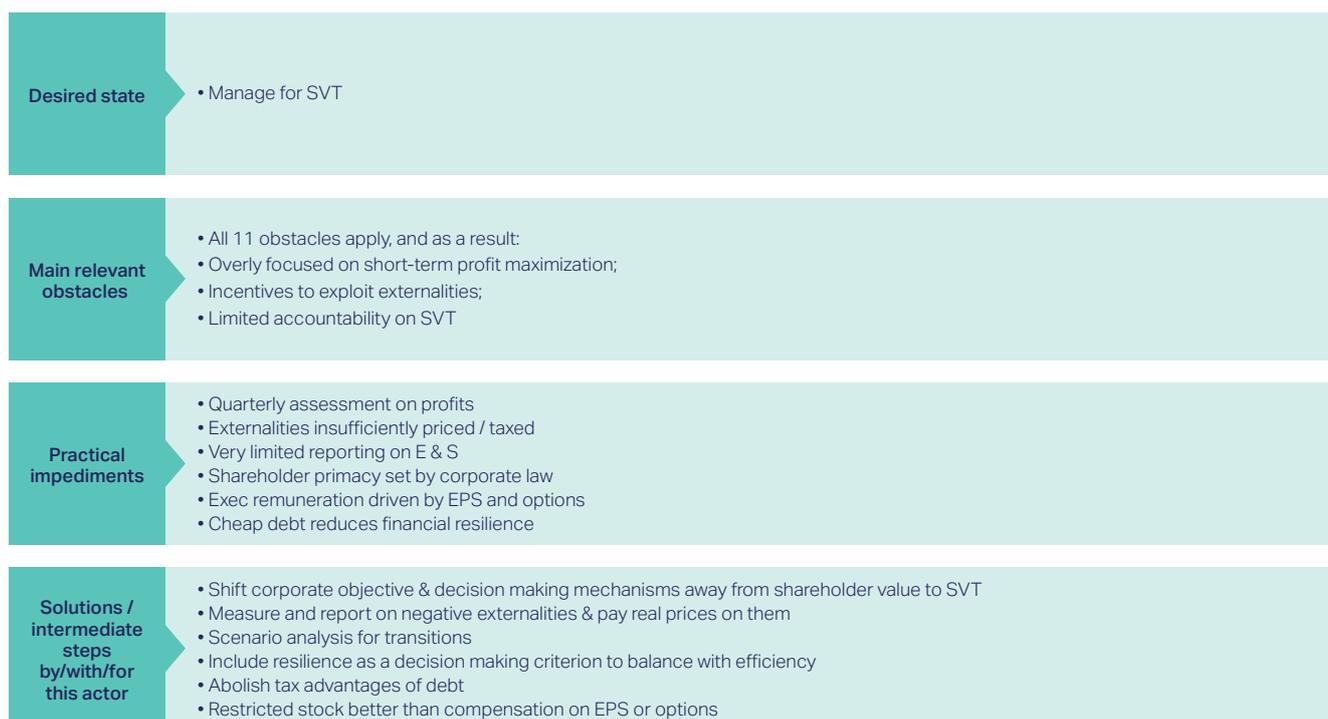


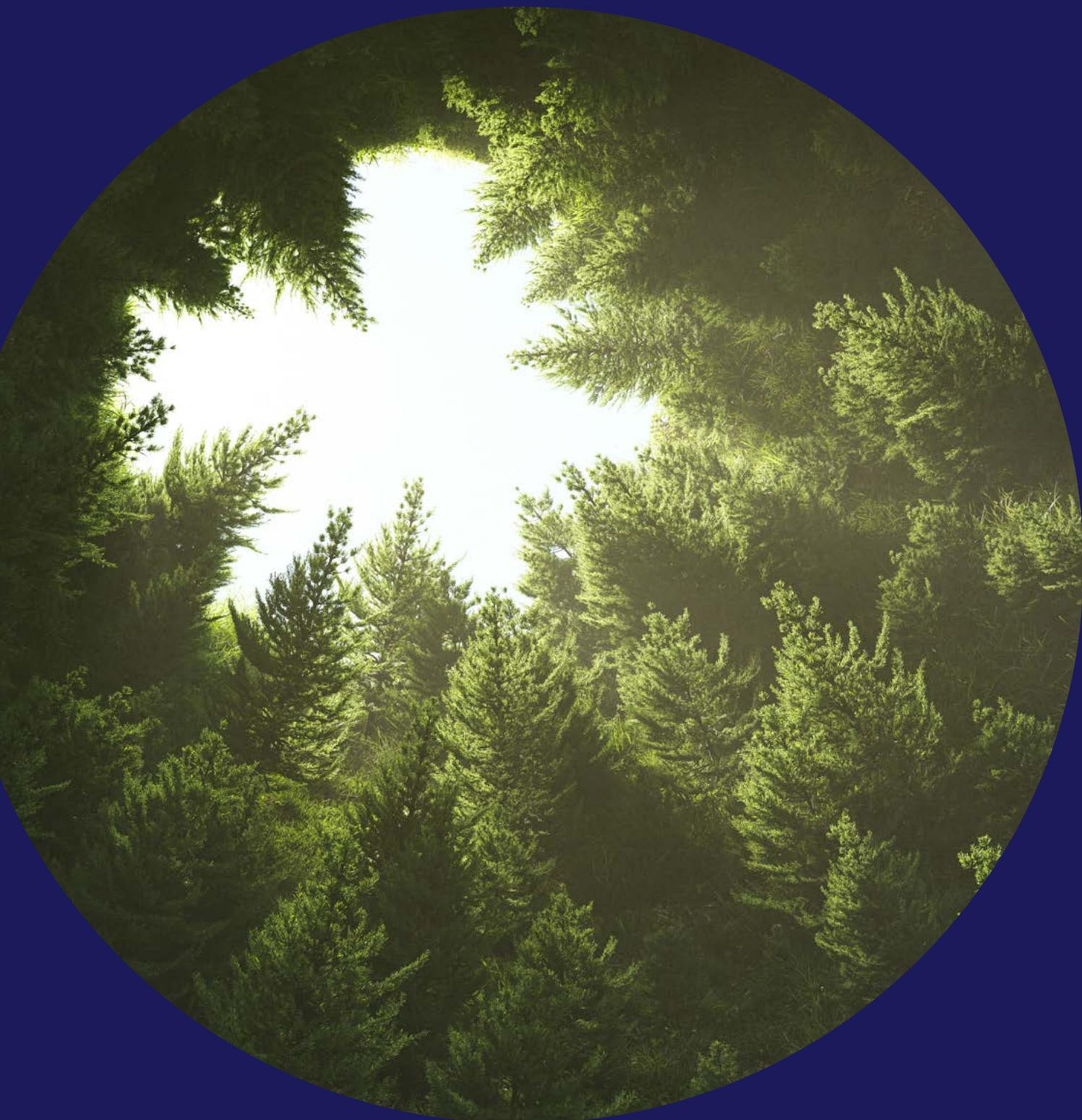
Figure 18.c. From obstacles to solutions per group of actors. C) Financial institutions

Desired state	<ul style="list-style-type: none"> • Manage for SVT • Allocate capital for SVT
Main relevant obstacles	<ul style="list-style-type: none"> • All 11 obstacles apply, and • Complex models and products maximize financial value at large external costs; • Dominance of models over judgement • Extreme specialization • Complex investment chains limit awareness, sense of responsibility and ability to effect change • Separation of finance and ethics
Practical impediments	<ul style="list-style-type: none"> • Information systems & flows geared to just a few metrics • Lack of meaningful non-financial metrics • High financial return expectations make many valuable projects uninvestable • Short performance evaluation periods • Lack of sustainable finance awareness, knowledge, and experience; and inability for many to think or act beyond their current models & structures • Large diversified portfolios cause lack of knowledge on investments, inability to do deep engagement, and limited responsibility
Solutions / intermediate steps by/with/for this actor	<ul style="list-style-type: none"> • Shorten investment chains • Concentrate portfolios • Build in longer evaluation horizons • Make impact explicit as a third dimension in addition to financial risk & return • Sustainable finance training & innovation

Figure 18.d. From obstacles to solutions per group of actors. D) Governments & supranationals

Desired state	<ul style="list-style-type: none"> • Manage for SVT • Set the rules of the game so as to align incentives of others with managing for SVT
Main relevant obstacles	<ul style="list-style-type: none"> • All 11 obstacles apply, and • Lack of vision on identifying and limiting exploitative business models • Corporate lobbying or even corporate capture • Lack of vision on desirable long-term outcomes
Practical impediments	<ul style="list-style-type: none"> • Limited inclusion of E&S in national accounting • Outdated budgeting methods • Large subsidies on fossil fuels • Tax systems favor debt and fossil fuels • Corporate law stipulates shareholder primacy or at best vague stakeholder rights • Short tenures & social media's pressure to score
Solutions / intermediate steps by/with/for this actor	<ul style="list-style-type: none"> • National accounting well beyond GDP • Serious pricing of carbon • Shift taxation from labour to materials use • Adapt corporate law to change corporate objective • Budgeting and regulation on all planetary boundaries, at local, regional and global levels, etc. • Limit bureaucratic burdens on local experimentation

5 Information flows to enable a sustainable transition



5 Information flows to enable a sustainable transition

Many of the obstacles highlighted in the previous section relate to information flows that are either incomplete or altogether lacking. While financial information flows quite easily, the quality and supply of environmental and social information are often problematic. Much of the relevant information does not flow through the system as a whole, or it does so in a limited or distorted way.

INFORMATION LIMITATIONS

A key example of this challenge is that metrics and measures for corporate performance on key social and environmental issues frequently measure system outputs or characteristics, rather than the underlying condition and health of the system.

For environmental information, this means companies are encouraged to report aspects and impacts which relate to outputs or services provided by the environment (e.g., discharges to the environment, product production per area unit) rather than system health measures which would indicate the underlying health dynamics of the system (e.g., soil health over time, net primary production over time etc.).

More meaningful environmental measures would provide information on the state and condition of underlying resources and the wider system, not simply its current capacity to provide outputs. An example of such measures is provided by the Natural Capital Protocol³³, which suggests that companies measure their impacts and dependencies in three interdependent dimensions:

- **Measuring impact drivers and dependencies:** defining company activities in terms of their impact (and dependency) upon natural capital.
- **Measuring changes in the state of natural capital:** what are the changes in quantity and health of natural capital which can be associated with company impacts/dependencies?
- **Value impacts/dependencies:** identifying the consequences and value implications of natural capital impacts (these may be value derived by the company from natural capital or natural capital value changes arising from company activity).

INFORMATION: DISTORTED SIGNALS

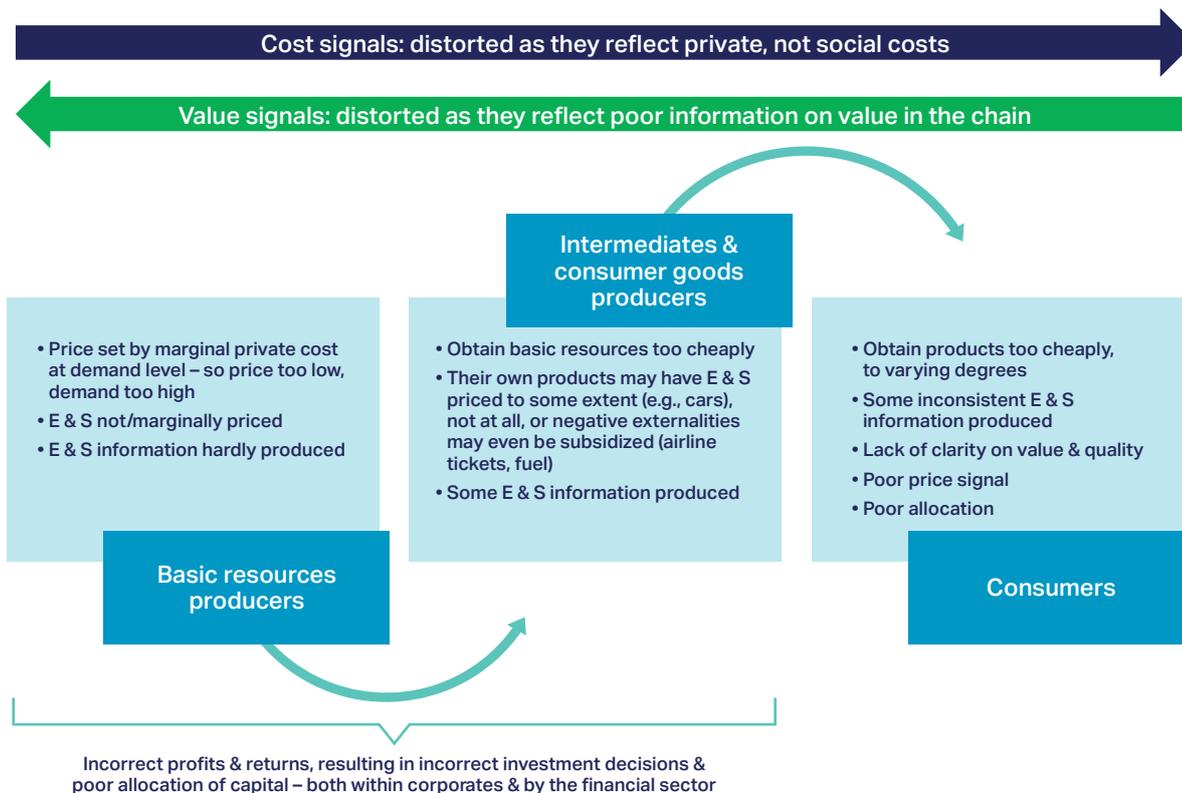
When information is produced and received there may be challenges relating to its receipt and utility. Information is typically not priced and its impact on decisions tends to be binary (e.g., pass or fail, invest or not) rather than subtle (invest more, less, differently).

Since such information flows (or the lack thereof) are at the heart of the undervaluation of E and S, it makes sense to take stock of which information flows do and do not work properly. This would allow clearer specification as to what better data would mean.

In order to do this, it is important to identify how information flows through the system – its general ‘plumbing’. The critical question to ask when considering such information plumbing is: to what extent are signals from the natural and social worlds well enough translated into signals for decision making by all groups of actors (i.e., people, corporations, financial institutions, and governments)?



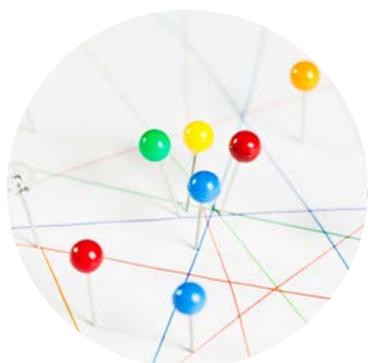
Figure 19. Flows of information across actors and value chains



Further questions include:

- What information does a true long-term investor need and is it available?
- How can an individual company, investor, government, organization, or person ascertain their own exposure or footprint and its own budget per social and planetary boundary? What initiatives show us the way?

These questions are explored in further detail in the following sections.



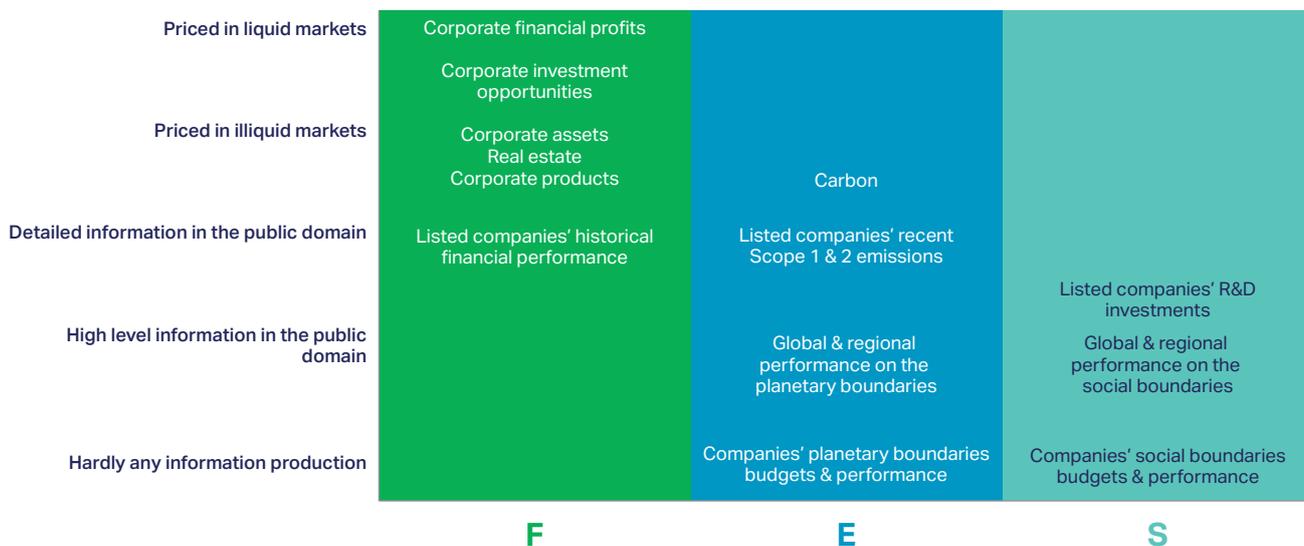
WHAT INFORMATION DOES A TRUE LONG-TERM INVESTOR NEED...AND IS IT AVAILABLE?

A long-term investor wants to know the extent to which a company is building the capitals that it depends upon so that it might prosper in the future. That includes:

- Information on S: how is the company building its social, human, and intellectual capital?
- Current data are limited to data on inputs (e.g., R&D investments), outputs (e.g., R&D success, employee attrition rates, employee satisfaction), or anecdotes. It is not clear from the data how capital is built, or if it grows or decays, etc.
- Information on E: to what extent does the company's business model rely on eroding natural capital?

- How will its business model be affected when negative externalities are internalized through technology or regulation? Current data are limited to some types of emissions rather than the underlying dynamics and relationships. It does not become clear how the company's sales and costs structures will change and what that means for its competitiveness. For example: an aluminum company has significant externalities, but if it operates in a cleaner way than its peers it will likely become more rather than less profitable when a significant carbon price is introduced.

Figure 20. Levels of information production and processing by type of capital



It is useful to ask which information that is needed for SVT decision making is being produced insufficiently or not at all, and which of this information is being produced but not disseminated or used and why? Figure 20 above illustrates, for each category of capital, the various levels of information production, how these are much more developed for F than for E and more for E than for S; and what the major gaps are.

Of course, this can be specified further. The following example examines the information flow surrounding a large fictional mining group which does not report against multiple capitals impacts and performance.

In its external reporting, that mining group is likely to report its Scope 1 and 2 CO₂ emissions and possibly Scope 3 CO₂ emissions. It probably also reports its waste and water use, but not what happens elsewhere in the value chain that can be said to be commissioned by the company. It will most certainly not (as yet) report to what extent it impacts on biodiversity and other planetary boundaries. An investor will also not have sufficient information on what the effects would be of significant

carbon prices or other true prices imposed on the company. It is not clear how that will affect the company's cost base, competitive position, sales, etc. On the social side, the company will probably report on a number of community building initiatives. It is less likely to report on any human rights challenges and lack of living wages in the value chain operations it commissions, be it knowingly or unknowingly. Overall, an investor can guess that the company's performance is well beyond its planetary and social budgets but will not have a clear understanding of the extent of that overshoot or the path that the company should take to come back within budget.

Only a small part of that information gap is filled by ESG ratings agencies and NGOs. Ratings agencies will collect and rate information on aspects such as policies that the company may or may not adhere to, what the level of reporting is versus peers and what controversies the company has been involved in. Such controversies tend not to be quantified in terms of scope, number of people affected, etc. Instead, they are aggregated into an assessment of risk, based on

limited information. As a result, the information produced still does not provide investors with a good picture of a company's E and S performance. NGOs may fill yet another part of the information gap, but their information tends to be less systematic, and this level of information frequently does not reach investors. Investors, in turn, have limited awareness of the extent of the gaps in the data since they are not trained to be looking for SVT. A major step forward would be the emergence of investors dedicated to closing these gaps. Their demand for information would facilitate the systematic production of information on issues that are currently not sufficiently covered at the current time.³⁴

Credit Rating Agencies (as opposed to ESG rating agencies) are starting to integrate an interpretation of company and sector E and S performance and strategy into implications for Credit Risk. These are translated into indices with specific E, S or a wider Impact or SDG focus. Such credit-related analysis is still focused predominantly on recognizing peer comparison outperformance/best practice, rather than assessing a

company's performance in terms of planetary limits. An exception is climate performance, for instance S&P's Paris-Aligned Climate (PA) Indices and S&P Climate Transition (CT) Indices which overweight companies that publicly disclose Science Based Targets.³⁵

More systematic research about the incompleteness of E and S information is required. However, it would be inaccurate to make the case that the lack of "good" data on E and S performance is the reason why sustainability progress has stalled or is inadequate, especially as most investors and companies do not seem to know what information is needed. Lack of data is too often a poor excuse for not acting. Instead, it should be a call for better data gathering. Small tweaks to the current system in terms of how existing information is understood and strategically interpreted can add up to significant change.

ASCERTAINING IMPACTS, FOOTPRINTS, AND BUDGETS IN A FINITE WORLD

How can an individual company, investor, government, organization, or person ascertain their own exposure or footprint and their own budget per social and planetary boundary?

Determining an exact individual budget per planetary boundary is a daunting task, especially given the current state of information. However, within a few years it is likely we will see some serious estimations. For now, some rules of thumb offer clarity. For example, given that we need to achieve carbon neutrality collectively as a society, carbon neutrality should be pursued at the individual level as well as at the institutional and national. Companies with heavy footprints need to ensure they have credible plans and investments in place to put them on a timely path to carbon neutrality.

Several initiatives show us the way. For example, R3.0 offers provocative thinking through work relating boundaries to thresholds and allocations³⁶. Future Fit³⁷ offers a simplified approach, with 23 social and environmental goals that together identify the extra-financial break-even point every business must eventually reach to protect people and the planet.

At a macro level, complementary currencies³⁸ might be considered to price the planetary boundaries. Depending on the nature of the boundary, such currencies could be global (such as for CO₂) or highly local (such as for biodiversity). Meanwhile, the system of national accounts (SNA) already contains information on performance for Planetary Boundary relevant data (e.g., nitrogen emissions), but with little context. Hoekstra (2019)³⁹ argues for a wider scope of national accounts to systematically include F, E, and S both in terms of quantity (units) and quality (diagnostics) accounts.

Even if everything is measured, it still leaves the issue of where responsibility lies. For example, the overapplication of nitrogen might be undertaken in practice by farmers, but it is a function of laws, contracts, training, and awareness. This implies that large agricultural firms and companies which deliver biological supplies have a significant "commissioning" responsibility with agricultural activities being undertaken in response to demand drivers, while governments have enabled such practices. As such, shared responsibility for that practice might be legitimately asserted.



In such situations, the approach of the GHG Protocol is instructive. By defining Scope 1, 2 and 3 emissions, it has effectively assigned value chain responsibility. Applied to nitrogen, this would place responsibility on both farmers and agricultural firms but would still not include the enabling role of governments.

This issue also puts a different perspective on materiality, which identifies important or significant issues and impacts that should be the focus of management intent and effort. Conventional corporate sustainability and Corporate Social Responsibility (CSR) materiality processes tend to regard materiality from the perspective of the business with the input of local and representative agents (e.g., environmental NGOs representing ecological interests). The assessment process can suffer from a lack of contextual scope, meaning that important impacts for the system as a whole might be either ignored or underprioritized. In this context, the business and human rights (BHR) approach to “saliency”⁴⁰ makes more sense in that materiality should be seen from the perspective of the impacted. Also known as “double materiality”,⁴¹ this approach can support the proper valuation of E and S and is consistent with companies operating as if they are part of a system, where they take a wide view on stakeholders recognizing indirect and invisible impacts.

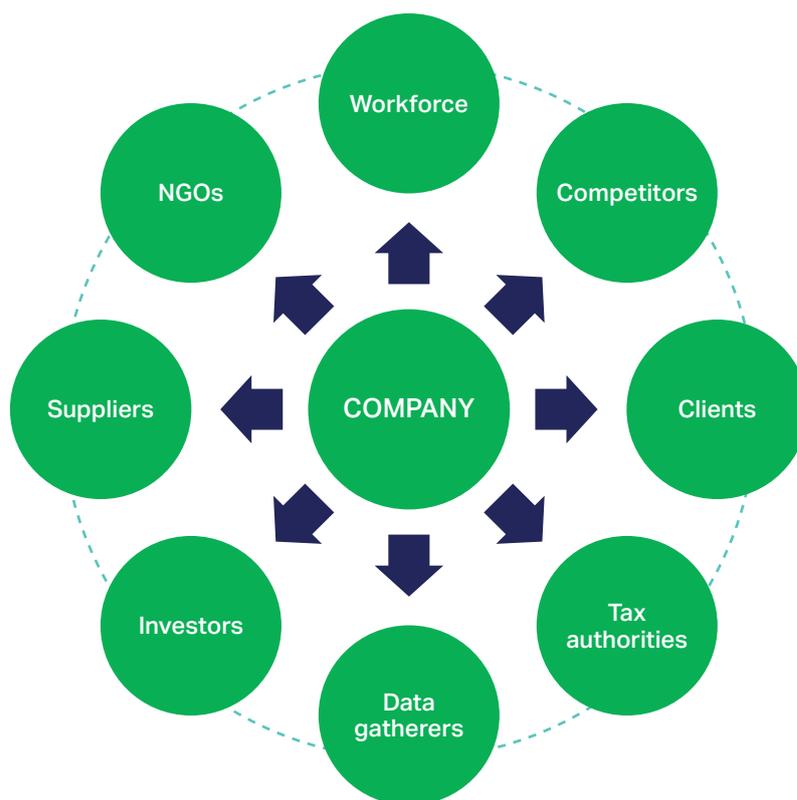
Another approach to budgeting would be global commons stewardship⁴², in which parts of the globe become owned by everyone and the use of resources is explicitly restricted. Local commons are not new and seem to be making a comeback. In a similar vein, private initiatives like Commonland⁴³ develop and finance multi-decade land restoration projects. Better infrastructures for funding such initiatives would help drive further progress.

In sum, a strong information architecture for sustainable value is needed to allow investors to obtain the required data on performance

in context, including the relevant relationships, dependencies, and systems dynamics. This should allow investors to develop an integrated view on value and to make better decisions. Information can and should come from various sources, allowing users to triangulate and verify information.

In order to achieve this outcome, there needs to be significant work undertaken on the plumbing of the system. At the moment, as shown in figure 21, there are information flows between actors, but they lack the structure required to accurately support and drive contextual, sustainable performance.

Figure 21. Reinforcing flows of information across actors



6 Resilience



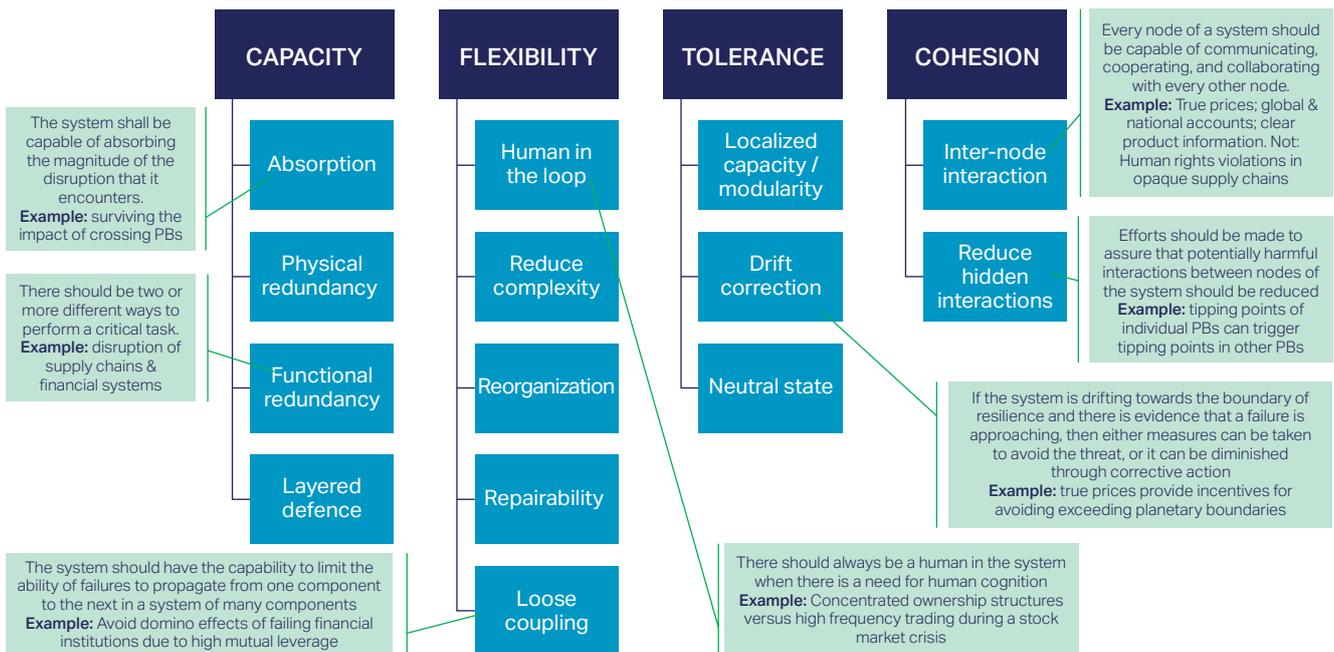
6 Resilience

An architecture for the delivery of long-term sustainable value will likely be much more resilient than the current system. Jackson and Ferris (2013)⁴⁴ describe the 14 features of a resilient system. The figure below highlights how the architecture proposed in this paper might deliver increased system resilience.

Managing for resilience has serious implications across multiple fields in corporate decision making. For example, resilient companies finance more conservatively, resulting in less debt, fewer buybacks, and larger cash holdings. They will also diversify their supply chains to avoid dependency on single firms or single countries.

For further perspectives on building resilience, WBCSD's Vision 2050 has published an "Issue Brief on Improving long-term resilience"⁴⁵ and WBCSD's Redefining Value programme has produced "Strategic resilience: A primer for business".⁴⁶

Figure 22. Resilience of a system that manages for long-term sustainable value



7 Transitions perspective



7 Transitions perspective

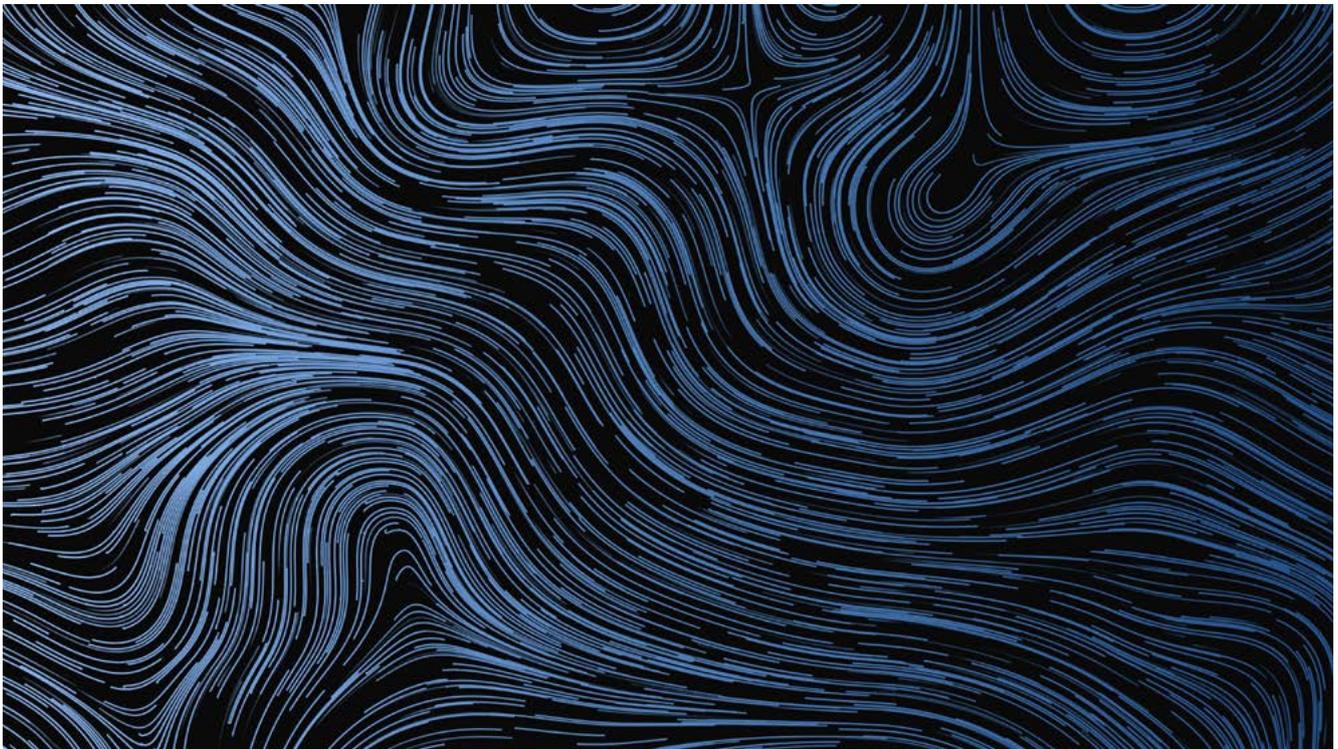
Another fundamental question is how to establish such an architecture for sustainable value. According to transition theory, even if the desired characteristics and most important mechanisms for change are known, there will be resistance to change embedded within current customs and practice due to the cultures, incentives and structures people are used to. Any evolution will take time, and progress will not be linear. However, the good news is that there are ways to deal with this resistance.

Firstly, it helps to imagine a desired outcome as we have done in this report by highlighting the wider context of WBCSD's Vision 2050 goal of "9+ billion to live well, within planetary boundaries, by mid-century" and through the development of the proposed architecture.

Secondly, change needs to come from both within and outside the system.

Thirdly, transition governance is possible and WBCSD is well placed to play a role in it – both from the inside by mobilizing its leading members and by means of its network links to like-minded organizations and professionals.

Finally, experimentation is fundamentally important for innovation and should be explored further.



8 Next steps



8 Next steps

It is impossible to build such an architecture overnight. The process will involve years or even decades of hard work with setbacks to be expected. This makes it all the more important to remain focused and to stimulate people to make small changes, even though they may think they have little impact.

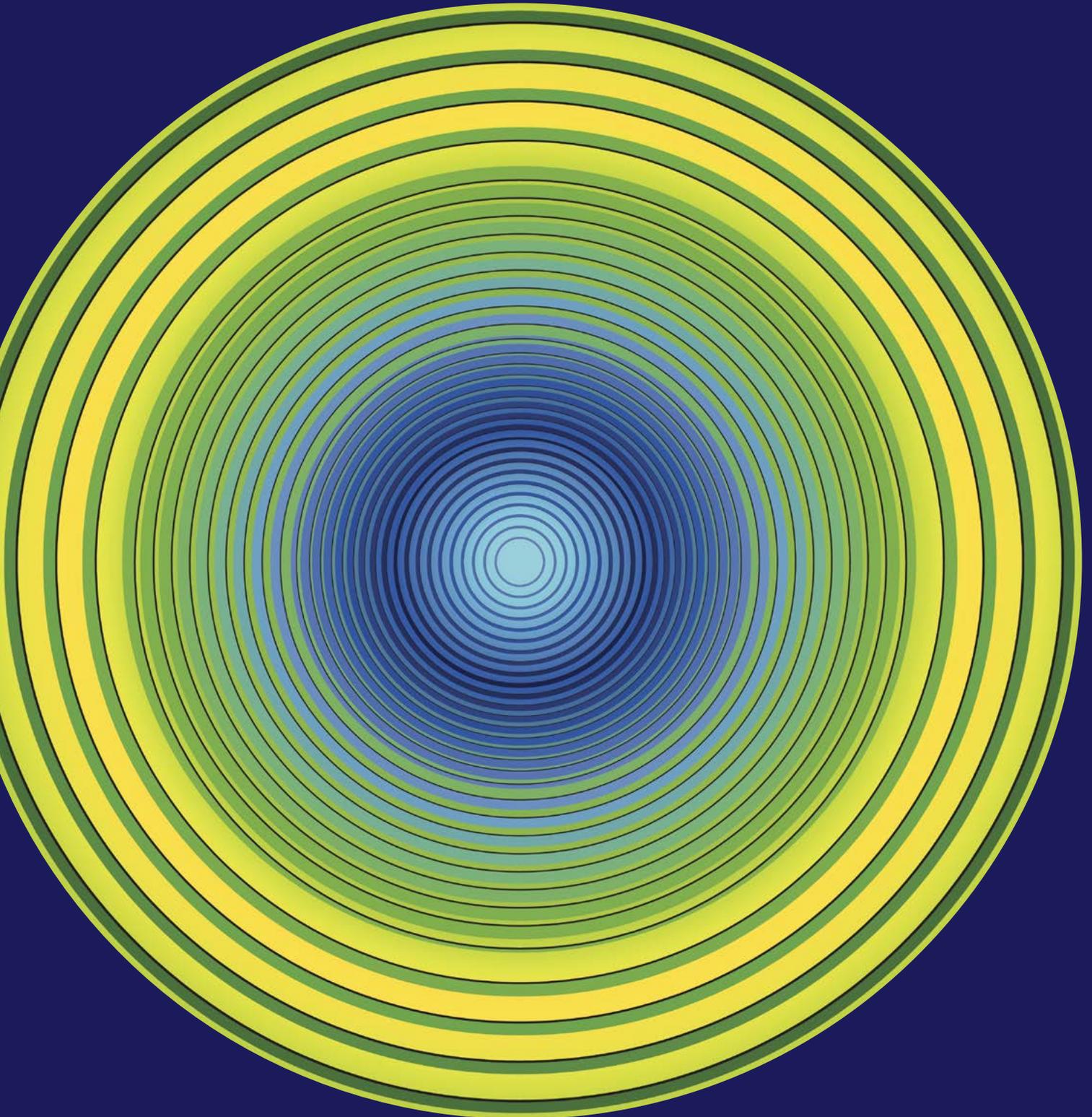
By way of making a start, companies can take the following steps to explore their orientation towards, and capability for, sustainable value transition.

- Analyze the evolution of the company's investor base in terms of their demands regarding ESG priorities and scores, impact footprint, SDGs, and transition exposures.
- Classify the company's capital deployed according to different levels of transition risk.
- Identify indirect transition risks: what are the key dependencies and vulnerabilities of the current business model which might arise from the failure of partners or customers to successfully transition?
- Analyze a sample of investment projects/opportunities from an integrated value perspective. What issues do you run into? What insights do you gain? How do they score on the individual types of value? Can they be restructured in a way that ensures value creation across all capitals?
- Analyze for a selection of assets how their cost structures, sales and competitive positions would change in case of a true price (either on the products sold or on key inputs).
- Make a rough assessment of where individual assets within your portfolio are in terms of the above integrated value matrix (figure 13). How much of the portfolio is in quadrant 2? How much of the portfolio is in quadrant 1 and how much of that is at risk of falling to quadrant 3? What assets have the best chances to transition to quadrant 2? Are there projects in the pipeline that are in quadrant 4 but which might be monetized to make it to quadrant 2?
- Map the extent and types of exposures to planetary and social boundaries for select business lines.
- Map your own information flows on E and S. What is there? What is missing? How can the gaps be filled?
- Train employees on integrated value to build awareness and proficiency in application.
- Contribute to the development of the information infrastructure that is required given the issues described in Section 5 on information flows.
- Develop and accelerate reporting on relationships, dynamics, impacts and value creation/ destruction across all capitals.
- Undertake a serious analysis of your current strategy from a transition perspective. How aligned is the strategy with transition pathways? How resilient is it to systems shocks? How capable is the company of responding to and succeeding within environmental and social disruption?
- Conduct a meaningful and fair assessment of exposure to Planetary Boundaries – including the dependencies, vulnerabilities, breaches and strengthening of boundaries;
- Find and attract a group of committed shareholders that support a sustainable transition purpose, vision, mission, and strategy.
- Experiment with new business models.

Bigger, but still achievable, steps would be to:

- Establish and embed a clear corporate purpose that is related to the achievement of value creation on E or S, while making contributions to the health and vitality of all capitals within social and planetary boundaries.

9 Conclusions



9 Conclusions

This paper has explored what long-term societal value creation could look like while moving along transition pathways to stay within social and planetary boundaries.

Traditional finance and economics suffer from crucial simplifications that don't do justice to a complex reality. As a result, the current system has a number of design flaws that make us steer in the wrong direction, namely by equating financial value to value in a broad sense. We need an evolution of corporate goals, governance and practices which move beyond shareholder value and stakeholder value in a way that better balances and aligns the various types of capital. Significant change is required to achieve this, not just within corporations but also in the wider operating environment so that sustainable intentions and performance are rewarded through long-term sustainable value creation.

We argue that an architecture for delivering sustainable value encompasses a wide range of institutional arrangements. It should outline the potential mechanisms for processing global information on E and S, so as to assess and price actors' and products' alignment with social and planetary boundaries. We propose the contours of such an architecture in a set of nine elements.

Each of these nine elements require further development and many questions remain to be answered. For example, what are the key information flows that need to be established and how can these elements be adjusted in a fair way?

The continuing existence of such questions should not be an excuse to wait and do nothing. We need people at all levels to show responsibility and leadership and start acting now for an equitable and sustainable transition.



Appendix: academic foundations of sustainable value

In this appendix, we explore historical thinking about value and more recent debates about shareholder versus stakeholder value, transition pathways and long-term thinking. It is important to explore these concepts, since most characteristics of the current system are taken for granted and seen as fixed or innate, when in fact they are a social construction and should be seen as dynamic.

VALUE THINKING IN HISTORY: FROM THE GOOD TO UTILITY IN MODELS

Structured thinking about value goes back to ancient philosophers such as Aristotle, who defined it as what is good for man. As economics grew out of philosophy, economists further specified and also limited the concept of value. Adam Smith⁴⁷ defined value as generated when people take raw materials from their environment and then, through their labor, turn those into something that people want. Hence, the importance of specialization and trade. According to Smith, a fair allocation of resources is the one that maximizes the total wealth of society. However, economics then took a hedonistic turn. In his fable of the bees, Mandeville claimed that vices are the sources of wealth. Jeremy Bentham and the utilitarians redefined the goal of human activity into maximizing collective utility or happiness – which is only a subset of what Aristotle saw as “the good”.

During the 19th and 20th century, a narrow conception of utility maximization was institutionalized in economics and formalized into models. Leon Walras modelled price formation based on equilibria, using mathematics from physics. This was unrealistic, since real markets are hardly ever in equilibrium, but it did fit the models. This set off a trend in economics to express the world predominantly through mathematics and to largely ignore its legacy in philosophy.

This was well described by Thomas Sedlacek (2011)⁴⁸ in ‘The economics of good and evil’ - the price signal is supposed to result in automatic coordination of markets, based on a small set of axioms, and, innovation is taken as a mere exogenous variable, i.e., as a variable that is not explained in its own right, in contrast to Schumpeter’s view that the origin of wealth lies in entrepreneurs making new combinations.

In finance theory, value equals the present value of discounted cash flows. However, this refers purely to financial value, and financial markets are claimed to be so efficient that all relevant information is in the price, meaning that prices are typically close to their fair (financial) value.

Finance theory does admit that real goods markets are less efficient, and that people might want to pay higher prices due to ‘private benefits’ – hence an oligarch will pay much more for a prestigious football team than the value of its cash flows.

Societal value is supposedly accounted for via the prices people pay for the products produced by such firms, but this assumes reliable price signals which is a problematic assumption and rarely the case in practice.

Price is a concept that is often incorrectly equated to value. Rather, price reflects a willingness to pay given circumstances of scarcity – which may be artificial, temporary, or driven by bargaining power. For example, the price of gold is very high while that of water is almost zero. Yet water is more valuable than gold as one cannot live without it, but its price is low since it is still so abundant, while gold is rare.

In addition, not everything has a price, and many prices are distorted as they typically do not reflect externalities, i.e., the costs or benefits that are created privately but borne by society.

In keeping such costs outside pricing mechanisms, distortions arise, e.g., fossil fuel prices are too low to reflect their wider social, environmental and systems costs. Even if prices do include externalities, they still struggle to reflect factors such as value dependencies and they should be used with caution. As Tantram and Tantram (2016, page 24)⁴⁹ put it: “..price cannot be used to assess trade-offs when the trade-offs are between aspects of value with dependency relationships at their heart.” In sum, price is not value and the distinction matters.

ALTERNATIVE PERSPECTIVES ON VALUE

In past decades, alternative voices have arisen in economics which highlight the flaws of neoclassical economics and finance. For example, the dominant neoclassical paradigm in economics has a simplistic view of humanity. It posits a perfectly rational *homo economicus* (humans as agents who are consistently rational, narrowly self-interested, and who pursue their subjectively defined ends optimally) which does not correspond to reality.

While neoclassical economics ignores this unreality (because such assumptions help to make the maths work better), behavioral economics (e.g., the work by Kahneman and Tversky) has shown that it does matter and that decision making in practice (e.g., the choice between outcomes with differential risks) will be weighted with considerations of risk aversion rather than pure rationality.

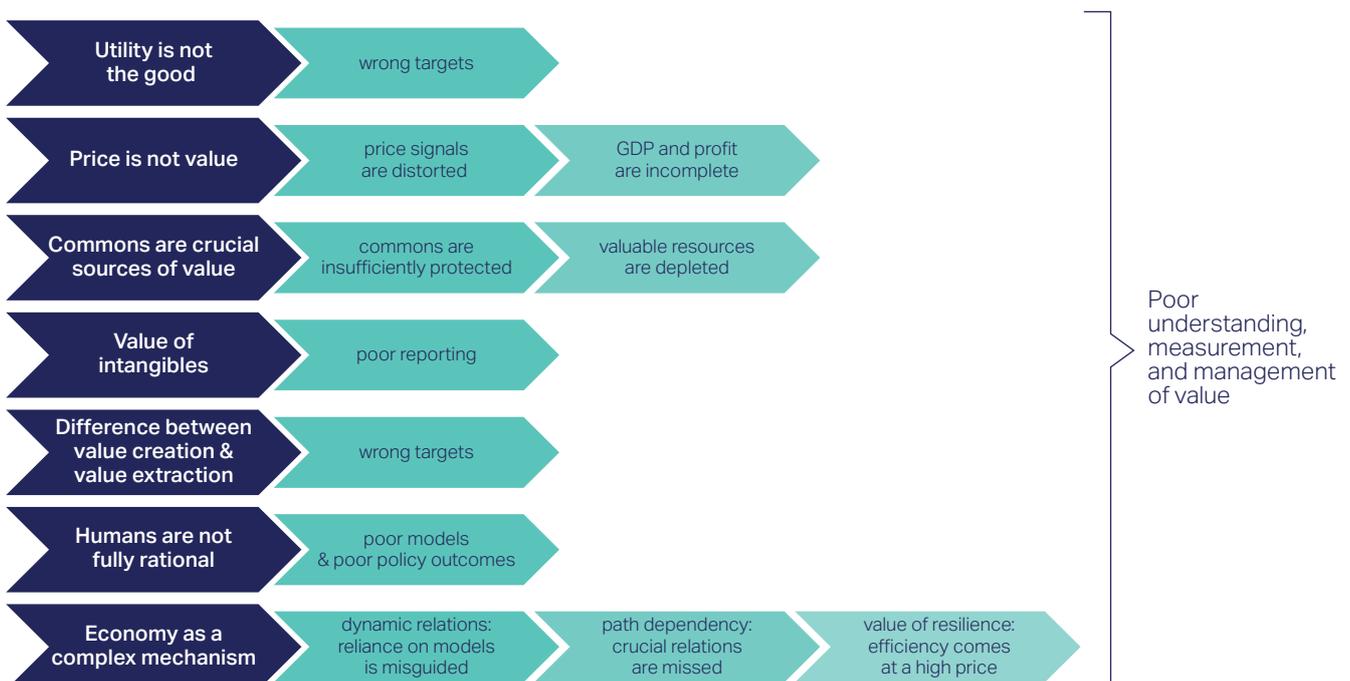
Another flaw is that neoclassical economics has a mechanistic view on the economy, seeing it as a machine with static relationships. In contrast, the evolutionary perspective regards the economy as a complex adaptive system in which wealth creation is the product of an evolutionary process of differentiation, selection and amplification. Path dependencies mean that starting positions influence later outcomes. This perspective also recognizes the neglected value of resilience; entities are more likely to survive if they have buffers and multiple redundancies while efficiency has inherent elements of fragility.

The value of the commons is yet another neglected aspect which is at the heart of challenges in pricing and valuing long-term environmental and societal wellbeing. Common resources are crucial to our continued health and existence and, as Elinor Ostrom pointed out, these require commons stewardship.

Despite the recognition for a number of years of the flaws in traditional economic approaches, alternatives such as behavioral economics, sustainable finance and evolutionary economics are not as yet taken seriously by many traditionally trained economists. Even if they do see the merits, they often fail to grasp the implications for their own work in terms of the methods, questions asked, and yardsticks used. Many economists claim economics to be a positive science so as to avoid ethical and metaphysical questions and as a result, markets are perceived to follow physical laws and are not questioned as creations of human activity.

Rather than understanding that markets are a human construction and therefore can be shaped by human intention and intervention, they are frequently treated as ineffable and beyond intervention. Sociologists are well aware of that and stress that value is not intrinsic, but the product of an ongoing social

Figure 23. Underappreciated aspects in traditional economics and finance



process (Dewey, 1939).⁵⁰ According to Fourcade & Healy (2017),⁵¹ nation states legally structure and regulate markets and, conversely, states are borrowing and using concepts such as efficiency and rationality from markets structured by economic principles. In addition, markets are deeply enmeshed with other aspects of social organization such as law and politics.

At the macro level, economists' and politicians' focus on GDP is not aligned with long-term value creation, since it emphasizes and prioritizes one dimension of value to the exclusion of others that are more fundamental to human security, prosperity, and wellbeing. Rather than focusing on a single (and flawed) indicator such as GDP, one should consider a dashboard of indicators (Stiglitz et al., 2019)⁵². Hoekstra (2019)⁵³ proposes a set of national accounts – namely social, environmental, economic, and distributional accounts (all four in stocks and flows, but not necessarily monetary) – complemented with quality accounts which ensure that pure modelling is complemented by a diagnostic approach. A fair and balanced approach to value is crucial. In 'Why nations fail',

Acemoglu and Robinson (2012)⁵⁴ show that political institutions which promote inclusiveness generate prosperity. Mazzucato (2013, 2018)⁵⁵ argues that value creation is a collective process, the fruits of which should not be expropriated by those who happen to be in the right place to capture them. This means that we should become much better at distinguishing value extraction from value creation.

At the business level, there has been the rise of intangibles and they now constitute the vast majority of value of listed companies. In 'Capitalism without capital', Haskel and Westlake note that most measurement conventions ignore them, meaning that the majority of capital is not counted. Moreover, the basic economic properties of intangibles (sunk costs, spill overs, scalability, and synergies) make an intangible-rich economy behave differently, with implications for inequality, real estate prices, etc. Lev (2001)⁵⁶ argues that intangibles are both hard to manage and hard to value.

On top of this comes the issue of the internalization of externalities. This is mainly driven through regulation and technology, or both as in the case of the car

industry which saw more stringent emissions regulation and policy commitments in concert with, following and sometimes driven by, the advent of electric vehicles and improved battery capacity.

Internalization can also come in the form of true prices, i.e., prices that reflect the most important externalities. True Price (2014)⁵⁷ and KPMG (2014)⁵⁸ outline ways to measure value and profit including externalities, and WBCSD's True Cost of Food project uses True Cost Accounting in order to understand the full contributions of food systems to sustainability and human health⁵⁹. As their examples show, this can dramatically change business models and value chains. Counterintuitively, even carbon intensive companies can benefit from true prices provided that they are better prepared than their competitors or other alternatives. Tantram and Tantram (2016)⁶⁰ go further than true prices and present four principles for putting sustainable value at the heart of economic price: thermodynamic optimization; abundance (as opposed to scarcity); natural vitality; and interdependence.



EVOLVING BEYOND SHAREHOLDER VALUE

Maximizing shareholder value is the goal of the firm in traditional corporate finance textbooks (e.g., Brealey, Myers and Allen, 2020;⁶¹ Berk and DeMarzo, 2017).⁶² It is grounded in agency theory which identifies a conflict of interest between the owners (shareholders) of the firm and its managers, which could extract resources from the firm to their own advantage. Among financiers, shareholders are most important because they are residual, non-contractual claimants. This implies higher risk⁶³ (Jensen and Meckling, 1976)⁶⁴ as they get paid after all contractual claims to other stakeholders – including creditors, employees, customers, and government – are paid. According to Alfred Rappaport (1986),⁶⁵ “the ultimate test of corporate strategy, the only reliable measure, is whether it creates economic value for shareholders.” Shareholder value thus carries the advantage of a single objective, which makes accountability and incentivization of managers easier. By means of the power of the invisible hand of the market, shareholder value is supposed to result in societal value.

In practice, shareholder value is problematic as it often maximizes financial value in the short term at the expense of long-term value. This is due to a number of factors.

Firstly, the theory is applied in a distorted way as management incentives are related to Earnings Per Share (EPS), which makes the recognition and prioritization of long-term value creation opportunities less likely. In a study among executives by Graham et al. (2005),⁶⁶ it was found that “a surprising 78% of our sample admits to sacrificing long-term value to smooth earnings.”

Secondly, a narrow focus on shareholder value and the belief that markets ‘automatically’ yield desirable

outcomes, result in a limited sense of responsibility among executives and what corporate law professor Jaap Winter calls the “dehumanization of the corporation” (Winter, 2020).⁶⁷

Thirdly, externalities are not accounted for in shareholder value. Hart and Zingales (2017)⁶⁸ challenge the prevailing idea that externalities, like charity, can be outsourced to the shareholders. Rather, they are part of corporations’ operations. In fact, there are number of business sectors whose profits give rise to recognizable costs borne by health and wider social systems which are not fully reflected in product pricing or in taxation levied on those sectors.

Without a change in the requirements for aligning business purpose and wider system health, such sectors will have no pressures to change, since the system does not sufficiently respect the value that is being destroyed. At the macro level, shareholder value primacy has resulted in too little investment, and too many mergers and acquisitions (M&A) and buybacks.

This has resulted in many firms lacking resilience to shocks. For instance, when the COVID-19 crisis hit, many corporations were without the buffers they could have built.⁶⁹ Over the past decades, both social capital (increased inequality, less access to education and healthcare,

etc.) and natural capital (climate change, loss of biodiversity) have suffered from a lack of prioritization.

Stiglitz (2019)⁷⁰ further argues that corporations were stimulated to acquire monopoly power to extract higher prices, Mazzucato (2013, 2018)⁷¹ notes that the IT, pharma, and financial sectors were especially prone to extracting value from society and Reich (2008)⁷² argues that shareholder value and globalization were positive for us as consumers, but negative for us as employees and citizens.

Neither traditional stakeholder value, nor enlightened shareholder value is sufficient

An enlightened shareholder view (ESV) recognizes that it is instrumental to treat the other stakeholders well in order to preserve long-term shareholder value (Jensen, 2002).⁷³ However, even within this conception, it is not clear what “treating well” means and such an approach is still insufficient for dealing with externalities. Moreover, companies can still exploit market power, especially if transparency is low. Some ESV led companies do better, but even companies with enlightened CEOs can struggle to move beyond shareholder value pressures. This leaves us with two models that do not (at least as yet) work properly.

Figure 24. Limitations of shareholder value and traditional stakeholder value

	SHAREHOLDER VALUE	STAKEHOLDER VALUE
Strengths	<ul style="list-style-type: none"> • Single objective • Incentivised managers • Accountability • The power of Smith’s invisible hand 	<ul style="list-style-type: none"> • Longer term perspective • Eye for current stakeholders
Weaknesses	<ul style="list-style-type: none"> • Advantages are deceptive: maximise F at the expense of social and natural capitals • Very poor macro outcomes 	<ul style="list-style-type: none"> • Lack of accountability • Unclear objectives • Still neglects future generations & natural capital

Value creation across capitals

Managing for societal and shareholder value would require mechanisms which support measurement and direction for value creation across all capitals, with a high degree of accountability.

This requires first of all a serious evolution in the disclosure of sustainability intent and performance from its current state (incomplete, low comparability, little verification) towards a level on par with financial reporting; to cover not only the dependencies and dynamics of fundamental business relationships with multiple sources of capital, but also to include a full picture of the net impacts or contributions of an entity upon the health, diversity, and resilience of those capitals.

Second, companies will need decision rules for balancing these capitals while pursuing their purpose (as discussed in Schramade and Schoemaker [2021]).⁷⁴ These, in turn, will need to be embedded across an array of institutions, including corporate law and taxation, to ensure that failure to avoid negative S or E will have consequences that are at least as serious as failure to generate F.

In terms of ownership and control, Mayer (2018)⁷⁵ argues that the power of short-term shareholders (and capital markets) should be limited, while the corporation's purpose should be safeguarded by committed shareholders, for example by means of concentrated ownership or societal value tests in large corporate M&A.

In addition, management compensation should be disentangled from short-term metrics like EPS, stock options, etc. Moreover, the tax deduction of interest charges must be limited since it provides incentives to load companies with debt capital, which increases financial risk, reduces resilience, and increases systemic risk.

Accountability and individual responsibility will have to increase, by means of a serious reduction in the amount, complexity, and detail of regulation, as it too often stifles individual responsibility. Instead, Winter (2020)⁷⁶ argues that a duty of societal responsibility should

be imposed on the board of the corporation. All of this should enable corporations to steer on long-term value, but more is needed to arrive at SVT – to value and steer performance within social and planetary boundaries along transition pathways.

How does this fit with other ideas proposed so far?

Focusing Capital on the Long Term (FCLT): gives high level recommendations on behaving in a more long-term oriented way but does not get to the core of the issues.

Embankment Project for Inclusive Capitalism (EPIC): gives some interesting indicators, but its framework avoids the tough questions that need to be asked, such as the size of companies' externalities and their likelihood of being internalized; frictions with stakeholders; etc.

Alex Edmans' (2020) book 'Grow the pie':⁷⁷ argues that companies should manage for long-term value for society. However, he does not go far enough: he doesn't explicitly take planetary and social boundaries into account; doesn't explicitly deal with negative pieces of the pie; and he regards a company's stock market value as the best proxy for the value of the pie. In that sense, it is still quite close to enlightened shareholder value.

More interesting are several initiatives that contribute a partial solution to systematic value creation by corporations.

Steward ownership: proposes an ownership form with a long history as a solution for companies to enshrine their purpose at their core. Principles: self-governance; profits serve purpose. This is in line with Mayer (2018) and looks feasible but is only part of the solution.

R3.0: brutally honest and very ambitious; R3.0 is very interesting but requires some challenges to be overcome in order to allow for practical application.

Future Fit: this framework allows companies to self-assess their operations in terms of staying within social and planetary boundaries. This is very powerful for companies that really want to manage for long-term value and have the leeway to do so – such as Novo Nordisk, which is majority owned by a foundation that safeguards its purpose

Framework Impact Statements (FIS)⁷⁸: provides very detailed guidance on how to account for all capitals in reporting and goes well beyond other reporting initiatives like Integrated Reporting, SASB and GRI. FIS fit very well with managing for long-term value. However, these are reporting focused so are only part of the solution.



TRANSITION THEORY AND PATHWAYS

Systematic change is necessary to achieve just and sustainable futures within Planetary Boundaries before 2050, but so far there has been an inability to change direction (Loorbach et al., 2017).⁷⁹ However, transitions research investigates how transitions can happen and, to some extent, be managed. Transition pathways are of utmost relevance, at three levels:

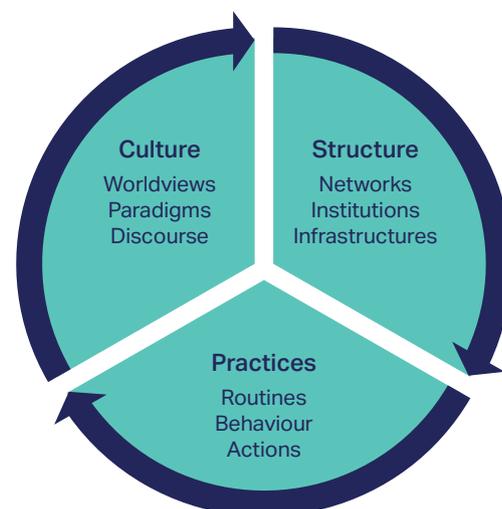
1. System level. Staying within the PBs requires a systemic change of our economic and social system.
2. Industry level. Different industries face different transitions. For example, energy transitions are less relevant for the pharma industry than for the oil and car industries – and the latter two are affected in different ways.
3. Company level. Each company will have its own transition pathway – and navigating that pathway will be key to its success in generating long-term value.

Transition theory asks how one can transition from the current regime to a new regime. What are the dominant cultures, structures, and practices that support the current regime? This dynamic typically creates a path dependency or 'lock-in' within which actors seek to improve the existing system and are unable to change course fundamentally.

Lock-in often involves 'persistent unsustainability': efforts to address unsustainable practices may reinforce regime structures and thereby become part of the problem instead of driving change. The way out is typically offered by emerging niches that offer an alternative way of doing things such as circular business models, B-corps, local currencies, fintech, impact private equity, etc.

Figure 25. Lock-in within a socio-institutional regime

Source: adapted from Loorbach et al. (2017)



Transition dynamics can be visualized using the x-curve (see figure 26).

Following an ideal typical s-curve, niches move along a pathway of experimentation, acceleration, emergence, institutionalization, and stabilization, replacing the old regime. Conversely, the existing regime follows a downward s-curve from optimization, via destabilization and disruption, to a breakdown and phase-out.

In reality, these transition pathways are more chaotic and less-clear cut, with actors moving in different, and sometimes opposed directions. Based on studying historical transitions and doing experimental action research in ongoing transitions, it was found that transitions take decades to

materialize but that the actual period of transition is a relatively short (10-15 years) disruption of otherwise 'dynamically stable equilibria'.

Transition governance argues that: (1) it is possible to identify agents that are influential in guiding and accelerating transitions in institutional structures; (2) governance can support the efforts by these agents; and (3) this can be a basis for developing new forms of governance.

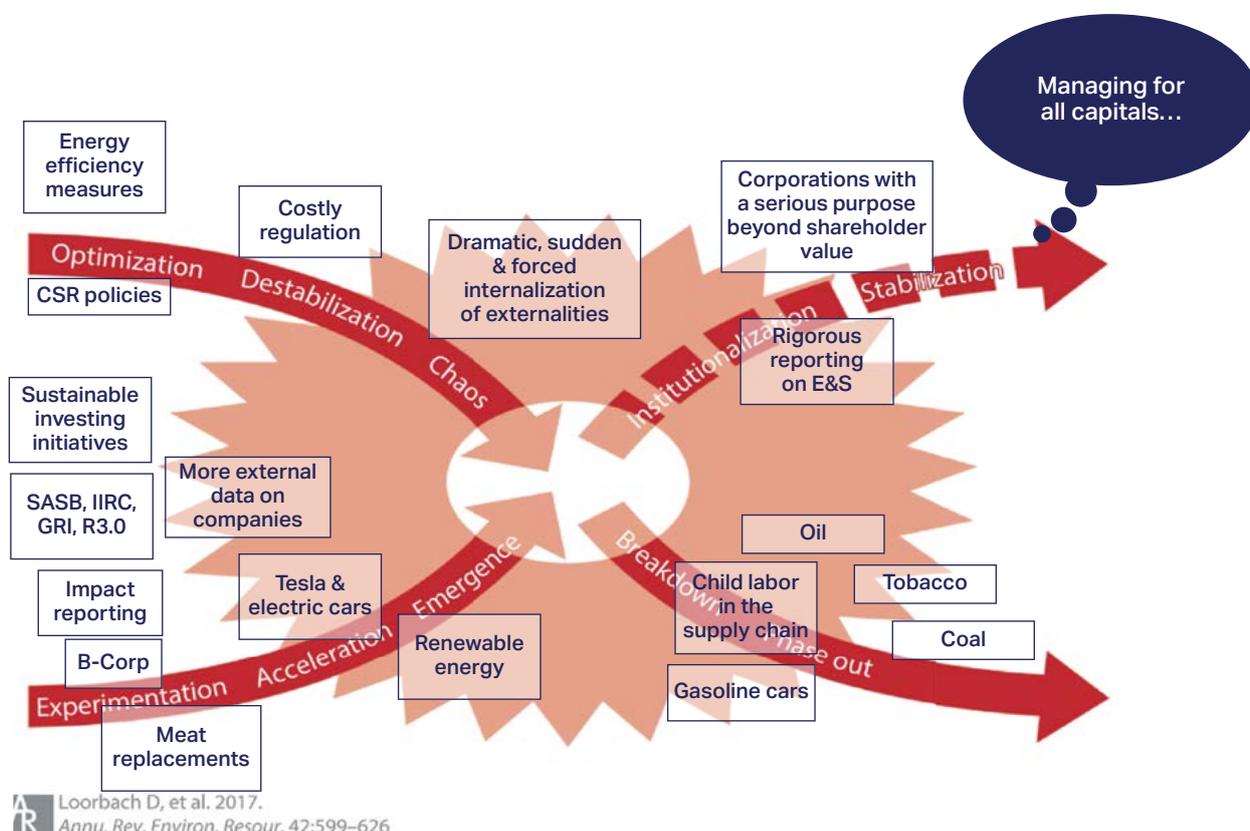
Transition governance builds on the following imperatives for action:

- 1. Long-term thinking is used as a framework for shaping short-term policy.** This requires reflection and forecasting including the

establishment of short-term goals based on long-term ambitions, considering and reflecting how goals will impact future developments through the use of scenarios (e.g., the models at the heart of the Taskforce for Climate-Related Financial Disclosure - TCFD).

- 2. Objectives should be flexible and adjustable at the system level.** The complexity of the system is at odds with the desire to formulate specific objectives and blueprint plans.
- 3. Managing a complex, adaptive system means using disequilibria as well as equilibria.** Relatively short periods of non-equilibrium offer opportunities to direct the system in a desirable direction.

Figure 26. The x-curve of transition dynamics – populated with inputs and outcomes related to sustainable transition
Source: adapted from Loorbach et al. (2017)



4. **Creating space for actors to build up alternative regimes is crucial for innovation.**

Actors at a certain distance from the regime can effectively create a new regime provided that they have a protected environment which permits investment of sufficient time, energy, and resources.

5. **Steering from outside a societal system is ineffective.**

Structures, actors, and practices adapt and anticipate in such a manner that they should also be steered from “inside” the system. Participation from and interaction between stakeholders is a necessary basis for reframing problems and developing support for policies.

Company-level transitions

Companies and investors will want to understand the drivers of long-term value creation and the transition pathways to long-term value creation. However, companies often struggle with “how” to make such transitions (e.g., transition to a low-carbon economy), let alone how they might be able to integrate it into their financial planning. An approach to starting this process is to investigate the forces at work that affect their industry, develop a view of what the new regime will look like and design a strategy that prepares them to be part of the new regime.

Kurzack et al. (2020)⁸⁰ suggest a model of long-term sustainable value creation for a company along transition pathways. The model helps to understand the process of transition, which is differentiated across sectors. It also allows the transition preparedness of individual companies in each sector to be assessed in order to identify frontrunners and laggards.

LONG-TERM THINKING

Long-term thinking is a challenge since evolution tends to equip us to be prepared for urgent dangers rather than for slow processes. Moreover, we suffer from status quo bias in that people tend to assume that things stay as they are and are comfortable in ignoring problems that might be foreseen but have yet to manifest at sufficient scale. In addition, we face short-term tendencies in the system, such as politicians with limited terms that seek to ‘score’ during their tenure, attention seeking for short term satisfaction and perceived success, and short-term financial incentives for executives.

It is hard to pin-point the ideal circumstances for long-term thinking, but what seems to help are the following:

- A sense of mission with clearly identified goals;
- Building specific institutions to safeguard the mission;
- Communication, culture, and mindsets, and;
- Committed ownership.

Some historical solutions to promote long-term thinking illustrate this. For example, medieval canon law by the Roman Catholic church separated ownership of assets from the offices that managed them. Moreover, the clergy were not allowed to marry and create offspring to whom they might want to transfer those assets. As a result, the holders of such offices were perhaps more inclined to manage the assets for the long-term benefit of the church and less for their own gain. Medieval cathedrals were built over the course of decades or even centuries, driven by a strong sense of this mission. Around the same time, the governance of

Dutch water management was set up by relatively autonomous local communities that felt a high sense of urgency to act (the water was a constant threat) and established new institutions with the clear mission to manage the threat.

Another issue is communication. People need to convince each other of long-term goals so as to jointly pursue them. Knauer and Serafeim (2014)⁸¹ find that companies that communicate more on long-term issues also tend to attract more long-term oriented investors. However, many corporations’ earnings conference calls focus on short-term issues and the more corporations do so, the more they are associated with high risk and a high cost of capital (e.g., Brochet et al., 2015).⁸² Committed ownership also helps; companies owned by foundations that safeguard their purpose tend to survive longer (e.g., Mayer, 2018;⁸³ De Geus, 1997).⁸⁴



Endnotes

- ¹ This refers to the concept of multiple capitals – which posits that, in addition to financial capital, there are other categories of value that society, and institutions within society (including companies and investors), benefit from through their existence and use. These categories are generally recognized (e.g. as part of the International Integrated Reporting Framework) as consisting of six forms of capital; financial, manufactured, human, social and relationship, intellectual, and natural.
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- ³ <https://www.weforum.org/agenda/2019/12/why-we-need-the-davos-manifesto-for-better-kind-of-capitalism/>
- ⁴ <https://www.blackrock.com/corporate/sustainability>
- ⁵ <https://www.wbcsd.org/Overview/About-us/Vision-2050-Refresh/Resources/Reinventing-capitalism-a-transformation-agenda>
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- ⁷ E.g., see the Millennium Ecosystem Assessment (Board, M. A. (2005). Millennium ecosystem assessment. Washington, DC: New Island, 13.); and the IPBES 2019 global assessment (Díaz, S., Settele, J., Brondízio, E., Ngo, H., Guèze, M., Agard, J., ... & Chan, K. (2020). Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.)
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- ¹² E.g., as Ortiz-de-Mandojana and Bansal (2016); Lins, Servaes and Tamayo (2017); Edmans (2012)
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- ²⁹ <https://www.investopedia.com/terms/t/truecosteconomics.asp> and <https://www.wbcsd.org/Programs/Food-and-Nature/Food-Land-Use/FReSH/News/True-Cost-of-Food-Discussion-Paper>
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- ³⁵ <https://www.spglobal.com/en/research-insights/featured/transition-to-a-1-5-c-world-with-the-sp-paris-aligned-climate-transition-indices>
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- ³⁷ <https://futurefitbusiness.org/>
- ³⁸ <https://www.investopedia.com/terms/c/complementary-currency-cc.asp> :A complementary currency is any currency which is not a national currency but has acceptance for use in specific conditions. Complementary currencies are set up by private citizens, advocacy groups, or public regulatory bodies to create parallel markets for specific goods and services, or within a specific geographic region, with the goal of regulating the economy or achieving a particular social, environmental, or political purpose.
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ACKNOWLEDGEMENTS

This publication forms part of the World Business Council for Sustainable Development's (WBCSD's) [Redefining Value](#) programme's work to define and explore the implications of sustainability for systems of value and priority.

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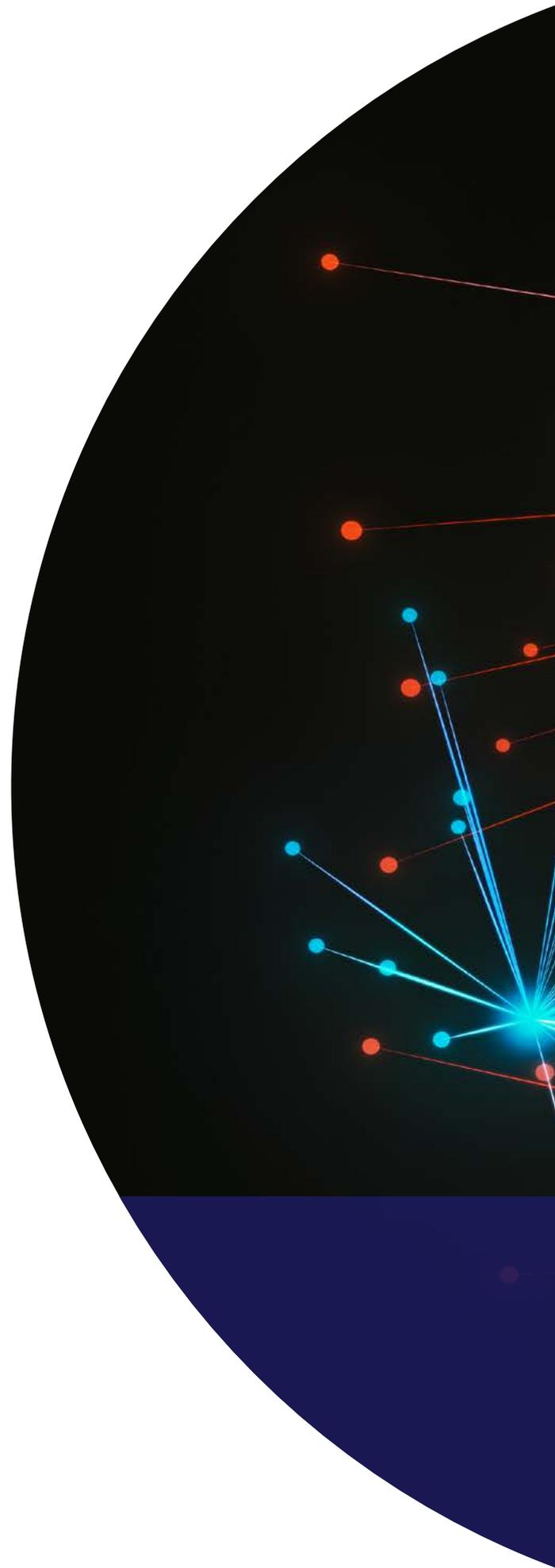
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December 2021

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This publication has been funded by the Gordon and Betty Moore Foundation's Conservation and Markets Initiative. For more information, please visit www.moore.org.

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