

TRANSFORMATION CAPITAL

Systemic Investing for
Sustainability

Transformation Capital is a collective effort. Its contours have been drawn by a community of visionary innovators, finance professionals, scientists, entrepreneurs, systems thinkers, and creative minds who represent some of the most audacious and progressive organisations dedicated to tackling the climate crisis. By participating in co-design sessions and interviews or by writing about their work and experience, they have contributed invaluable insights to the quest of a new investment logic fit for catalysing the transformation of those systems that matter most for human prosperity. This white paper synthesises their ideas. It stands on their shoulders. Realising its bold vision of building a systemic investment movement will be impossible without the members of this community—and without the many people who will join the journey of experimentation and discovery that lies ahead.

Transformation Capital – Systemic Investing for Sustainability

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About EIT Climate-KIC

EIT Climate-KIC is Europe's largest climate innovation initiative, leveraging the power of innovation in pursuit of a zero-carbon, climate-resilient, just, and inclusive society. Established in 2010 and headquartered in Amsterdam, we orchestrate a community of more than 400 organisations including large corporations and SMEs, municipal and regional governments, universities and research institutes, as well as non-governmental organisations and uncommon actors. We use a portfolio approach for developing and deploying innovation to achieve systemic change in those human systems that matter for long-term prosperity, combining activities and innovation outputs from applied research, education, start-up incubation, and innovation ecosystem building. In 2019, we launched Deep Demonstrations, a demand-led methodology for composing innovation portfolios across technology, policy, finance, citizen engagement, and other relevant levers of change in order to generate options and test transition pathways for place-based systems and value chains. We currently operate out of 13 hubs across Europe and are active in 39 countries globally. EIT Climate-KIC is supported by the European Institute of Innovation and Technology (EIT), a body of the European Union.

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While the intellectual achievement of this white paper is a collective one, any errors and misrepresentations are the sole responsibility of the author.

EXECUTIVE SUMMARY

Transformation Capital is a systemic investment logic designed to catalyse mission-driven sustainability transitions in the real economy. It will be developed, tested, and scaled through the Transformation Capital Initiative, a collaborative open innovation programme and a do-tank for the sustainable finance movement.

The science is clear, and the world's top economic authorities agree: To safeguard human civilisation as we know it, we must fundamentally change the way our societies and economies operate. Our task is to move from an extractive, exclusive, and fragile status quo to a regenerative, equitable, and resilient model that respects the natural boundaries of our planet and honours the social needs of our communities. This requires that we transform the place-based, socio-technical systems that constitute the bedrock of our current way of life: cities, land use, transportation, energy, industry, infrastructure, and aquatic systems.

Financial capital is one of the most powerful levers for influencing the behaviour of systems and thus plays a critical role in building the low-carbon, climate-resilient, just, and inclusive future envisioned by the UN's Sustainable Development Goals and stipulated in the Paris Agreement. Policymakers and investors recognise its importance and are increasingly committed to closing the trillion-dollar investment gap that currently inhibits progress towards this vision.

Yet mobilising greater quantities of climate finance is only one part of the challenge. What remains unclear is how exactly capital needs to be deployed to catalyse the transformation of place-based systems. What kind of value models, performance metrics, methods, tools, analytical frameworks, partnership structures, mindsets, and sensemaking protocols are required to generate transformative dynamics? This white paper sets out to explore these questions.

What seems clear is that the paradigms, structures, and practices of today's financial sector prevent it from unleashing deep, structural change in the real economy. Narrow notions of value, outdated world-views, constraining financial mathematics, and a low sense of responsibility over social outcomes drive a wedge between market values and human values. The 2008-2009 financial crisis and the COVID-19 pandemic have demonstrated how easily capital markets are disrupted by events that deviate from business as usual, due in no small part to their rigidity and conservatism. Fortunately, an increasing number of finance professionals realise that climate change and other complex societal challenges pose a tangible threat to their financial assets and thus recognise the need to build a future-proof version of capitalism.

Over the past decade, dozens of sustainable finance initiatives (SFIs) have set out to mobilise climate finance at the trillion-dollar scale, a welcome and important effort. Yet even if they succeed at closing the investment gap, most are still bound to produce incremental outcomes at best in the place-based systems that matter for human prosperity. The root cause is that many SFIs remain steeped in traditional finance orthodoxy, are vague about the issues they address, and lack a robust theory of change that links their actions to their objectives. They tend to follow a project-by-project mentality—despite empirical evidence making clear that single projects cannot change systems—and are mostly concerned with reducing risk rather than creating value. They often focus on secondary markets and thus operate at a considerable

distance from the real economy, which is where the goals stipulated in the Paris Agreement must ultimately materialise.

The consequence is that many SFIs act to preserve the structural fabric of capital markets, making small improvements on a status quo that is incompatible not only with environmental and social sustainability but also with the intent of long-term wealth preservation. And given how fast we must reverse our emissions trajectory and protect our communities from the consequences of a warming planet, the time for incrementalism is over.

What we need now is a radically new approach to investing with the explicit aim of systems transformation—one that deploys capital with a broader intent and mindset; that is anchored in different methodologies, structures, capabilities, and decision-making frameworks; and that moves away from a project-by-project mentality to a strategic blending paradigm. Transformation Capital is that approach—a holistic investment logic guiding the deployment of capital for the purpose of catalysing sustainability transitions while generating commensurate financial returns. It recognises the world as a complex adaptive system and embeds systems thinking, human-centred design, and sensemaking in all stages of the investment process. It provides the tools and methods to manage the uncertainty, complexity, and ambiguity inherent in socio-technical systems and to engage with social concepts such as resilience, justice, and inclusiveness in an investment context.

At the core of the Transformation Capital logic sit strategic portfolios—collections of investments deliberately composed and governed to unlock combinatorial effects and nested within a broader system intervention approach. Based on our long-standing experience in systems innovation, we believe that such strategic blending is the most promising way to unlock transformative dynamics in place-based contexts and address the billion-to-trillion scale challenge of climate finance. Assembling a broad range of innovations into a coherent investment approach, Transformation Capital reimagines notions of value and how such value is generated and captured; provides a method-

ology for how investors can make sense of a system and identify sensitive intervention points; redefines who participates in the investment process and how risks and rewards are shared; and reconceptualises the meaning and measurement of impact.

The Transformation Capital Initiative (TCI) will develop, test, and scale the systemic investment approach and build a pipeline of investment opportunities at the multi-billion-dollar scale. It has an open-ended, multi-stakeholder, and action-oriented structure and borrows methods from human-centred design and systems thinking to build a space for collaborative research, prototyping, field building, and investing. It will thus act as a do-tank for the sustainable finance community and a vehicle for putting a wide range of theories and innovations into practice.

Call to Action: This white paper serves as the starting point for what lies ahead—a journey of exploration and discovery, a systematic inquiry of what is possible, probable, and preferable. We invite challenge owners, systems thinkers, innovation practitioners, investment professionals, ecosystem shapers, and creative voices to join us in figuring out how to deploy financial capital to solve some of the most pressing and tangible problems of our time.

| CONTENTS

- 7 THE GRAND CHALLENGE OF OUR TIME:
TRANSFORMING THE PLACE-BASED SYSTEMS
WHERE WE LIVE, WORK, AND PLAY
- 12 THE LIMITATIONS OF TRADITIONAL FINANCE IN
CATALYSING SYSTEMIC CHANGE
- 18 THE NEED TO LIFT SUSTAINABLE FINANCE ONTO THE NEXT LEVEL
- 25 TRANSFORMATION CAPITAL: TOWARDS A SYSTEMIC INVESTMENT LOGIC
- 32 GETTING PRACTICAL: TRANSFORMATION CAPITAL'S
DESIGN SPACE
- 44 THE TRANSFORMATION CAPITAL INITIATIVE –
A DO-TANK FOR THE SUSTAINABLE FINANCE MOVEMENT
- 48 CALL TO ACTION
- 49 GLOSSARY
- 51 ENDNOTES

THE GRAND CHALLENGE OF OUR TIME: TRANSFORMING THE PLACE-BASED SYSTEMS WHERE WE LIVE, WORK, AND PLAY

The 2020s have opened with a quintessential black swan: COVID-19, the largest pandemic in modern history and the greatest challenge the global community has faced since World War II. The virus SARS-CoV-2 has triggered a health crisis that currently shapes everyday life, consumes the public's attention, and dominates political priorities.

Yet while COVID-19 may monopolise world affairs at the moment, soon we will need to reorient our focus towards the slew of societal challenges that will define the coming decade: rising social inequality, deteriorating public health, cyber-attacks, structural racism and gender discrimination, forced mass migration, food crises, biodiversity loss, and environmental pollution.¹ Towering above them all is climate change, a threat so existential that most scientists and economists see it as a danger to civilisation as we know it.

To avoid catastrophic global warming—and preserve the financial wealth our societies have built—the Intergovernmental Panel on Climate Change (IPCC) is calling for the rapid, far-reaching, and unprecedented transformation of the socio-technical systems that constitute the bedrock of our modern way of life: energy, land use, infrastructure, industry, maritime systems, and cities.² This suggests that we must change not only the methods and technologies used to extract, convert, and allocate resources within our economy. We also need to shift values and norms on both the individual and collective level to create a more equitable balance of political, cultural, and institutional power in society.³

Implied in the IPCC's call to action is the notion that the most pressing and tangible problems of our time are not technical in nature—they are systemic. In other words, climate change is no longer a problem of technology *development* but of technology *diffusion*. This means that incremental improvements in single-point technical solutions are not going to unlock change at the necessary pace and scale. What we need to do instead is weave a new fabric of society with a yarn spun not only from technological advances but also from cultural, political, social, and economic innovation.

The Role of Capital

Financial capital is an important lever of change in socio-technical systems. The way in which money accumulates and flows within them determines our ability to build a low-carbon, climate-resilient, just, and inclusive society. This is why the United Nations sees finance as a critical success factor for the attainment of the Sustainable Development Goals (SDGs).⁴ It is also why the Paris Agreement identifies the realignment of financial flows as one of three essential strategies (along with reducing greenhouse gas emissions and strengthening climate resilience) in the global response to climate change.⁵

Under the label "sustainable finance," dozens of initiatives have set out to tackle this realignment challenge. Most have chosen to focus on the *quantitative* aspect of the problem, aiming to increase the volumes of money invested in "Paris-aligned" or "SDG-aligned" assets.⁶

Mobilising greater quantities of climate finance is only one aspect of the challenge. We also need to figure out *how* to deploy climate finance if the purpose is to transform place-based systems.

While increasing the quantity of sustainable finance is important—the world still faces a multi-trillion investment gap to meet the ambitions of the SDGs⁷—many *qualitative* questions remain unaddressed. What exactly does it mean to deploy capital in service of reduced emissions and increased equity, and in the context of sustainable development and efforts to eradicate poverty, as the Paris Agreement demands?

Climate investments have been rising in recent years,⁸ yet few sustainable finance initiatives offer compelling answers to these questions. Most are bound to generate incremental change at best, making small improvements on a status quo that is structurally incompatible not only with the notion of environmental and social sustainability, but also with the idea of long-term wealth preservation. Take ESG investing, an approach that considers risk factors related to environmental, social, and governance factors in capital allocation decisions, and that has become increasingly popular amongst institutional and private investors in recent years. While ESG investing is well suited to diffuse incremental sustainable practices throughout the finance industry, and thus harvest some low-hanging fruit, empirical evidence suggests that it is unlikely to drive the dramatic transformative change that is required for the decarbonisation of the economy.⁹

There remains a long list of questions about *how* to invest climate finance in service of the type of real-world, place-based systems transformation that the IPCC is calling for:

- How do we make sense of a system—where it is today, where it needs to go, and how it can get there—in a way that informs investment decisions?

- What assets do we need to fund if the goal is not just to generate a financial return and reduce emissions but also to strengthen resilience, social justice, and inclusiveness?
- How can we identify sensitive intervention points where small changes have big effects?
- Given that single projects do not have the power to change systems, how can we design and manage portfolios that do?
- How can we make investing in sustainability transitions more participatory and democratic?
- How can we cultivate a community of investors who self-identify as proactive change agents and take responsibility for the future trajectory of society at large?

The main reason most sustainable finance initiatives fail to address these questions and are thus geared for incrementalism is because they remain steeped in traditional finance orthodoxy—in the paradigms, structures, and practices that guide decision-making in today's capital markets. Yet going forward, any investor with the intent and mandate to finance sustainability transitions, and therefore contribute to long-term wealth-preservation, must engage with these questions. It will no longer be enough to maximise financial returns—the objective function has changed.

The Need for a New Investment Logic

As we push ahead in the third decade of the 21st century, there is little time left to reverse our emissions trajectory and protect our communities from the consequences of a warming planet, visible from Houston's flooded streets, Australia's burning forests, and the Arctic's record-setting sea-ice decline. We cannot wait for the effects of incremental approaches to accumulate until they produce deep, structural changes in the real economy. The time for incrementalism is over.

What we need now is a new approach to investing *for* systems transformation in the places that matter for human prosperity—one that deploys capital with

a broader intent and mindset; that is anchored in different methodologies, structures, capabilities, and decision-making frameworks; and that moves away from a project-by-project mentality to a strategic portfolio paradigm.

This white paper sets out to describe such an investment logic: Transformation Capital. It is the culmination of a year-long collaborative design process orchestrated by EIT Climate-KIC, which brought together a diverse group of innovators to frame the problem, sketch the contours of a systemic investment approach, and provide a blueprint for an initiative whose mission is to develop, demonstrate, and mainstream place-based systemic investing throughout the world of finance. It builds on what some of the most progressive minds in the systems innovation and sustainable finance communities have already started, looking to make its own essential contribution to the global effort of redesigning financial markets.

Before Delving in, a Reality Check

We recognise that the opinions we offer in this white paper are critical of how society relates to wealth and of how many finance professionals go about managing that wealth. Yet what we advocate for is not to overthrow capitalism, revolutionise the monetary system, or disregard the financial interests of asset owners. Nor do we suggest that everybody needs to agree with our norms and values.

We do believe, however, that it is evident that much of capitalism as practiced today is destructive for the planet and unjust to many and therefore not only unsustainable for society but also perilous for investors in the long run. At the same time, we know that capital can be part of the solution if we find ways of deploying it more intelligently and without sacrificing its current needs and preferences.

Transformation Capital advances certain ideas that transcend the paradigms of today's capital markets, so it will perhaps find its first audience amongst progressive investors and those with a mandate to lead society into a sustainable future. However, if we are to build a prosperous and resilient world on a truly global

scale, mainstream capital must follow. There is simply no alternative.

We believe it will be possible to bring traditional investors along, because—as we are now setting out to demonstrate—there is nothing in the theory of systemic investing that suggests that financial return and positive transformative change are mutually exclusive. In fact, we believe that systemic investing holds the promise of attractive returns and long-term wealth preservation, while catalysing the type of change the world needs to ensure prosperity for all—a process the finance industry must facilitate in order to retain its social licence to operate.

That said, none of it will matter unless we succeed at putting our theories into practice. In the deal-driven world of finance, seeing is believing, and the best marketing for a new way of working is to demonstrate tangible results through real-world transactions. This is why the Transformation Capital Initiative, which will bring systemic investment to life, is designed as a do-tank for the sustainable finance community.

What's Next?

Developing, demonstrating, and scaling a new investment logic is a complex challenge. It is in the nature of complex challenges that they cannot be solved by following a script. So what lies ahead is a journey of exploration and discovery, a systematic inquiry of what is possible, probable, and preferable.

This white paper serves as the starting point. We invite challenge owners, systems thinkers, innovation practitioners, investment professionals, ecosystem shapers, and creative voices to join us in figuring out how to deploy financial capital in pursuit of the greatest ambitions we hold for our future.

| USE CASES



→ Circular Economy Transition in Slovenia

In an audacious push led by its national government, Slovenia has set out to become the first country in Europe to transition its economy from a linear to a circular model. Such a fundamental rewiring of a national economy requires deep structural interventions in the realms of policy and regulation, public procurement, education, industrial value chains, and technology. It also requires investment capital to replace outdated infrastructure, retrofit the building stock, support the development of new services and business models, design innovative insurance products, and provide financial incentives for the creation of a market for circular products and services.

How can Slovenia make sense of where its economy stands today, what it needs to look like in the future, and what transition pathways it can take? How can the Slovenian government mobilise investment capital in service of its circular economy transition, both from the private sector as well as from large public investment programmes such as the European Green Deal? And how can it build strategic portfolios of assets that unlock synergies from combinatorial effects?



→ Developing Clean and Healthy Cities

Cities around the world face an enormous challenge in becoming healthy places to live while reaching net-zero emission levels in a short period of time. Meanwhile, the trend of urbanisation continues—by 2050, 80% of Europe's population will live in cities, while urban migration is projected to add 2.5 billion people to urban populations globally. Yet human settlements already exceed the Earth's resource capacity. Unabated urbanisation will put even more pressure on urban resources and infrastructures, threatening the function cities play in providing a space for inclusive and equitable prosperity.

How can cities develop investment plans that underpin new policy paradigms, such as Doughnut Economics, in pursuit of a wide range of social and environmental goals? How can they convert their high-level economic cost/benefit analyses into actionable investment programmes? And how can they aggregate projects with different typologies and risk/return characteristics in a way that not only widens the range of viable projects but also addresses their individual "millions-to-billions" scaling challenge?

| USE CASES



→ The European Union's Innovation Missions

Inspired by the Apollo 11 mission to put a man on the moon, the European Commission has developed five ambitious research and innovation “missions” that underpin its R&D framework programme Horizon Europe and aim to deliver solutions to some of the greatest challenges of the 21st century. Four of the five missions—those on climate adaptation and societal transformation, regeneration of oceans and waterways, climate-resilient cities, and soil health and food—relate directly to environmental concerns.

What these missions share is that they are bold and inspirational, require collaboration across multiple disciplines, pursue specific goals derived from clear problem frames, and seek to transform systems rather than merely provide superficial fixes. They all also depend on the mobilisation and smart deployment of investment capital.

How should investments be made in service of broad, mission-driven policy agendas? How can public capital be blended with private and philanthropic funding not just for the purpose of risk transfer but for creating strategic synergies? What system-level indicators should be used to measure whether the mission is on track? And how can the public sector benefit commensurately from the financial upside in return for funding the creation of new markets?



→ A Just Transformation of Industry in the Basque Country

The Basque Country is a remarkable case of a region that successfully championed inclusive economic growth. Following the end of the Franco dictatorship and Spain's subsequent transition towards democracy in the 1970s, the region developed a unique version of a cooperative-led economic model that had made it one of the most prosperous regions in Europe. Its transition was anchored in a strong culture of inclusiveness and social equity and got a boost when the famed Guggenheim Museum in Bilbao opened in 1997. Today, however, the Basques must confront a new set of challenges: declining economic competitiveness, an ageing population, and the need to decarbonise its heavily industrialised economy.

How can the Basque Country transform its industrial economy once more, this time along a low-carbon and climate resilient paradigm, while involving its citizens in the investment process? How can the Mondragon Cooperation, one of the largest federations of worker cooperatives in Europe and the biggest employer in the region, make investments that generate financial returns while preserving its values of inclusiveness and social equity? What lessons does the Guggenheim Museum teach about leverage points in socio-technical systems and how investors can engage them?

THE LIMITATIONS OF TRADITIONAL FINANCE IN CATALYSING SYSTEMIC CHANGE

Finance professionals are increasingly committed to address complex societal challenges, not least because of an increasing desire of citizens (the ultimate owners of all financial assets) to invest sustainably.¹⁰ Yet many investors are currently ill-equipped to move beyond incrementalism and deploy capital in a manner that catalyses systems transformation. This often also holds true for those specifically mandated to blaze the trail towards a low-carbon, climate-resilient, just, and inclusive society, such as multilateral institutions, public sector actors, and impact investors.

The root cause, we believe, is a set of paradigms, structures, and practices that guide decision-making in the financial industry and limit its ability to finance transformative change in socio-technical systems. Studying the fundamental constraints of financial orthodoxy, as this chapter does, illuminates the nature of the problem. It also affirms the need for a structurally different approach. Transformation Capital uses this analysis as an entry point for its own interventions, focusing on re-imagining how capital needs to be deployed in service of financial returns, wealth preservation, and holistic sustainability.

PARADIGMS

Paradigms are the shared ideas in the minds of the members of a community, the deepest and commonly accepted beliefs about how the world works. They are the foundations of a system, defining its goals, information flows, feedback loops, material stocks and

flows, and indeed everything else. Paradigms exert the greatest leverage on a system's behaviour and are thus a potent place for intervention.¹¹

In the world of finance, the paradigms of capital markets underpin the mindsets of investors, determine their priorities, and influence which frameworks and tools they use to analyse and make sense of the investment world. What follows is a list of the most important ones.

Notions of Value

A central paradigm of today's finance industry is that valuable is only what can be measured in monetary terms and captured through transactions. This means that capital markets cannot relate to sources of value outside this narrow definition. As a result, traditional investors consider public goods (such as political stability, social equality, and ecological sustainability) as exogenous factors, i.e. aspects that sit outside their sphere of influence and thus outside their sphere of responsibility. They feel little obligation to foster intrinsic societal values that exist beyond the "money in/money out" logic.

This is a moral issue for some. But it can become a financial problem for capital markets at large if the deterioration of public goods diminishes monetary wealth or makes our economies more fragile.

For instance, decades of shareholder capitalism, globalisation of supply chains, just-in-time inventory management, and reliance on market-based debt finance have made our economies vulnerable to exter-

nal shocks.¹² Nothing has exposed that more vividly than COVID-19, which caused stock markets to plunge faster than during the 1929 or 2008-2009 Wall Street crashes.¹³ The pandemic has laid bare the structural flaws in present-day capitalism, not least the precarity of work and the disconnect between financial markets and the real economy.¹⁴ That stock prices have rebounded fast despite the bleak economic outlook is primarily the result of central bank intervention, not a sign of the intrinsic resilience of our economies.¹⁵

In many respects, COVID-19 has also given us a preview of how financial markets might react to those catastrophes triggered by a warming planet, such as extreme weather events, biodiversity loss, breadbasket failures, and forced mass migration. The Economist Intelligence Unit estimates that, in a worst-case scenario and with a view towards the year 2100, as much as \$43 trillion (or 30%) of value stored in the global stock of manageable assets could be at risk from the effects of climate change.¹⁶ Expecting the government to bail out investors whenever there is a discontinuous event that disrupts business as usual will not be a dependable investment strategy in the long run.

So investors would act in their own self-interest if they expanded their notions of value. Mark Carney, the former governor of the Bank of England, agrees. In a recent op-ed about the implications of the coronavirus, he wrote: "The economy must yield to human values. The traditional drivers of value have been shaken, new ones will gain prominence, and there's a possibility that the gulf between what markets value and what people value will close."¹⁷ In their pursuit of new notions of value, investors could build on the ground-breaking efforts of public-sector pioneers. Scotland's National Performance Framework, New Zealand's Well-Being Budget, the City of Amsterdam's embrace of Doughnut Economics, and the European Union's Just Transitions Mechanism (which forms part of the European Green Deal Investment Plan) signal the dawn of a new paradigmatic understanding of value.¹⁸

The Nature of the World

The narrow conception of value that currently dominates financial practice derives in part from the

Traditional finance orthodoxy assumes that society at large, and economies in particular, are complicated systems. Yet science tells us that they behave as complex adaptive systems. This distinction matters because operating in complexity requires different mindsets, approaches, and tools than those prevalent in the financial sector today.

way many investors view the systemic nature of the world. They assume that economies are *complicated* systems, in which the relationships between cause and effect are clear and in which the nodes, inter-relationships, and feedback loops can be identified, through careful analysis, by those who possess the right kind of expertise.¹⁹ Yet complexity science teaches us that human civilisation (and economies and markets in particular) behaves instead as a *complex adaptive* system.²⁰

Why does this matter? Because how investors view the nature of the world determines what mindsets, frameworks, and tools they deploy for solving a problem. A worldview steeped in complicatedness leads to approaches that are reductionist, atomistic, and mechanistic. What matters then is the function, property, and promise of individual units. This is why finance practitioners are so fixated on single projects and securities. It also explains why investors rely on probabilistic models to forecast the performance of financial assets.²¹ Complexity, by contrast, is the domain of emergence, in which we can understand why things happen only in retrospect. In other words, in complex contexts, the future cannot be predicted but it will instead reveal itself over time, which is why probabilistic and deterministic models are of limited use.²²

So there is a mismatch between the nature of the models that investors use and the true nature of the context

in which these models are applied, and it explains why so many investors show herd behaviour and fail to anticipate asset bubbles.²³ If investors want to address systemic problems, they must adapt their mindsets and tools to the realities and needs of complexity.

The Agency of Money

Another set of beliefs, though one that is rarely stated, revolves around the agency of money itself. What role, exactly, does financial capital play in driving a system's behaviour?

Many investors see money as a *passive* entity that flows through a "landscape of opportunity" to the most attractive assets. In this worldview, the force that governs such capital flows emerges from the relative risk/return ratios of different assets within the investable universe, as revealed through analytical frameworks such as the Capital Asset Pricing Model (CAPM). Investors who subscribe to this view assign policymakers the role of landscapers—expecting them to tilt the landscape through policy and regulation, should society be unhappy with the current topography—and themselves the role of system optimisers whose job is to exploit profit opportunities within the boundaries of the investable universe. These investors then adopt a reactive mode of operation, feeling little responsibility for (and influence over) the general course of the world.

An alternative view posits that money is an active entity in determining what happens in a system and that the real landscapers are, in fact, investors themselves. Many venture capitalists, whose mission is to find the "next big thing" in technology and business model innovation, subscribe to this worldview. They, and other investors who share the same beliefs, tend to feel a strong sense of agency over shaping the future.

Are these just philosophical musings? Not at all.

Money is a powerful lever in driving systemic change, and it is investors who wield that power. Climate change is already threatening long-term prosperity.²⁴ Operating in a reactive *modus operandi* and waiting for lawmakers to change the boundary conditions for investment will

almost certainly be detrimental to the goal of long-term wealth preservation. Investors would act in their greatest self-interest if they proactively deployed their capital in service of a future-proof version of capitalism without waiting on others to build a path for them.

Financial Mathematics and the Conception of Value, Risk, and Return

In finance, decisions are often based on mathematical models. It is tempting to view these models as truisms. But doing so would neglect that they are, in fact, expressions of a range of beliefs about what is valuable, how that value is best managed, and how it materialises in markets.

Take the Discounted Cash Flow (DCF) method, which posits that the value of an asset equals the sum of its cash flows occurring in perpetuity, discounted at a rate that reflects the risk of these cash flows. While the mathematical rationale for the relationship between value and risk-adjusted future cash flows is sound, the DCF also makes a normative statement about what is valuable and how such value ought to be calculated. Indeed, the norms implied in the DCF method condition a whole industry to prioritise short-term profits over long-term value.

Further, the fundamental ideas embedded in the DCF introduce self-referentiality to the practice of investing. The concept of financial return, for example, is calculated as the money made or lost on an investment (i.e. the ratio between flow and stock). Risk is usually defined as the chance that the actual outcome of an investment differs from the expected outcome (i.e. the difference in size between the expected flow and the actual flow). The issue with self-referentiality is that it constricts the objective function of investors because it prevents them from relating to anything outside this narrow frame of reference. In other words, models like the DCF influence what investors care about and pay attention to, not least because—as the saying goes—only what is measured gets managed.

For instance, the way value is defined in the DCF makes it impossible for investors to capture positive externalities that their actions might create, such as

when an investment in a public park causes nearby real estate to appreciate while also reducing health care costs through improvements in the physical and mental health of the surrounding community.²⁵ The inability to capture positive externalities is one of the key reasons why investments in adaptation and resilience have been trailing those in climate change mitigation by a wide margin.²⁶

The self-referential definition of risk gives rise to another issue: it fails to account for systemic risks such as the vulnerability of economies, institutions, and other social constructs to the profound consequences of complex phenomena like climate change and technological advancement. The conception of risk as a metric that measures quantifiable chance (i.e. *known* unknowns) means that investors cannot relate to or engage fundamental uncertainty (i.e. the *unknown* unknowns), which would be a useful skill for those seeking to prosper in complex adaptive systems.²⁷

Another set of mathematical models derive from Modern Portfolio Theory (MPT), a dominant paradigm for managing risk at the level of portfolios. MPT postulates that systemic market risk and return are exogenous to investing (i.e., outside of the sphere of influence of investors), and that risk management is best pursued through diversification at the portfolio level. MPT is the dominant force behind the finance industry's focus on relative returns and short-term performance and the low sense of agency of investors over mitigating systemic risks.²⁸ It has been one of the strongest drivers of the growing separation between financial markets and the real economy that became so evident during the 2008-2009 sub-prime mortgage crisis and the COVID-19 pandemic.

To be clear, there is nothing wrong with a decision-making approach steeped in mathematics. Yet investors must acknowledge that their models reflect not so much absolute truths but a set of norms and values. Over the past two decades, it has become evident that the finance industry's objective functions fail to set us on a path to long-term sustainability and wealth preservation. So investors would be well advised to adapt their deterministic frameworks to the complex adaptive nature of markets and to expand their conception of value beyond today's confining definitions.

Other Social Constructs

Finally, it is useful to recall that investors operate under the paradigmatic assumptions that the social constructs upon which capitalism rests will persist into perpetuity: nation-states as dominant political entities and the guarantors of the rule of law, financial statements as the principal accountability ledger in the economy, and the existence of markets operating on the principles of open access, supply/demand balancing, and antitrust protection, to name just a few.

Would it be reasonable for investors to anticipate the end of the nation-state? Probably not. But just imagine how capital markets would start to behave differently if reporting cycles were to change from quarterly to annually, if every person had a fixed carbon budget to spend on consumption, if pension funds were obliged to consider the living conditions of future generations when making investment decisions, and if financial statements had to account for a company's destruction of the Earth's natural capital.

The point here is that most people in society are prone to believe that social constructs are permanent, that what exists today will also exist tomorrow. Instead, all social constructs are contingent and fragile and often they are an expression of the zeitgeist that prevailed when they were formed.²⁹ Believing in the false permanence of these ideas fosters passivity and further diminishes an investor's sense of agency.

PRACTICES AND STRUCTURES

To ensure conformity with these paradigms, the financial industry embraces and self-enforces a set of idiosyncratic practices and structures that impede the adoption of a systemic approach to investing.

Single-Asset Approach

The majority of investors analyse and trade single assets—they focus on one stock, one bond, or one project loan at a time. This manifests when a rating agency issues an ESG score for a company, when a fund manager buys a green bond, or when a multilat-

eral development bank structures a blended finance facility for a renewable energy project.

In following the single-asset approach, investors disregard what the sustainable development sector has understood for a long time—that single interventions rarely lead to systemic change.³⁰ They miss out on combinatorial effects that arise when investments are aligned and coordinated to create strategic synergies. So assessing and selecting one asset at a time is not an effective strategy for generating outcomes at the system level.

There is increasing recognition amongst sustainable finance practitioners that the single-asset approach is an inhibitor of systemic change. The World Bank, for instance, has recently started an investigation into how international climate finance could be deployed in more transformative ways.³¹ “Climate finance is typically allocated to projects rather than systemic interventions. The predominant preference is toward clean infrastructure projects. These bring important results but are not usually designed to change policies and ecosystems for a more transformative impact,” their report concluded.³² And Hiro Mizuno, the former chief investment officer of Japan’s Government Pension Fund—one of the world’s largest institutional investors—is advocating for asset managers to adopt investment strategies that make whole systems more sustainable, not just the companies in their portfolios.³³

The single-asset approach also exacerbates the scale problem—the challenge to move from billions to trillions in SDG-related investment.³⁴ When the size of individual projects is too small for institutional investors to care and there is no capacity to aggregate individual projects into larger investment portfolios, many beneficial investments go unrealised. Transacting “in bulk” is one of the most potent pathways for deploying climate finance at the trillion-dollar scale.

Risk-Based Portfolio Composition

In traditional finance, the main objective of portfolio composition is risk reduction through diversification. According to MPT, such diversification is best achieved by bundling different securities that correlate weakly.

But a risk-based approach to portfolio composition has limited potential to unleash transformative change because it underplays aspects of value. Investors following this approach tend to disregard, both ex-ante and ex-post, any value that emerges at the aggregate level of the portfolio through strategic synergies (i.e. through positive correlation). Selecting assets not only based on their individual merits and for the purpose of risk diversification but also for their collective interplay can make a portfolio more valuable.

The benefits of building strategic portfolios are increasingly being recognised by some of the most progressive mission-driven investors. For instance, under the label “ecosystem investing,” a growing number of impact investors have started to pursue an approach that emphasises the engagement of a multitude of players who drive outcomes within a social system of interest.³⁵ And researchers at University College London have developed an integrated portfolio composition method that produces greater non-financial impact compared with the single-asset approach, while making a wider set of projects investable based on given financial risk/return criteria.³⁶

The next generation of mission-driven investors should pay attention to how individual assets relate to each other, what synergies they can unlock, and how positive correlation can be converted from a risk to avoid to an opportunity for driving change while generating financial returns.

Categorisation and Other Unhelpful Practices

The instinct to categorise is a natural behaviour of all cognitive beings. It can become problematic, however, when it creates views and practices that are siloed and thus ignore the interconnectedness of our complex world.

The finance industry is categorical in the extreme. Investors use a long list of classifications to not only segment the investable universe (e.g. into asset classes, investment styles, time horizons, market maturity profiles, sectors, bands of creditworthiness, currency baskets, etc.) but also to organise teams,

design processes, manage risks, train employees, capture knowledge, and even shape corporate culture.

This extreme disposition to categorise derives directly from the view that the world at large is a complicated system that needs to be analysed by experts. The dominant view is that categorisation creates the conditions for people to develop deep domain knowledge. While this may be true, it also creates a degree of compartmentalisation within financial institutions that sits at odds with the notion of complexity.

Finally, there are other practices that limit the financial industry's ability to unlock the positive returns that come from a systemic, integrated approach. These include the static approach to defining asset allocations, the crude heuristics that underly normative investment horizons for different asset classes, the homogenous recruitment and training methods of banks and financial intermediaries, and the myopic incentive systems with which financial institutions reward their employees.

SO WHAT?

In combination, these paradigms, structures, and practices make traditional investors ill-equipped to make more than merely incremental contributions to resolving complex societal problems. In fact, they achieve the opposite of what the world now requires. Instead of enabling the finance sector to adapt itself to the changing needs of society, they confer a status quo dependency—capital markets depend on systemic stability, as the 2008-2009 financial crisis and the COVID-19 pandemic have highlighted.

This status quo dependency is so large that it has become self-perpetuating. The finance industry is obsessed with business as usual—in terms of the assets it invests in, the methods it employs, or the people it hires—and spends little time and effort to advocate for fundamental changes to the way capital markets operate.³⁷ And why should it? Finance is still the most profitable sector of the economy.³⁸ So those bankers and asset managers in power today have much

to lose in the short run but little to gain from positive change that will materialise decades into the future.

Herein, then, lies the ultimate problem. Climate change and other complex societal issues demand deep, structural change to the way in which our economies and societies behave. This will create systemic volatility that traditional investors are ill-equipped to handle and disincentivised to facilitate, and that they will thus resist. So unless the finance industry reimagines its role in society and redefines its objective function, it will fail not only to catalyse the profound transitions that the world needs but also to preserve wealth and economic stability for future generations.

THE NEED TO LIFT SUSTAINABLE FINANCE ONTO THE NEXT LEVEL

Given the paradigmatic, structural, and practical limitations of traditional capital markets, it is laudable that a massive global effort is now underway that aims to make capital markets more sustainable. The main focus of this effort is to compel financial institutions to behave differently in order to divert financial flows to “Paris-aligned” assets by “rewiring” the finance industry through new regulations, information architectures, risk frameworks, and reporting standards.

The problem with the most prevalent approaches underpinning this effort is that they are incremental in nature. While new risk disclosure obligations, climate risk metrics, financial products, taxonomies, blended finance strategies, multi-stakeholder collaborations, and multilateral climate finance instruments are important steps in the right direction, implicit in their design is the intent to keep the structural fabric of capital markets intact while making it a tad bit greener. This comes as no surprise given the finance industry’s status quo dependency explained in the preceding section.

THE FIVE STRUCTURAL ISSUE AREAS OF SUSTAINABLE FINANCE

As we move ahead in what many climate scientists call the “decisive decade”, the global sustainable finance effort needs to be strengthened in five areas. It is in these

five areas that Transformation Capital will make its own original contribution to the sustainability movement.³⁹

Area 1: Theory of Change

Many sustainable finance initiatives (SFIs) are vague about the issues they address and fail to specify how their actions will lead to outputs and outcomes that will achieve their ultimate impact objectives. In other words, they lack a robust theory of change.

The dominant logic is that the investable universe can be segmented into “Paris-aligned” and “Paris-misaligned” assets. The proxies used to assess the degree of alignment are usually based on some metric measuring greenhouse gas emissions, as applied to individual units such as corporate stocks or physical assets. In rare cases, such as in the EU’s sustainable finance taxonomy, the unit of analysis is a single economic sector.⁴⁰ Implicit in this approach is the hope that a one-by-one shift from high-carbon to low-carbon assets will produce the socially and environmentally sustainable future envisioned by the Paris Agreement.

Yet true sustainability is an emergent property of the system we call society. It *comes about* as a manifestation of how the different elements within that system interact. As a result, it must be conceived and approached in a holistic, systemic manner, not through a reductionist and atomistic approach. This philosophy is embedded in the Paris Agreement itself, which commits signatory countries not only to emissions reductions but also to a range

of societal outcomes not captured by emissions-based metrics. Many sustainable finance initiatives remain vague about how interventions at the unit level will lead to the emergence of holistic sustainability at the system level.

One reason for the dearth of solid theories of change is that it is not entirely clear how financial flows, and the financial system at large, relate to sustainability transitions.⁴¹ In other words, our understanding of how the structures and actions of investors affect outcomes in socio-technical systems (which is where the ambitions of the Paris Agreement must eventually materialise) remains weak. This is because there has been little research into the role of finance within the sustainability transitions field and, conversely, because academics in the field of finance have not incorporated concerns of sustainability transitions in socio-technical systems sufficiently into their research agendas. This creates a risk of misdirected or failed transitions because aspects related to context, assumptions, consequences, and generalisability remain unexamined and unchallenged.⁴²

One way in which we encounter this problem in practice is through the plethora of different problem frames that SFIs use. Some see a quantity issue and thus focus on “mobilising climate finance” (e.g. by crowding-in private capital through blended finance).⁴³ Others see political problems and call for policy that “fixes market failures” (e.g. through carbon pricing).⁴⁴ Still others see structural and cultural challenges within the organisations that comprise the financial sector and thus advocate for “greening the financial system”.⁴⁵

Many SFIs are vague about the issues they address and lack a robust theory of change. One of the reasons is that it is not entirely clear how financial flows—and the financial system at large—relate to sustainability transitions.

Problem frames matter. The way we make sense of a problem determines the strategies we deploy to address it. SFIs that are vague on the issues they aim to address therefore run the risk of being ineffective. That SFIs operate under such a broad range of problem frames suggests that we still have much to learn about the nature of the issue and how financial flows drive system-level sustainability.

Area 2: Angle of Attack

Many SFIs focus on secondary markets (most notably securities traded on stock exchanges) and thus operate at a distance to the real economy. The causal chain between the actions of an investor and their effect on environmental and social outcomes can therefore be very long.

Consider divestment. Selling oil stocks to another investor does not *per se* alter an oil company’s corporate activities. Divestment only becomes a force of change once it reaches a level that affects a company’s cost of capital, share price, or reputation, or once it succeeds at morally stigmatising the fossil fuel industry, for instance by making moderate policy proposals more acceptable or by mobilising a grassroots social movement.⁴⁶ But those are long causal chains, indeed.

The alternative is to remain invested and leverage shareholder rights to force a company’s board of directors into taking climate action. Here, the causal chain is much more immediate. But shareholder engagement is onerous and time-consuming, and significant barriers remain to mobilise more investors to engage corporations on questions of sustainability.⁴⁷

Another problem with the overwhelming focus of SFIs on secondary markets is that it contributes to narratives around quantity issues, and to productisation as a prevalent response strategy. Asset managers are quick to launch new climate-labelled investment funds, some with doubtful motives or weak theories of change.⁴⁸ This might move highly aggregated indicators (such as the volume of assets managed under considerations of ESG factors, or the size of the green bonds market) but fails to address the question of *what* to invest in once capital is mobilised.

There are several reasons why most SFIs concentrate on secondary markets. The most obvious one is that secondary markets are orders of magnitude bigger than primary markets, mainly owing to the financialisation of the economy over decades past.⁴⁹ That makes it easier to deploy or redirect large quantities of capital. But it does little to reverse the separation between capital markets and the real economy and thus unlock change where it matters.

Another reason is that many investors simply shy away from making direct investments in real-economy assets such as real estate, infrastructure, and the various forms of private equity. The reasons are manifold and include a lack of investor acumen, preferences for liquidity, and regulatory restrictions.

What remains in many cases is a wide chasm between what an SFI does and where it intends its impact to materialise. For the sustainable finance effort at large, it means that we have yet to build a bridge between the capital realignment strategy set out in article 2.1c of the Paris Agreement and the IPCC's call for transforming socio-technical systems.⁵⁰ It is precisely this bridge that Transformation Capital aims to build.

Many SFIs focus on secondary markets and thus operate at a distance to the real economy. We have yet to build a bridge between the capital realignment strategy set out in article 2.1c of the Paris Agreement and the IPCC's call for transforming socio-technical systems.

Area 3: Risk vs. Value

The sustainable finance discourse is dominated by one concept: risk. Be it on the level of fossil fuel reserves or individual units of infrastructure (e.g. "stranded

assets"⁵¹), at the level of individual companies or an economic sector (cf. climate-related financial disclosures⁵², "carbon bubble"⁵³), or at the level of the financial system at large (cf. "tragedy of the horizon"⁵⁴), the defining narrative of how climate change affects capital markets is a story about risk.

It is no surprise, then, that many SFIs expend a great deal of effort to help investors analyse, disclose, and manage risks: divesting from fossil fuel stocks, developing new risk metrics, raising risk disclosure obligations, improving risk modelling practices, and strengthening regulation and oversight to prevent a climate-related financial crisis.

These approaches are necessary and welcome, yet they are not sufficient on their own, because the transition to a more sustainable future will not happen solely through a race to the (risk) bottom. Instead, investors must start paying more attention to the other side of the coin: value. More specifically, they must be able to provide a compelling answer to the following question:

If we no longer invest in unsustainable assets, what do we invest in instead? In other words, how can investments not merely prevent the financial consequences we hope to avoid, but generate the societal outcomes we want?

So far, the climate finance community has responded mostly by funding projects in renewable energy and energy efficiency. This makes sense considering that the energy system is a relatively neat system with little technology risk, well-established de-risking mechanisms, liquid markets, mature supply chains, and sophisticated financiers. It is also usually straightforward to quantify environmental value through some sort of emissions-based outcome metric.

In contrast, systems like transportation, agri-food, cities, forests, and oceans, while just as important for society to prosper, are much more complex and thus harder to transform. In these systems, conceptualising and measuring impact is more difficult, especially in relation to elusive concepts such as biodiversity, resilience, justice, and inclusiveness. SFIs must find ways of defining how investments in complex systems can create both financial and societal value.

The defining narrative of how climate change affects capital markets is a story about risk. Yet the transition to a sustainable and prosperous future will not happen if investors focus solely on minimizing risk and neglect the other side of the coin: value.

The quest for value not only happens in relation to the present. SFIs must also figure out how to pull forward value that is set to emerge in the future, for instance through securitisation. Temporal value shifts could unlock the capital required to invest in the type of future-proof social and physical foundations that will replace the old, outdated industrial infrastructure. For instance, a municipality could forward sell its inner-city parking lots in order to finance the public transportation infrastructure that will make these same parking lots obsolete in the future. It could also enter into a capital gains sharing agreement with property owners who stand to profit from the construction of a new public park and then securitise these contracts in order to fund the costs of the park.⁵⁵

By far the most important challenge for investors to solve, however, is that the definition of value must be broadened. Going forward, value cannot refer only to money but needs to encompass a broad set of societal outcomes that underpin a low-carbon, climate-resilient, just, and inclusive society. These concepts, especially the latter three, are not part of the standard value definition in today's capital markets, and many traditional investors have no experience thinking about or acting on these issues. This is partly because these concepts are harder to measure, partly because they are not part of today's finance lexicon. So SFIs must help investors translate these concepts in a way that makes them relatable and actionable.

Area 4: Epistemology

In describing their goals and methods, very few SFIs explicitly reference systems theory, the discipline concerned with how different parts are interconnected and produce their own behavioural pattern over time.⁵⁶ Nor do they take a systemic approach to investing, for instance by interrogating the investable universe through the lens of strategic portfolios or by searching for leverage points, feedback loops, and drivers of self-organisation.

Instead, most SFIs continue to advocate for the use of predictive models and the single-asset approach. Few acknowledge the need to produce new knowledge of a fundamental nature (e.g. improving our understanding of the role financial capital plays in sustainability transitions), even fewer involve academia in a research capacity, and almost none dare to challenge current finance orthodoxies. But because of the discrepancy between investors' view of the world as a complicated system and its actual nature as a complex adaptive system, there is an urgent need to evolve the epistemology of finance.⁵⁷

For instance, portfolio composition should no longer be exclusively about capital aggregation and risk diversification. It should also be about unlocking combinatorial effects that investors can generate when they compose portfolios with a deliberate view of strategic synergies. The challenge is that such strategic blending tends to lead to multi-asset class portfolios, which many investment managers are not well equipped to compose because of their siloed internal organisation and their categorical approach to capital deployment.

Some may argue that rethinking finance from the ground up will take too long given the urgency to reduce greenhouse gas emissions. Yet there is a risk in believing that quick fixes will serve us well in the long run. Addressing structural problems requires structural responses, however long that may take. Complex systems theory has already found its way into economics.⁵⁸ And some SFIs have started to explore ways of deploying capital for transformative effects, most notably the Climate Investment Funds (CIFs) with their pioneering Transformative Change Learning Partnership.⁵⁹ What is now needed is a push to mainstream systems thinking in capital markets.

Area 5: People

Finance is a highly depersonalised domain. The things investors care most about are markets, companies, and financial instruments as well as the regulations and institutions that create the boundary conditions for their actions. Almost everything that matters is measured in amounts or percentage changes. It is therefore easy to forget that, ultimately, the financial industry, like any other community, is populated by people. It is the collection of actions performed by these people that give rise to capital markets as we know them.

Many SFIs underappreciate the human element as a potent place for intervention. Some engage with it, but mostly in the context of capacity building. Few go to the literal heart of the change agents within the financial sector, speaking directly to people's values, mindsets, and their sense of agency.

Further, the climate crisis is an opportunity to rethink the roster of people participating in financial markets. At present, many SFIs uphold a centralised operating model with big banks, large asset managers, and multilateral development finance institutions at the core. Many also uphold crude dichotomies, such as between the private sector and the public sector and between the "Global North" and the "Global South".

As the SDG-related funding gap remains wide, these traditional notions of industrial organisation and economic hierarchy have the potential to perpetuate ineffective response strategies. The sustainable finance effort would benefit from abolishing unhelpful categorisation and from building more diverse investment partnerships across the public, institutional, private, and philanthropic domains.

One particularly promising route is the democratisation of climate finance through the direct involvement of citizens, mediated through social media platforms and fintech solutions. The government of Indonesia set a pioneering example in 2019 when it raised money for its national savings bonds from millennials through social media apps like Instagram.⁶⁰ As fintech lowers the transaction costs of connecting with a large investor base, citizen investors could become an attractive source of climate finance. All that is needed to tap into

There is now an urgent need to rethink who participates in financing sustainability transitions and how risks and rewards are shared. Systemic transformation is often a distributed and participatory process and therefore well suited for more democratised forms of finance.

this source of funding is for the big players in climate finance to have the vision and courage to experiment with new approaches.

This being said, the challenge here is not just to access different sources of funding but to redesign how value is generated, captured, and shared with those who participate. Currently, the role of the public sector is often limited to de-risking investment propositions for the private sector. The finance industry must figure out how to reward the public sector (and more specifically, the taxpayers who fund it) in a more equitable way for the risk it takes and the value it generates, especially where it accepts entrepreneurial risk and acts as a market maker.⁶¹

A cautionary tale is provided by the UK's Green Investment Bank, which was privatised in 2017 through a sale to the Australian financial group Macquarie at a price tag considered too low in light of the risk that UK taxpayers had accepted when their government established the bank five years earlier.⁶² A counter-example is provided by the Mass Transit Railway Corporation (MTRC), the operator of the subway and bus system in Hong Kong, which turns an operating profit year-over-year by systematically capturing value from the spill-over effects that its transport services produce for businesses and property owners.⁶³

BIG PICTURE

To appreciate how fundamental these considerations are, it is useful to make explicit what they imply.

Society will need to have a conversation about the purpose of money in the 21st century. Shall monetary wealth continue to be a source of power, status, and self-worth, or shall it return to a more basic function as a facilitator of sustainable and prosperous societies?

This conversation has already started on the fringe of the financial system but must now move to its core.⁶⁴ It is a conversation that is closely related to the one about values. What is it that societies should appreciate in the coming decades? What is considered *valuable* and thus worthy of creation and protection on a planet inhabited by 10 billion people, stressed by environmental degradation, and threatened by social inequality?

These questions are important because the challenge we face is not just to overhaul the category of finance but to redesign the economic system at large and therefore the financial system that structures and enables it. Practical efforts are already underway and must be strengthened.⁶⁵ Yet these are often led by government, with capital markets standing on the sidelines and deferring responsibility.

In our mission to lead the world into a more sustainable future, being bystanders will no longer be an option for investors. If we are to prosper as a society, investors will have to become opinionated and take a stance. Capital will have to induce change, not just follow it.

Doing so opens the door to reframing the climate finance challenge beyond notions of “green”. Climate change is an environmental challenge driven by complex social factors. A reductionist approach centred on environmental indicators (as opposed to a broader and more systemic approach) carries the risk of biasing our actions towards interventions with easily quantifiable outcomes, such as CO₂ reductions. We must be careful not to just blindly build more solar farms and wind parks because they score well in a

unit-level impact assessment, assuming that doing so will lead to the transformation of our food, transportation, and infrastructure systems. Sustainable finance needs new assessment and accountability frameworks that pay tribute to the interconnectedness of our world.

Last but not least, the time has come for investors to increase their risk tolerance. Continuing to try and safeguard financial wealth through risk minimisation on a single-asset level might unlock capital flows in the short term but could lead to the deterioration of the global asset stock in the long term, diminishing everybody’s wealth in the process. Abandoning short-termism will be no easy feat, requiring not only more sophisticated risk management tools but also greater “futures literacy”⁶⁶ and, for many institutional investors, a commitment to reinterpret fiduciary duty.⁶⁷

Ultimately, all this hinges upon those wielding power over financial capital to *want* change to happen. Intent matters. It might require the finance sector to undergo a cultural change, away from fierce competition and towards symbiosis, solidarity, and empathy.

The conception of impact in climate finance must be expanded beyond notions of ‘green’ to also encompass social outcomes such as resilience, justice, and inclusiveness. Moreover, what matters is that investment decisions are based on an understanding of how such impact will emerge at the system level, not just at the level of a single project or transaction.

THE ADDITIONALITY OF TRANSFORMATION CAPITAL

Transformation Capital will not solve all these problems. It will try to build on what others have started and contribute by:

- enabling actors in the real economy to deploy money as a lever of change in place-based systems, thus building a bridge between the system of finance and the socio-technical systems that matter for human prosperity,
- developing an investment logic that recognises the world as a complex adaptive system and embeds systems thinking within all stages of the investment process,
- lifting value generation onto the same level of importance as risk management, connecting investors with new value sources and progressive intents and thereby empowering them to become proactive change agents rather than mere risk avoiders, and

- bringing human-centred design and sensemaking to the practice of investing and thus enabling investors to respond to what emerges from their actions at the level of the systems they want to change.

→ Transformation Capital in Relation to Impact Investing

The Global Impact Investing Network (GIIN) defines impact investing as “investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return”. While Transformation Capital falls under this broad definition, it differs in important aspects from traditional approaches to impact investing.

First, it intends to catalyse deep, structural, and irreversible change at the level of whole socio-technical systems. The scope and ambition of this intent surpass those of most traditional impact investors, who tend to focus on specific, and often localised, outcomes.

Second, whereas traditional impact investing tends to follow the single-asset approach, Transformation Capital puts

strategic portfolios and nesting—the deliberate synergistic alignment of an investment portfolio with a broader system intervention approach that encompasses non-financial levers of change—at the heart of its investment logic.

Finally, whereas traditional impact investing tends to adopt current capital market orthodoxies—with the (incremental) addition of non-financial metrics to selection and accountability frameworks—Transformation Capital seeks to change the paradigms, practices, and structures of investing, bringing innovation to almost all stages of the investment process including value models, methodologies, analytical frameworks, partnership structures, financial instruments, and learning protocols.

TRANSFORMATION CAPITAL: TOWARDS A SYSTEMIC INVEST- MENT LOGIC

DEFINING TRANSFORMATION CAPITAL

The science is clear, and the world's top economic authorities agree. To safeguard both our society and economy, we must avoid the most dangerous consequences of global warming.⁶⁸ This requires that we fundamentally change the way we interact with the physical environment of the Earth.⁶⁹ The interactions that matter most are those that happen at the nexus of people, technology, and nature, in the place-based socio-technical systems that provide us with energy, mobility, food, housing, water, and other goods and services characteristic of modern human civilisation.

The change we need is not incremental. We must rewire almost all aspects of how societies operate: technologies, values and social norms, materials extraction and use, institutions, education and skills, economic paradigms, policy and regulation, and financial flows. The sustainability movement uses a technical term for such deep and irreversible change in economic, technological, societal, and behavioural domains: transformation.⁷⁰

In the context of climate change, transformative change is not just about depth and irreversibility but also about directionality.⁷¹ Human economic activity must transition from its extractive, exclusive, and unsustainable status quo to a regenerative, inclusive, and sustainable model that respects the natural boundaries of our planet and the social needs of our communities. In the political and public debates around

climate change, a common framing of what that future needs to look like is “low-carbon, climate-resilient, just, and inclusive”, a reference to the mitigation and adaptation challenges posed by a warming planet.⁷²

The logic—the collection of paradigms, structures, and practices—under which money is invested is a powerful driver of a system's behaviour. What determines such a logic is the purpose for which money is invested. If invested effectively, money can cause or accelerate—in other words, catalyse—the accomplishment of that intent.

We thus define Transformation Capital as ...

an investment logic intending to deploy capital to catalyse directional transformative change of socio-technical systems to build low-carbon, climate-resilient, just, and inclusive societies.

Put simply, Transformation Capital is a systemic investment approach for catalysing sustainability transitions in the real economy.

THE NATURE OF TRANSFORMATION CAPITAL

As a capital deployment logic, Transformation Capital inhabits the nexus of systems thinking and investment practice. It recognises that financial flows occur in networks of actors and relationships, which are bounded

by institutions and social norms and constituted by people. It aims to build a bridge between the Paris Agreement’s goal of realigning financial flows and the IPCC’s call for transforming socio-technical systems.

Transformation Capital borrows its values from the philosophy of humanism: informed by science, inspired by culture, and motivated by compassion. It strives for equitable and inclusive prosperity, promotes fairness and dignity, embraces diversity, and supports the maximisation of individual liberty and opportunity consonant with social and environmental responsibility. It is committed to reason and evidence-based argumentation, and it advocates for representative and participatory democracy.⁷³ Why does this matter? Because anyone deploying capital with the intent of affecting the lives of others will inevitably run into ethical dilemmas. When such dilemmas emerge, Transformation Capital will look to humanism to provide the first principles for evaluating trade-offs and informing decisions.

Implicit in this philosophical foundation is the recognition that today’s conception of wealth—and the yardsticks we use to measure it, such as GDP or the market capitalisation of companies—is no longer an appropriate proxy for human prosperity. Nor is the current version of capitalism future-proof. This creates the need for investors to expand their notion of value to include non-financial goods such as social equality, political stability, intergenerational equity, and ecological sustainability, without which the traditional concept of wealth is threatened.

Despite its philosophical roots, Transformation Capital is fundamentally about action. A new investment logic of such scope and ambition cannot be developed at the white board—it must be informed and advanced through real-world experience.

The Transformation Capital Initiative (TCI), the open-innovation programme that will bring systemic investing

THE CONTEXT OF TRANSFORMATION CAPITAL

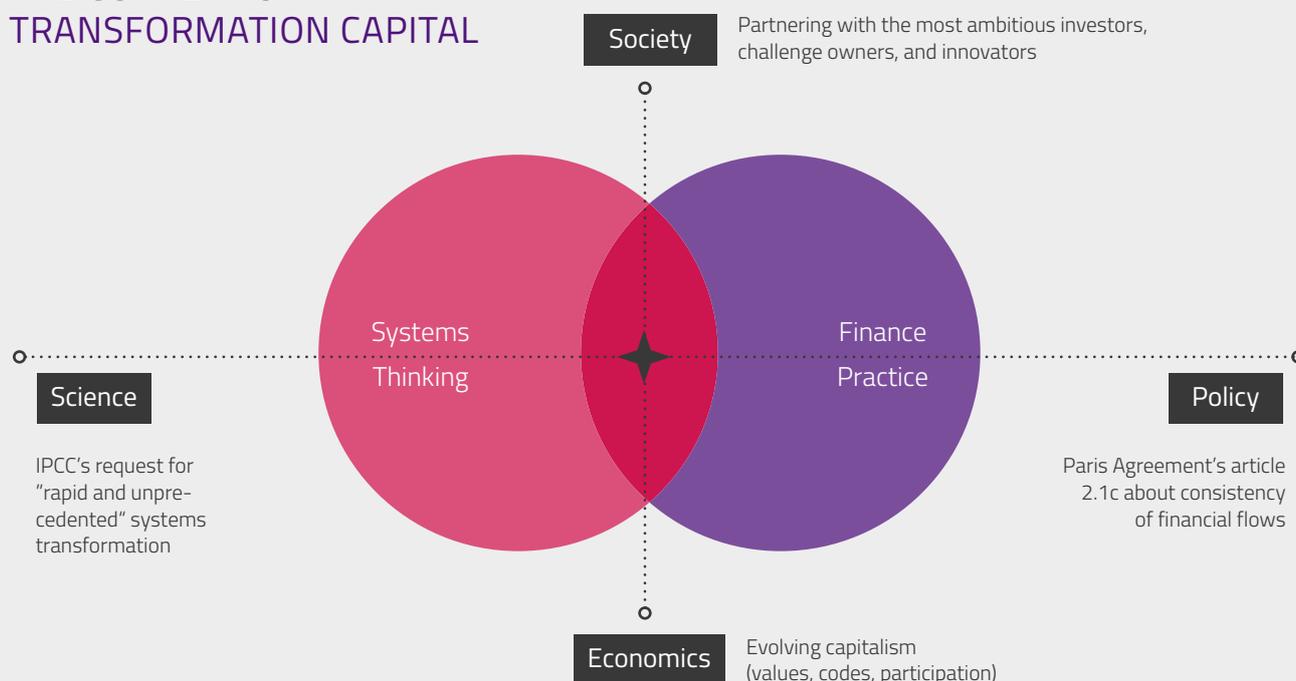


Figure 1: The Context of Transformation Capital

Transformation Capital is an investment logic at the intersection of systems thinking and finance practice. It aims to build a bridge between the Paris Agreement’s goal of realigning financial flows and the IPCC’s call for transforming socio-technical systems. It guides challenge owners and investors in the real economy in deploying capital for transforming place-based systems, thereby contributing to the global effort of building a future-proof version of capitalism.

to life, will therefore put an emphasis on working with the most ambitious challenge owners and innovators in society, and on raising and deploying substantial investment capital in real-world settings. It will provide a platform for these challenge owners to raise funding for their sustainability agendas and for committed asset owners to connect with transformative investment opportunities.

While Transformation Capital focuses on the practical, a robust intellectual underpinning is nonetheless essential to supply a set of hypotheses that can be tested and validated in order to affirm the usefulness and limitations of its core ideas. So it is vital to intertwine theory and practice from the beginning.

THE WORLD AS A COMPLEX ADAPTIVE SYSTEM

A hallmark of the axioms underpinning Transformation Capital is that the world operates as a complex adaptive system. Such systems consist of many parts that interact dynamically, process information, and adapt their behaviour.⁷⁴ Economies, immune systems, brains, and natural ecosystems are all complex adaptive systems, as are social constructs such as nation-states, families, and companies.

Complex adaptive systems share three defining characteristics. First, they constantly evolve, adapting themselves in response to internal pressures and external stimuli, in a constant struggle to retain or improve their fitness for the environment in which they exist. Second, they exhibit aggregate behaviour not derived from the individual actions of their constituent parts. In other words, the micro-level interactions of these parts lead to the emergence of macro-level patterns of behaviour. And third, these constituent parts develop rules to anticipate the consequences of certain responses. Such anticipation can lead to major changes in aggregate behaviour, even if those consequences fail to materialise.⁷⁵

These basic characteristics endow complex adaptive systems with a set of peculiar features. Such sys-

tems are self-organising. They have built-in feedback loops that can act as amplifiers, which can lead to the occurrence of tipping points and non-linear behaviour. Because of their intricacy, these systems behave in non-deterministic ways, making it difficult to distil cause-and-effect relationships. They never reach optimality (or indeed any sort of steady state) but instead constantly exhibit new forms of emergent behaviour.

These are not just theoretical musings. They have profound implications for designing intervention strategies, not least for how to deploy capital in service of system transformation. In complex adaptive systems, deterministic action plans are bound to fail, predictive tools are unhelpful, and excessive categorisation is constraining. More promising approaches emphasise exploration, experimentation, and rapid learning, and they try to harness the defining characteristics of such systems.⁷⁶

THE IMPORTANCE OF INTENT

At the heart of Transformation Capital stands intent. While the concept of intent is related to that of objectives, it is worthwhile to consider their differences. Objectives typically strive to be specific, measurable, and attainable and are often set against a defined time horizon. The mindset that underpins objectives is one of predictability and linearity.

In contrast, intent sits on a higher level of abstraction. It is more closely related to the idea of purpose and thus more spacious and flexible than the concept of objectives. While objectives are met (or not) over time, intent endures but may have to be renewed from time to time.⁷⁷

Why is this distinction important? Because many sustainable finance initiatives are explicit about their objectives but not about their intent. Without a connection between the two, or if that connection is incoherent, an SFI may achieve its objectives but fail to serve its purpose. For example, it is one thing to commit to transitioning investment portfolios to net-zero greenhouse gas emissions by 2050 in a “holistic ESG approach”, as the UNEP Finance Initiative’s Net-Zero Asset Owner Alliance

strives to do.⁷⁸ It is another to also articulate why that is important, to reveal what self-interests each signatory has in pursuing this goal, and to commit to a vision of what the world at large should look like in 2050.

Many SFIs pursue laudable environmental and social objectives but operate with the intent of retaining a version of capitalism that ascribes a singular purpose to investment capital: to multiply itself. In contrast, Transformation Capital intends for investors to deploy capital *primarily* to create change dynamics that propel a system in a specific direction, both in order to set the system on an environmentally and socially sustainable footing as well as to enable the continued multiplication of capital in the long run.

Being clear about intent also matters because what investors set as their priorities determines what they care about. Investors pursuing systemic change will interrogate the universe of investable assets with different frameworks and metrics for evaluating potential, success, and failure. They will also bring a different spirit and mindset to their investment practice.

Mindsets matter because complex challenges are shared challenges. To generate truly transformative outcomes, investors must adopt novel approaches to their professional practice, embrace collaboration with unusual actors (particularly from the public and philanthropic spheres), engage with concepts that are not part of the standard finance lexicon (such as justice and inclusiveness), and recognise their power to solve or perpetuate the problem.

It is the combination of intent and mindset that produce the seed with which the Transformation Capital Initiative will raise a new community of finance professionals: systemic investors.

SETTING DIRECTIONALITY THROUGH MISSIONS

The directionality so characteristic of systemic investing is set by the challenge owner: a government, multilateral organisation, foundation, corporation, or individual with the resources, influence, sense of

agency, and mandate to address climate change on behalf of others. It must be articulated in a transformation agenda—or “mission”⁷⁹—as a statement of intent.

When imagining the future, it is useful to keep in mind that systems move from one state to another through an evolutionary process. One of the marvels of evolution is that it produces a great variety of designs that are fit for a specific purpose. This means that there are a multitude of different system designs that meet a specific intent. So what counts for sustainability transformations is not to perform a precision landing on any individual design (i.e., to meet clearly defined objectives) but instead to arrive somewhere within a general landing zone.

That is not to say that specificity is irrelevant or that close enough is good enough. Instead, it is an acknowledgment that the exact meaning of “low-carbon, climate-resilient, just, and inclusive” will vary by context. When intervening in complex adaptive systems, it is neither useful nor practical to articulate a highly specific end state. Instead, systems should be given the opportunity to evolve in whichever way proves to be fit for their specific context—provided, of course, that they land within the zone.

Economist Kate Raworth, the creator of Doughnut Economics, provides a wonderful example. In her model, the landing zone is framed as a “safe and just space for humanity” and sandwiched between a social foundation of well-being (that no one should fall below) and an ecological ceiling of planetary pressure (beyond which critical environmental degradation occurs).⁸⁰ The city councils of Amsterdam and Copenhagen have both embraced Doughnut Economics as a north star for their urban transition planning, yet the Dutch version of a “safe and just space for humanity” will certainly look and feel different to the Danish one.

However the landing zone is defined, it is useful to recognise that systems are path dependent—where they come from determines where they can go next. A system can only evolve towards a new design through intermediate states that act as developmental bridges between the old design and the new. If the two designs are too far apart, the system cannot just

Complex adaptive systems have self-organising properties. Investors can harness these by deploying capital in a way that changes a system's dynamics. This requires that their impact assessments focus on indicators of transition dynamics rather than on static outputs such as project-level emissions savings.

"jump".⁸¹ So transformations do not occur as discrete phenomena that happen in an instant, like flipping a light switch. Instead, they progress along a gradient, evolving forward along a series of adjacent possibles that originate in the system's past, like pieces on a chessboard.⁸² This means that systemic investors must develop a sense of the transition pathways that a socio-technical system could reasonably take given its current resource base and configuration.

Yet investors do not have to provide all the capital required for a system's transformation. They only need to create new attractors—entities towards which a system tends to evolve—or, where desirable attractors already exist, move the system closer to tipping points (e.g. by strengthening feedback loops). After that, the system will self-organise and produce a new techno-economic paradigm that resides within the landing zone and becomes the new common-sense logic that drives the behaviour of all actors within the system.⁸³ What matters, therefore, is an investor's effect on the transition dynamics unleashed in the system of interest, not so much the static outputs (e.g. CO₂ emissions savings) that an investment generates.

Norway provides an interesting case in point. Over the past decade, the Norwegian government has been offering generous subsidies and a range of use-related benefits with the goal of expanding the country's

electric vehicle fleet. In combination with a credible policy goal to phase out the sale of new gasoline and diesel cars by 2025, these measures have been effective at signalling the imminent arrival of a new techno-economic paradigm, both to consumers and to the businesses that serve Norway's transportation system. The fraction of fully electric cars and plug-in hybrids has recently risen to just under 75% of total vehicle sales.⁸⁴ And operators of fast charging stations, in an attempt to reap first-mover rewards, have started to build charging stations without public subsidies, anticipating the acceleration of an irreversible systemic transformation once the electric car fleet crosses a tipping point.⁸⁵ At that point, the government will be able to phase out its support programmes, entrusting the completion of Norway's transition to a fully electric transport system to the self-organising forces of markets.

THE ROLE OF CAPITAL AND INVESTORS IN DRIVING SYSTEMIC CHANGE

As explained above, how exactly capital drives a system's behaviour is not well understood, particularly in the context of sustainability transitions.⁸⁶ This not only provides an impetus for further academic research. It also creates a compelling argument for testing new approaches in real-world settings.

In the context of Transformation Capital, there are two key questions that remain underexplored. The first is about causality: do investments create the dynamics of systemic change or merely respond to other forces that have already triggered such dynamics? The second question, which derives from the answer to the first, is one of agency: are investors active or passive agents of change?

It will take time for academics to continue studying these questions and present answers that are actionable for investors. In the meantime, Transformation Capital will operate with two bold assumptions: first, that monetary flows can trigger systems-transformative dynamics, and second, that investors can be active

agents of change and determine the shape and direction of these dynamics. These assumptions will inform the methodological and social approach to building the field for systemic investing, as detailed below.

Irrespective of the agency of money, it is clear that the causal chain between interventions in secondary markets (such as stock exchanges) and effects on emissions and resilience in place-based systems is long. This is why Transformation Capital focuses on the real economy, working as closely to the sources of emissions, resilience, justice, and inclusiveness as possible.

QUESTIONS OF LEGITIMACY, ETHICS, AND JUSTICE

Whenever people come together to work towards a common good, and whenever some people make decisions on behalf of others, they give rise to questions of legitimacy and justice.⁸⁷ This is particularly true in a process of change, which inevitably produces winners and losers. Systemic investors must not be blind to these considerations.

Transformation agendas must be democratically legitimised, consider the consequences for the most vulnerable and powerless people in society, and try to avoid unintended consequences and harmful outcomes. Further, any data collected in the process must be properly governed and protected and shared in a fair, safe, and equitable way.

These are just a few of many ethical issues that Transformation Capital needs to address. The response strategies must be baked into the investment logic *by design* and through mechanisms that prevent mission drift, mission retreat, and unintended consequences.

This does not imply that there will always be right answers to intricate questions. Nor that every single person will benefit in the same way, all the time. What it *does* mean is that systemic investors must proactively engage with issues of legitimacy, ethics, and justice. They must develop and operate with a governance

framework that guides their decision-making and co-evolves with their systemic investment experience.

THE HUMANSCAPE

Systems thinking is an abstract discipline. The units that constitute systems are often intangible entities such as economies, sectors, and organisations, so decision-makers can justify their actions by invoking unassailable concepts such as market mechanics, competitive dynamics, and fiduciary duty. Why, for instance, should a bank stop financing the fossil fuel industry when their competitors continue to do so? And why should asset managers cease to prioritise short-term returns for their clients when this is what their fiduciary duty commands?

What is often overlooked in the highly institutionalised world of finance is that the behaviour of the financial system emerges from the actions of people. Competitive dynamics are real, but a bank's senior managers and shareholders have a choice of how to respond to them. And while asset managers are indeed bound by regulations of fiduciary duty, the obstacle to a more sustainable approach to finance is not so much the absolute constraints of these duties but their misinterpretation by decision-makers.⁸⁸ This is why Transformation Capital emphasises the agency of the individual, calling upon decision-makers to critically reflect upon the role they play in shaping the future, and to make a deliberate choice for action over complacency and responsibility over deference.

Yet a strong sense of individual agency is not the only people-related success factor. Systemic investing is inherently collaborative. So actors from all parts of society must work together in a trustful, respectful, and mission-oriented manner. In particular, Transformation Capital seeks to engage:

- civil servants in public sector entities on the national, regional, or municipal level,
- sustainable development specialists in multilateral organisations or NGOs,

- asset owners such as citizens (including through their role as beneficiaries of the pension system) and high net-worth individuals,
- finance professionals who advise asset owners and manage their wealth,
- regulators such as government officials and central bankers as well as standard setters who devise and enforce rules for the financial industry,
- supervisors such as trustees, auditors, and directors who oversee the financial sector and the capital within it, and
- corporate executives who steer the allocation of company resources.

In the humanscape of Transformation Capital, dichotomies (e.g. between the private sector and the public sector, or between the Global North and the Global South) are critically questioned and, where they are superficial and misleading, abandoned altogether.

IMPACT PROMISE

Article 2.1c of the Paris Agreement calls upon the world to “make financial flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.”⁸⁹ What that means from a practical perspective remains largely unclear, and work focused on operationalising this article has only just begun.⁹⁰ Nor, as we have argued above, is it obvious how today’s most prominent sustainable finance initiatives can build a bridge to the IPCC’s call for real-economy transformations at the scale and pace we need.

Transformation Capital is not a sure-fire recipe for driving this kind of change. But there are several reasons for why it holds the promise of being effective at deploying capital for transformative effects:

By intending to transform systems for greater sustainability, equity, and justice, its goals are more consistent

not only with the aspiration of building a prosperous society but also with the long-term wealth preservation motive of the finance industry.

By recognising economies as complex adaptive systems, it is more in tune with the fundamental nature of our world than the predictive decision-making frameworks of traditional investment managers.

By assigning an active role to capital in shaping our future, empowering decision-makers in the real economy, and cultivating a sense of individual agency, it is more immediately actionable in place-based contexts than investment approaches focused on risk avoidance or secondary markets.

And by focusing on strategic portfolios and collaborative partnerships, it is more likely to unlock change of the type, rate, and scale we need than the single-asset approach.

GETTING PRACTICAL: TRANSFORMATION CAPITAL'S DESIGN SPACE

What does an investment logic capable of transforming systems look like?

We don't know.

So we will approach the development of Transformation Capital as an inquiry, a systematic exploration of a set of ideas and hypotheses to discover what is possible, probable, and preferable. This inquiry is open to climate change experts, finance professionals, innovators, designers, entrepreneurs, systems thinkers, creative minds, and uncommon voices who share our vision and commitment. It is your opportunity to shape the design and development of Transformation Capital and help put it into practice.

The inquiry will borrow methods from human-centred design and systems thinking. It will follow the spirit of what the economist Eric Beinhocker calls "deductive tinkering," a methodological approach to innovation that combines logical thinking based on knowledge and experience with practical, hands-on exploration.⁹¹ This will allow us to develop the intellectual foundation of this new systemic investment logic, design a user-centric approach for its application in practice, run experiments to test its fitness in the real world, and evolve it based on what we learn.

What follows is a set of ideas and hypotheses that establish a coherent starting point. Some of these elements will turn out to be both important and powerful. Others will prove peripheral or ineffective. It is only through further design and testing that we will find out

which elements belong in which category, and which aspects we have not thought about yet.

PEOPLE DOMAIN

People are at the core of the design space. This is because the intent-oriented and collaborative nature of systemic investing places certain demands on the mindsets of its practitioners. It would be tempting to consider these aspects esoteric, brush them aside, and jump straight into the procedural and technical aspects. Yet our practical experience working with challenge owners suggests that progress often depends on how people show up to an engagement (such as a workshop), on their capacity to imagine the future, on their understanding of the role they play in the process, and on their ability to listen well to others.

These may sound like basic qualities. But in a world dominated by information overload, short-termism, and output-oriented management styles, they are surprisingly hard to find. This is why the design space of Transformation Capital contains activities aimed at cultivating a productive social space, where these qualities can be developed and practised.

While there are many building blocks of this social space, three elements stand out:

- **Notions of Value:** Systemic investors must be aware of and appreciate a broad set of values that encapsulate the idea of a prosperous and

inclusive society. This does not mean that there needs to be consensus around priorities and political views. Participants just need to be open to considering a value frame that transcends purely monetary aspects and to coordinate with others on what to prioritise.

- **Relationship with Time:** While there is nothing in systemic investing that suggests that every investment must have a long-term time horizon, in many cases maximising value will require long-term thinking and patient capital. For many investors, accomplishing a mindset shift from short-termism to long-termism requires an adjustment of their preferences and behaviours and an expansion of their ability to create images of possible futures and learn from them.
- **Sense of Agency:** Investors must act with the conviction that they are the best and most immediate agents of change. They must recognise that their actions matter, and that the financial sector obtains its social licence through its commitment to serve the common good, as the Occupy Movement has affirmed. They must therefore have the courage to explore the full opportunity space that laws and regulations create and actively contribute to advancing the theories and practice of their field.

In the absence of these mindsets, it will be difficult to escape traditional finance orthodoxy. In their presence, however, much becomes possible.

INTENT & FRAME

The procedural starting point of Transformation Capital is the Intent & Frame phase, the purpose of which is to clarify the challenge owner's intent and frame the mission.

This phase is designed to establish directionality, to scope needs, visions, and objectives for systemic change, and to elicit explicit agreement to work together on a systemic intervention programme. It also creates an opportunity to identify and connect existing activities, including those outside the realm of finance. What emerges from these activities is not only a shared consciousness for the desired direction of travel but also a reference point for future learning and sensemaking.

Engaging Challenge Owners

The first step in the Transformation Capital journey is to convene people who want to bring about change. It is critical to find the right match between individu-

→ Engagement Opportunity: A Deep Demonstration of Long-Termism

Many people struggle to establish an emotional connection with the future. A psychological bias rooted in our evolutionary struggle for survival drives us to focus on immediate problems rather than on issues that require long-term planning. This phenomenon is known as "temporal myopia" and predisposes us to prefer short-term gains over long-term rewards.

Central to any initiative seeking to produce outcomes years into the future is an understanding of the role that time plays in human decision-making. How can we rethink notions of

value with a view towards the far-out future? How can new governance frameworks and institutional structures promote long-term thinking and action? And how can we leverage social and cultural narratives to explore and diffuse alternative concepts of time and of our relationship with it?

Exploring questions like these is the purpose of the Deep Demonstration of Long-Termism, a multi-stakeholder innovation initiative orchestrated by EIT Climate-KIC.

Learn more [here](#).

TRANSFORMATION CAPITAL DESIGN SPACE

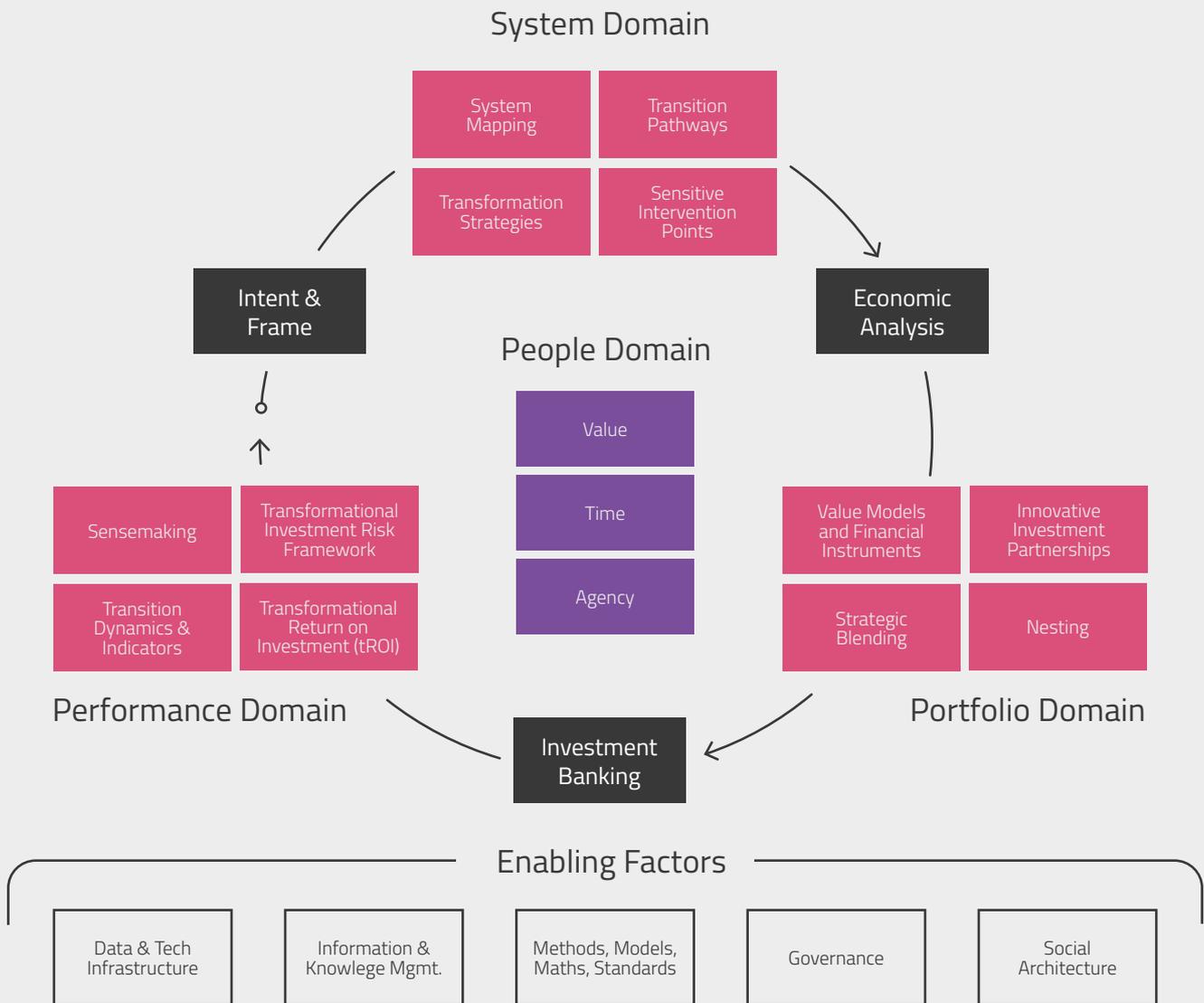


Figure 2: Transformation Capital Design Space

How the design space can be operationalised as a process is subject to discovery. The depiction above is therefore mostly a hypothesis, though one that provides a useful starting point for prototyping Transformation Capital in the field.

als, organisations, or consortia and a specific change agenda, as not all actors are equally well positioned to address a given problem. For many societal issues, there is often a set of people who already have the mandate to act (e.g. by virtue of being elected to office or by having an employment relationship with a government agency or a company) and thus “own” the challenge in the eyes of society. Such challenge owners are often cabinet ministers or bureaucrats, corporate managers, chief investment officers or trustees, and in some cases, citizens themselves.

To be effective in a systemic investment process, such challenge owners must meet several qualitative criteria in addition to those described in the people domain above. They must engage with a genuine intent to unlock systems transformation and possess the legitimacy to drive change on behalf of the people who are going to be affected. They must also have the capabilities to engage in an inquiry of this kind, or at least the openness to be part of a collective learning journey. This means to be trusting and curious, to listen and converse well, and to adopt a collaborative

and courageous attitude. They also need to be “futures literate”, knowing how to imagine the future and why it is necessary. When these qualities do not exist at the beginning, they must be cultivated.

Articulating the Mission

A transformation agenda—articulated as a statement of intent—acts as the compass for systemic investing. It not only sets the directionality of the mission but also activates actors, provides a common vocabulary, and serves as a calibration and negotiation mechanism in case conflicts and trade-offs arise. Therefore, the way challenge owners frame and define these missions matters.

Irrespective of their specific purpose, well-articulated missions share a set of common traits. They exhibit flexibility so that they can co-evolve along with the external context that lends them meaning; they are democratically legitimised; they are governed effectively to avoid mission drift, mission retreat, and unintended consequences; and they are underpinned by a financial commitment that is commensurate with the scope of their ambition.

SYSTEM DOMAIN

The system domain is a space of the analytical and factual. It is where systemic investors map the system, develop an understanding of its evolutionary possibilities, and identify points of intervention.

Mapping the System

In the context of global warming, transformative change is not just about depth and irreversibility but also about directionality. Human economic activity must transition from its unsustainable status quo to a regenerative and inclusive model. So investors need to make sense of where the system starts from and where it needs to end up, creating useful images of the present and the future, and of the space in between.

This means identifying the nodes and relationships within a system and characterising its behaviours

and dynamics. It also means getting to grips with a system’s material and financial stocks and flows and with the actors that control these.

The challenge is that mapping is always done through a specific lens. What we map, how we map it, and who we engage in the mapping process depends on what we are interested in learning.⁹² Our objective is to create maps that provide us with information about the present and possible future states of a system in a way that is actionable from an investor’s perspective.

Creating such a map, even if only as a fleeting hypothesis, supports us in:

- understanding the investable universe and its evolution over time,
- developing a theory of change of how investments might unlock systems-transformative dynamics,
- creating a framework for measuring and tracking such systems-transformative dynamics and calculating a transformative return on investment (tROI), and
- engaging a broad range of stakeholders in our activities, helping them understand the purpose and potential of Transformation Capital, and winning their support and buy-in.

Understanding Evolutionary Possibility

System mapping also enables the articulation of the transformation agenda in relation to today’s actionable levers of change. In other words, it connects the future with the present, thereby allowing us to construct qualitative and quantitative gap narratives between where the system is at present and where it needs to land in the future.

Such a gap analysis is a pre-requisite to hypothesising transition pathways. These can be understood as a series of steppingstones—what scientists call adjacent possibles—that might move the system closer to its new configuration.

To travel along a transition pathway requires a transformation strategy, a plan for intervening in the system in a way that compels actors to behave as desired. Examples of transformation strategies include de-risking value chains, shifting the relative economics of technologies, redesigning decision architectures, changing the law, establishing new contractual frameworks, influencing values and norms, and accessing uncommon sources of capital. Often, the most powerful transformation strategies will consist of a combination of approaches.

Leveraging System Dynamics

This still leaves the question of what to invest in. We know, from both theory and practice, that certain interventions in a system have greater potential than others to cause the system to change. In systems thinking, places of high potency are called leverage points.⁹³

The key question for systemic investors is this:

Where could a relatively small investment trigger a larger change that becomes irreversible, and where non-linear feedback effects act as amplifiers?

Such sensitive intervention points (SIPs) come in two kinds.⁹⁴ The first involves a *kick* to the current state of the system, moving it onto a new trajectory without any change in the underlying system dynamics. A subsidy scheme that promotes clean technologies and thus changes the relative economics of a system's technology mix is an example of a kick. The second involves a *shift* in the underlying system dynamics, where the rules of the system itself change. New institutional frameworks (such as the Paris Agreement) or national laws (such as the ban of diesel cars) are examples of measures that can produce shifts.

The idea that certain points of intervention are more potent than others is also embedded in the "community wealth building" approach championed by the Centre for Local Economic Strategies (CLES), which seeks to harness the power of anchor institutions to enable local economies to grow and develop from within.⁹⁵ The Guggenheim Museum in Bilbao is an

Certain interventions have greater potential than others to cause a system to change. The task of systemic investors is to find sensitive intervention points where a relatively small investment triggers a larger change that becomes irreversible.

example of how powerful such anchor institutions can be, where its opening in 1997 caused substantial economic growth and reorganisation in the territory, thereby coining the phenomenon known today as the "Guggenheim Effect".⁹⁶

In any case, the purpose of considering SIPs in a system is to design deliberate interventions that drive nonlinear amplification in complex systems, pushing a system beyond its tipping points through investments in infrastructure projects, technology start-ups, insurance products, public subsidy schemes, and the like.

PORTFOLIO DOMAIN

The portfolio domain is where systemic investors leverage the momentum built in the people domain and the knowledge generated in the system domain to unlock value, foster collaboration with other investors, deploy capital, and maximise strategic synergies. From a practical perspective, this is where the rubber hits the road.

Creating New Value Models

Building a low-carbon, climate-resilient, just, and inclusive future requires that we define, generate, capture, and distribute value in new and different ways. Systemic investors can either enhance the value models of existing asset classes or create entirely new markets with different structures, rules,

and agents. Examples include new digital, social, and institutional infrastructure; markets based on new consumption and production paradigms; and new approaches to corporate governance. These value models can then be made transactable through novel financial instruments.

Strategic Blending

In complex adaptive systems, it is rarely a single intervention that unleashes transformational dynamics. Rather, fundamental change is typically the result of multiple forces acting together. In the example of Norway's electric vehicle fleet described above, it is the combination of financial incentives, use-related benefits, and credible policy statements that is catalysing the transition of the Norwegian transportation system.

Systemic investors can emulate this approach by composing strategic portfolios of assets that mutually reinforce each other's impact potential. What matters in constructing such strategic portfolios is not so much an asset's individual merits but its potential to unlock or accelerate transformational effects in combination with other assets. In other words, the key is to create strategic synergies for producing the right type of change dynamics with respect to the transformation agenda at the aggregate level of the portfolio. This implies a move away from the single-asset approach towards a strategic blending paradigm.

Blended finance should not only be about risk transfer but also about generating combinatorial effects that arise when a portfolio is constructed in a way that generates strategic synergies amongst its assets. The point is to turn positive correlation from a risk to avoid into an opportunity for driving change.

Researchers from University College London have modelled the benefits from such an integrated portfolio approach in the context of mission-oriented urban development. They were able to show that combining projects with different typologies and risk/return characteristics not only converts some projects from non-viable to investable (through cross-subsidy effects) but also maximises non-financial benefits at the portfolio level.⁹⁷

Building strategic portfolios also offers an opportunity to address two structural issues of climate finance. One is the aggregation problem, the notion that the

→ On Redefining Value

A growing number of initiatives are investigating new ways of defining, capturing, and distributing value:

- The [Civic Capital project](#), led by [Dark Matter Labs](#) and [McConnell Foundation](#), seeks to develop novel financing models and instruments—across the domains of regulation, investment, accounting, taxation, insurance, and procurement—for creating and sharing the value embedded in a range of civic assets that form the societal backbone of our cities.
- [Tomorrow's Capitalism Inquiry](#), led by [Volans](#), has set out to redefine the principles of the triple bottom line approach to corporate governance so that businesses can act as catalysts for economy-wide transformations.
- Economist Kate Raworth's [Doughnut Economics](#) provides a framework that integrates planetary boundaries with social limits for setting an economy's objectives and managing its performance.

These and others offer new lenses through which to conceptualise, create, and transact value in the 21st century.

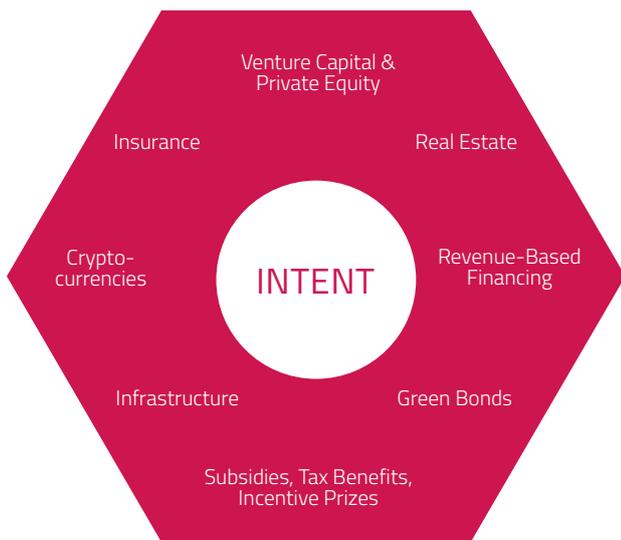


Figure 3: Strategic Portfolios
Strategic portfolios are collections of investments, deliberately composed and governed to unlock synergistic combinatorial effects in service of a specific transformation agenda.

single-asset approach causes large transaction costs and limits scalability. By combining several assets across multiple asset classes, strategic portfolios offer a practical pathway to scale and thus address the trillion-dollar SDG investment gap.

The other is the phase-out problem, the question of how to retire the old industrial infrastructure that produces greenhouse gases and other types of environmental harm. Strategic portfolios can be constructed to generate and distribute cash flows in a way that the single-asset approach cannot, creating opportunities to compensate those who stand to lose in the sustainability transition and thus accelerate the emergence of the new sustainable structures we need.

Strategic portfolios also offer an opportunity to rethink the role of the public sector. By framing subsidy schemes, tax benefits, and other public finance instruments as investments in public goods, public sector bodies (and the taxpayers on whose behalf they act) become a more integral part of capital markets. This creates an opportunity to forge contractual arrange-

ments that share risk and return more equitably amongst those who finance the change.

Nesting

Where capital alone is not sufficient to unleash transformative dynamics, systemic investors should align themselves with actors engaging other levers of change in the system, those that are considered “non-investable” in the traditional sense of capital markets but represent a public good and therefore still require “investment”, such as policy and education. Public sector bodies and foundations are often at the forefront of making these investments.

The purpose of such “nesting” is to ensure that the portfolio of real-economy assets is well aligned with a broader set of system interventions, all designed for their collective, synergistic ability to generate transformative dynamics. (The corollary is that nesting can become a way to create selection pressure for those actors and behaviours that serve the transformation agenda.)

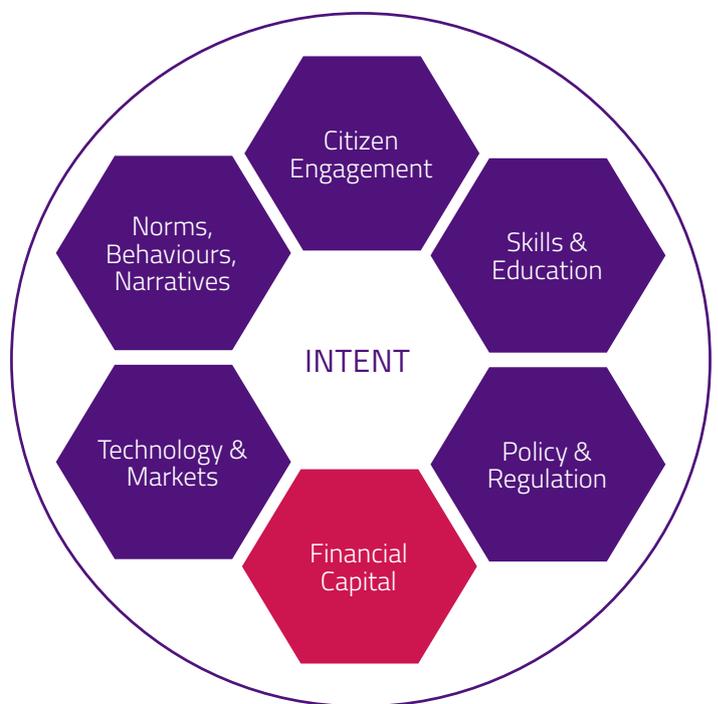


Figure 4: Nesting
Nesting is the deliberate synergistic alignment of an investment portfolio with a broader system intervention approach that encompasses measures around non-investable levers of change.

The purpose of “nesting” is to ensure that the portfolio of real-economy assets is well aligned with a broader set of system interventions, all designed for their collective, synergistic ability to generate transformative dynamics.

Concerted efforts aimed at intervening holistically in systems can create market-shaping forces. This is particularly true in the context of public sector missions led by entrepreneurial governments.⁹⁸ Investments made in alignment with such missions will arguably enjoy more compelling risk/return characteristics than those made in isolation—a core hypothesis that the Transformation Capital Initiative will seek to test and validate.

Nesting also holds the promise to mitigate the coordination challenge often faced by the public sector. It encourages policy makers to think about new policies and regulations alongside investors, as part of a collaborative co-design process. Research shows that policy design matters for attracting climate finance.⁹⁹ By involving “users” early on, the likelihood that new policy succeeds at attracting capital increases significantly.

To improve their effectiveness, strategic portfolios should leverage the mechanism of blended finance, i.e. the strategic use of public or philanthropic capital for the mobilisation of private finance for impact-related investments.¹⁰⁰ They should also incorporate, where possible and appropriate, best practices from the field of catalytic finance.¹⁰¹

Investment Partnerships

Systemic investing is inherently collaborative. It creates the opportunity to form innovative investment partnerships, particularly between governments and non-governmental asset owners. This, according to economist Mariana Mazzucato, creates a space to rethink how risk and reward are shared by the collec-

tive group of actors that “absorb the inherent uncertainties driving a system’s evolution through space and time.”¹⁰²

Transformation Capital offers an opportunity to rethink who participates in funding system transformations. For instance, new public-private partnerships can include citizens (e.g. through equity crowdfunding) and philanthropic investors.¹⁰³ And multilateral finance institutions can increasingly leverage domestic capital markets and tap into the assets of the middle class in countries of almost all income levels.

Once an investment partnership has formed, strategic portfolios can be packaged in multiple ways. One approach is to structure them as a fund-of-funds, in which the underlying instruments share a common impact mission. Another is to establish special purpose vehicles designed and approved for multi-asset-class solutions. A third is to construct these portfolios virtually, i.e. not consolidate them in a single legal entity but instead superimpose a coordination mechanism that aligns them.

Whatever the case, there are two important aspects to consider. One is that these portfolios must be investable given the regulatory and operational constraints of the investors supposed to back them. This will depend on jurisdiction as much as on idiosyncratic aspects unique to each investor in the consortium. The other is that effective governance is put in place to control for the portfolio’s impact mission and avoid mission drift, mission retreat, and unintended consequences. Both requirements may create the need to design new instruments, which might require the involvement of regulators.

PERFORMANCE DOMAIN

The performance domain is where systemic investors measure the effectiveness of their interventions and take corrective action if necessary. Specifically, they need to make sense of what emerges in the system they intend to change, evaluate different types of returns on their investments, and manage risk.

Sensemaking

As the effects from investments and other interventions take hold, the system starts to react. Systemic investors need to be proficient at observing change in a system and at making sense of any new patterns and behaviours that emerge. There is a method for studying systems-level change in a systematic and rigorous way: sensemaking.

Sensemaking is a collaborative activity that taps into the collective intelligence of groups and produces intelligence and insights about how systemic interventions can catalyse change. It provides a window into potential futures, allowing investors and other agents of change in the system to understand what is possible, probable, and preferable. The goal is to identify where to amplify effort, increase investment, or combine solutions for accelerating and intensifying change.¹⁰⁴

Sensemaking is particularly powerful for studying phenomena of emergence that arise when the system starts expressing dynamics or properties not shared by its constituent parts. Emergence offers clues as to where the system might show a propensity to evolve in the desired direction.

Recognising emergence creates an opportunity to rethink the concept of asset allocation and the

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approach to setting it. In traditional finance, an asset allocation is a relatively static construct. It is typically set in a one-off manner, mainly as a function of an investor's risk appetite, and with narrow margins for individual weightings to tactically deviate from their strategic base value.

Systemic investing requires a more dynamic understanding of asset allocation and a departure from some of the most pervasive paradigms of traditional finance. For instance, investment portfolios must be rightsized in the context of a given mission. How much investment is needed to electrify a city's public transport system or to convert a national economy from a linear to a circular model? Questions of rightsizing are not straightforward, but economists have tools to at least provide indicative figures.

Moreover, money is ideally invested sequentially over time in response to emergent phenomena and the insights gathered during sensemaking. This requires that investors move away from the "picking winners" approach that characterises traditional impact investing. Instead, they should hold a loose conception of how change happens and follow the *probe-sense-respond* sequence most suited to complex contexts, as described in David Snowden's Cynefin framework.¹⁰⁵

Measuring Transition Dynamics

In any uncertain endeavour, risk and return are defined in relation to a specific intent. In traditional investing, where the primary intent is the multiplication of financial capital, success is typically framed as the extent to which money is multiplied and measured as a financial return on investment (fROI).¹⁰⁶ By extension, risk is defined as the chance that such a return fails to materialise.

In contrast, systemic investors are interested in a broader range of outcomes, including but not limited to financial returns. So their conception of risk and return is broader, too. Importantly, they care more about the value they generate (and the risks they need to manage) at the level of the system rather than at that of individual assets. Thus, their unit of analysis is different.

So how should systemic investors go about measuring progress and assessing risk?

Quantitative indicators, such as those related to CO₂ emissions, are often ineffective metrics for assessing system-level outcomes. Not only do they suffer from a myriad of measurement and attribution challenges, but they also lead to preferences for action in systems with neat boundaries and short causal chains. Energy systems, for instance, are characterised by low technology risks, mature supply chains, liquid and efficient markets, sophisticated financing structures, and well-developed actor networks. It is therefore relatively easy to deploy capital into energy systems and for governments to create favourable market conditions that attract investment. Often, it is also straightforward to quantify the environmental and social benefits of energy investments such as lower emissions, reduced air pollution, and increased energy security, thereby pinpointing the causal relationship between an investment and its impact. These are some of the reasons why renewable energy is currently receiving the lion's share of climate finance.¹⁰⁷

In contrast, other domains of human civilisation (e.g. transportation, forestry, coastal zones, industrial supply chains, and cities) are much messier, in part because of the human agency that sits at their core. When intervening in these systems, outcomes can rarely be attributed directly to any one intervention or be expressed in a quantitative metric. And the relevant outcomes often go beyond emissions reductions and include harder-to-measure results such as resilience, justice, and inclusiveness.

Another important consideration is where to measure progress along the causal chain between input and impact. Many impact metrics are lagging indicators, which means that they measure results at the far end of the causal chain. When the goal is to transform a human system, measuring indicators placed further upstream will produce insights that are more immediately actionable. For instance, measuring the rate at which electric vehicles gain market share in a transportation system (a leading indicator) produces a more useful insight for policymakers than measuring

the decline of transport-related greenhouse gas emissions (a lagging indicator).

By studying potential transition pathways for a system, it is possible to define a set of transition dynamics that are indicative of whether the system is evolving in the desired direction, and to develop transition indicators that allow a quantitative measurement of the relative strengths of these dynamics. For example, the Transformative Innovation Policy Consortium (TIPC) has developed a framework that proposes 12 transformative outcomes associated with three dynamics of transformation: niche building, niche expansion and embedding, and the destabilisation and creation of socio-technical regimes.¹⁰⁸ Such a framework could be adapted to the specific context of investing.

Measuring the extent to which systemic investments have affected these transition indicators allows us to compute a new type of success metric: transformational return on investment (tROI). It is a metric that expresses what systemic investors ultimately care about—that their actions create the necessary change dynamics to lead the system towards the landing zone defined in the transformation agenda.

Rethinking return in this way paves the way for reconceptualising its sibling: risk. What matters to systemic investors is the uncertainty of achieving their transformation agenda. Risk can therefore be defined as the quantifiable uncertainty of unleashing no transition dynamics or the wrong ones, and transition indicators can once more serve to measure such risk. A definition of this kind will naturally lead to a different approach to risk management, though the full range of implications will only start to become obvious once Transformation Capital is applied in practice.

Such a broad, systems-level assessment of risk and return recognises that the value of financial wealth is relative. What matters is the context in which that wealth exists, expressed in the conditions under which its owners and beneficiaries live. The logic is simple—possessing financial wealth in a world that is economically, socially, and environmentally stable is more desirable than owning such wealth in a world

strained by extreme weather events, food system failures, social unrest, and forced mass migration. Once value is viewed through this lens, investments in the real economy become an opportunity to shape those living conditions and thus make financial wealth more valuable.

ENABLING FACTORS

The enabling factors are the glue that holds the different domains together. They establish the foundations to operationalise Transformation Capital, promote capacity building, scale the investment logic, and prevent mission drift.

Data & Technology Infrastructure

Understanding the status and trends in a system requires data. How data is collected, stored, and processed not only determines how useful that data is but also affects the legitimacy of the effort.

As Transformation Capital is put into practice and begins to amass data, there will be a need to provide a repeatable framework of terms and contractual mechanisms, a technical solution to storing and accessing data, a legal structure governing its use, privacy and protection, and an oversight mechanism to manage access.¹⁰⁹

Information & Knowledge Management

Capturing insights and intelligence is critical for developing and refining Transformation Capital. There is a need for a carefully designed sensemaking and learning system and state-of-the-art knowledge management technology to make such intelligence useful and actionable.

Methods, Models, Mathematics, Standards

Transformation Capital starts out as an inquiry to develop and test a range of modules that might form part of a coherent investment logic. As the effective-

ness of these modules comes to light over time, it might become possible to formalise methods. Such methods would enable consistent repetition across contexts and form the basis for training programmes, standards development, and certification schemes.

In some cases, there might even be an opportunity to evolve mathematical models to guide decision-making, or to develop new actuarial models that shape the objective functions and accountability frameworks of institutional investors.¹¹⁰

Governance

An initiative intending to bring structural change into the world will inevitably encounter questions of ethics. This is particularly true for the strategic elements of Transformation Capital, e.g. when defining missions or designing the innovation partnership and its distribution of risks and rewards. Transformation Capital therefore needs an effective governance framework designed to instil freedom to operate while providing effective guardrails and decision-making guidance to deal with questions that have no right answers.

There are three types of risk that a systemic investment programme is most vulnerable to and that such a governance framework must address. The first is the risk of mission drift, the inadvertent deviation of the systemic investment programme from its original mission caused by an accumulation of small deviations that are innocuous on their own but, on aggregate, result in the programme missing its landing zone. The second is the risk of mission retreat, the deliberate decision of systemic investors to revert to a more traditional primary intent, often induced by developments in the political or economic environment. The third is the risk of unintended consequences in the form of counter-productive systems dynamics or tangible harm inflicted upon vulnerable groups in society. Managing all three requires effective safeguards and decision-making mechanisms and the application of a customised *do no harm* doctrine.

Effective governance also means that the unproductive biases, heuristics, and default dynamics of social systems are kept in check. The Transformation Capital governance framework must suppress reduc-

tionist thinking, mitigate path-dependency (e.g. from entrenched interests, identities, and promises), avoid closed and controlling structures, and discourage preferences for linear evolutions and predictable dynamics.¹¹¹

Social Architecture¹¹²

For systemic investment consortia to thrive, they need a vibrant social space in both the physical and virtual world that creates the fertile ground for innovative pursuits: dense diversity, dynamic and open exchanges, creativity, serendipity, experimentation, and learning. This will only be possible if they cultivate the right incentive systems, social norms, and interaction protocols.

Central to the success of such social spaces is their ability to:

- consolidate a broad spectrum of interests, experiences, intents, and commitments to a shared vision,
- seed and facilitate a conversation that breeds individual and collective agency, instills a sense of urgency, provides a common language, fosters identity, invites vulnerability, and builds resilience,
- discipline innovation efforts, procure resources, and promote growth, and
- nurture leadership of a quality that is imaginative, reflective, interpretive, argumentative, communicative, open, and profoundly curious.

THE TRANSFORMATION CAPITAL INITIATIVE – A DO-TANK FOR THE SUSTAINABLE FINANCE MOVEMENT

The Transformation Capital Initiative (TCI) is an open innovation programme. Its mission is to develop, demonstrate, and scale the systemic investment logic at the heart of Transformation Capital and to generate a pipeline of investable opportunities.

It has an open-ended, multi-stakeholder, and action-oriented structure and leverages methods from human-centred design and systems thinking to build a space for collaborative research, prototyping, field building, and investing.

As such, the TCI is fundamentally about real-world action and practice-relevant research. As a do-tank for the sustainable finance movement, it recognises that practical experience is a potent source of knowledge, legitimacy, and differentiation.

The TCI is fundamentally about action. It is a vehicle to put the theories of systemic investing into practice in real-world, place-based settings, demonstrating its opportunities and limitations through actual transactions.

IMPACT PATHWAY

There are three elements to the means by which the TCI seeks to bring change into the world:

- 1 Stage 1 – Manage Millions:** Finance is a profoundly practical industry, and when it comes to financial innovation, seeing is believing. So to demonstrate the possibilities of systemic investing, enable learning, and build credibility, the TCI will raise and deploy substantial investment capital in real-world settings.
- 2 Stage 2 – Connect Billions:** Systems transformation is a herculean task beyond the power of a single organisation. To achieve meaningful scale, the TCI must “build the field” of systemic investing by activating and enabling a community of actors from across the entire investment value chain, and by matching real-world investment opportunities with pioneering investment consortia.
- 3 Stage 3 – Inspire Trillions:** The scale of the sustainability investment challenge reaches into the trillions of dollars per year. Generating outcomes at this level is only possible by harnessing the self-organising properties of complex systems through changing their rules, structures, goals, and paradigms. The TCI will produce and disseminate the proof points and stories that enable the mainstreaming of its core ideas, leveraging best practices from storytelling, brand marketing, and narrative economics.¹¹³

This impact pathway implies that the people within the TCI must manage and advise capital, but that their ultimate mission—to mainstream systemic investing as a new orthodoxy for deploying capital in service of addressing climate change and other complex societal challenges—is only achievable if the theories and experiences they create diffuse beyond the TCI’s immediate sphere of influence.

WORK PROGRAMME

To progress along its impact pathway, the TCI must develop the intellectual underpinnings of a systemic investment logic, develop the capabilities and operational models required to put its theories into practice, and demonstrate its possibilities and limitations in real-world settings. The TCI will produce these outputs through four streams of work:

- **Work Stream 1 – Research:** developing the theoretical and intellectual underpinnings of Transformation Capital as laid out in the design space, as well as the capabilities required to put its theories into practice

- **Work Stream 2 – Prototyping:** applying the intellectual foundations of Transformation Capital in real-world settings to test their core hypotheses and to generate insights and intelligence for their advancement, and to facilitate investment transactions
- **Work Stream 3 – Field Building:** mainstreaming systems thinking throughout the financial sector by activating and enabling a community of practice and building a platform for investing in strategic portfolios
- **Work Stream 4 – Enabling:** building a backbone structure to allow the TCI to achieve its strategic intent and impact promise

These work streams do not stand as separate pillars. They are designed as an interconnected web of innovation activities that inform and learn from each other. This ensures that Transformation Capital can evolve based on both theoretical development and practical experience.

Research

The conceptual development work is structured around a set of action-oriented research questions that derive directly from the Transformation Capital design space. These questions mark a point of departure for the TCI but represent only a hypothesis of how to operationalise a systemic investment logic. The work will be carried out by the TCI’s innovation community and build, wherever possible, on existing efforts in the sustainable finance world.

Prototyping

Transformation Capital is more than just a new investment strategy. It is bold in both scope and ambition and fundamentally different from traditional investment approaches. It therefore cannot be designed through desk research and consultative stakeholder engagement alone. Instead, it must be approached as an iterative learning journey that starts with loosely held definitions and refines those with knowledge gained from real-world experience.

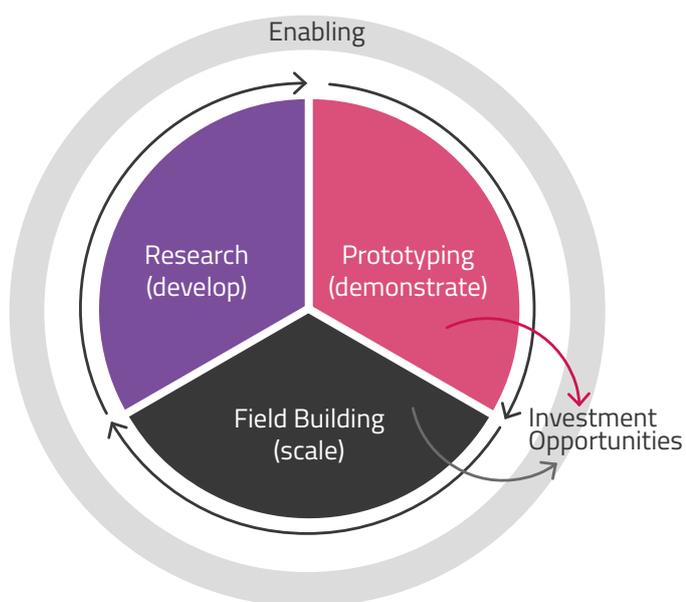


Figure 5: Executional Blueprint of the TCI
The Transformation Capital Initiative is comprised of three main work streams—research, prototyping, field building—and enabled by a backbone team.

We give the contexts in which such learning takes place a name: prototypes.

A prototype offers a space for people to convene and collaborate, contextualises this work, and makes it meaningful for its participants. A prototype will thrive if it ...

- accommodates variety across multiple dimensions such as actors, relationships, problems, assets, transactions, and disciplines,
- exhibits diversity across gender, age, and academic, professional, and cultural backgrounds,
- allows for serendipity of encounters, collaborations, and outcomes, and
- fosters a culture of curiosity, experimentation, and risk-taking.

Prototypes are also spaces for learning. Such learning takes place on multiple levels and is iterative, i.e. the experience gained by applying the theories of Transformation Capital produces valuable insights that can be used for subsequent refinement. The design space offers a rich menu of elements with which to experiment. While some prototypes will strive to do work across the entire design space, others will opt to focus on a limited number of modules. A rigorous, multi-level learning and sensemaking design will ensure that the experiences and insights captured during prototyping will, over time, translate into capabilities that are both tangible and transferable to other contexts.

Finally, prototyping will create spillover effects. It will deliver the proof points that underpin the storytelling, field building, and fundraising necessary to sustain momentum in the TCI and allow it to progress along its impact pathway.

Field Building

Building an active, diverse, and enabled community of practice dedicated to systemic investing is necessary to unlock change at the scale and pace the world needs. The TCI will seek to build the social space, the

information and knowledge infrastructure, and the deal platforms necessary to diffuse the Transformation Capital approach throughout the world of sustainable finance. In so doing, it will leverage best practices from the domains of field building, design thinking, and storytelling.

A key element of its field building effort is what we call institutional anchoring, i.e. the alignment of the TCI with institutional mechanisms that compel challenge owners to find ways of investing in ambitious climate action plans. Examples of such mechanisms include national net-zero laws, city-level climate strategies, or the NDC investment plans under the Paris Agreement. The deliberate design of the TCI with respect to these institutional obligations can drive demand for its offering and thus accelerate its uptake.

Enabling

A backbone team will build the enabling factors (described above) that put the TCI on a solid platform. It will also nurture and coordinate the fledgling innovation community, which entails orchestrating the members of the innovation community, coordinating the work programme, marshalling resources, developing and maintaining an effective governance framework, and telling the continuously evolving story of Transformation Capital to a broader audience.

COMMUNITY & ENGAGEMENT

The TCI is a space that comes to life only through the people who are present in it. The way these people think and act, both at the individual and collective level, are critical determinants of the initiative's success. The TCI's ambition is to forge an active and inclusive community whose members are glued together by a common intent and excel at leveraging each other's expertise, experience, and diversity.

In pursuit of this ideal, we will take a different approach to communications. Instead of focusing on markets, assets, or performance metrics, we will tell the story of the people and places that comprise the

growing field of systemic investing. By putting users at the centre of the Transformation Capital story, we hope to catalyse a conversation about norms and mindsets within the financial sector while reinforcing the importance of individual agency. Communications therefore becomes an integral part of the TCI's impact mission, a lever of change in its own right.

WHAT DOES SUCCESS LOOK LIKE?

The ultimate objective of the TCI is to induce a shift of paradigms, structures, and practices within the world of finance. We will accomplish this goal by gradually progressing along the TCI's impact pathway.

For each stage of the impact pathway, we have defined a set of proof points that tell us whether we are on the right track. One set of proof points will help us answer questions related to the theory of change behind Transformation Capital. Can we analyse systems in a way that produces insights for investment decisions? Can we compose and structure strategic portfolios and nest them within a broader systems intervention approach? And do our transition indicators confirm that the system of interest is moving towards its landing zone? We will validate these proof points through our prototyping work with challenge owners.

Another set of proof points will provide insights as to whether or not we are building the field of systemic investing. To validate these, we will borrow and adapt methods from the social innovation world (especially from the practice of social movement building), such as social network analysis, deep listening, and collective data interpretation.¹¹⁴

EVOLVING FORWARD

At its core, Transformation Capital is a hypothesis. It exists because of a perceived problem: the inability of capital markets to fuel transformative change. The TCI is thus designed as an inquiry, a deliberate and

systematic investigation of whether a new investment logic can augment our capacity to cope with humanity's gravest challenges.

Transformation Capital is developed specifically for issues that emerge within complex adaptive systems. A defining feature of such systems is that they constantly evolve. Likewise, Transformation Capital is also designed to evolve—through variation, adaptation, selection, and amplification. In practice, this means that we seek to enable challenge owners and investment professionals around the world to use and adapt the knowledge and capabilities at the core of Transformation Capital, so that this new investment logic can achieve change at a scale that would never be possible if it were rigidly designed and tightly controlled.

CALL TO ACTION

As the world starts to recover from the COVID-19 pandemic and waves of antiracism protests ripple through Europe and North America, a window of opportunity has opened. It is an opportunity to rethink value in the 21st century, reimagine the purpose of capital markets, and test new ways of deploying capital for catalysing sustainability transitions. **The time to act is now.**

So, if you are ...

- a challenge owner looking for novel approaches to raising and deploying capital in service of your change agenda,
- an innovator interested in conducting research, participating in prototyping, or catalysing field building,
- an asset owner or investment manager with the right intent and mindset and with the curiosity to learn more about the possibilities of systemic investing,
- a financial intermediary with creative ideas of how to structure strategic portfolios,
- a grantor looking for ways to support the next generation of sustainable finance, or
- an ecosystem shaper, creative voice, or uncommon actor with an idea of how to contribute to Transformation Capital,

... then join us in our mission to develop, demonstrate, and scale a systemic investment approach in service of a better future for all.

| GLOSSARY

Agency (Sense of)

the (perceived) capacity of an individual to act independently and have influence over something

Challenge Owner

any individual, organisation, or institution with resources, power, a sense of agency and/or a formal mandate to address the sources and consequences of climate change on behalf of specific stakeholders and/or of society at large

Complex Adaptive (Systems)

a class of systems that evolve to adapt themselves to their surroundings, exhibit aggregate behaviour emerging from self-organised local interactions of their constituents, and anticipate the consequences of certain responses, and that are often characterised by non-linear behaviour, unknown cause-and-effect relationships, and path-dependencies

Design Space (of Transformation Capital)

the collection of modules that form the coherent systemic investment logic that Transformation Capital represents, conceived as a hypothesis

Gap Narrative

a qualitative description between a system's current state and configuration and its future state and configuration as intended by the transformation agenda

Leverage Points

places within a complex system where a small shift in one thing can produce big changes in everything else

Levers of Change

conceptual domains within a system that shape its boundary conditions, path dependencies, and dynamics as well as the identities, practices, and mindsets of the people within it

Examples: technology, policy, education

Nesting

the deliberate synergistic alignment of an investment portfolio with a broader system intervention approach that encompasses measures around non-investable levers of change

Prototype (of Transformation Capital)

a systemic investment programme designed for a specific real-world context for the purpose of testing, demonstrating, and refining the Transformation Capital approach

Sensemaking

a rigorous method for studying system-level change by tapping the collective intelligence of groups for the purpose of producing intelligence and insights about a set of interventions

Sensitive Intervention Points (SIPs)

places within a system close to critical thresholds where a relatively small change can trigger a larger change that becomes irreversible, and where non-linear feedback effects act as amplifiers

Single-Asset Approach

a prevalent approach in the finance sector emphasising the evaluation and selection of assets in an isolated, atomistic, unit-by-unit way

Socio-Technical (Systems)

a web of human-engineered artifacts embedded in society, linked to economies, and connected with nature

Examples: cities, national economies, regional transportation systems, industrial supply chains, coastal zones

Strategic Blending

the deliberate composition of strategic portfolios across multiple asset classes, usually combining different types of capital and investor groups, and often including risk-transfer mechanisms for crowding-in private capital

Strategic Portfolios

collections of investments, deliberately composed and governed for strategic synergy with respect to a specific transformation agenda

Systemic Investing

an approach to capital deployment that applies the theory and practice of systems thinking to all stages of the investment process and intends to generate specific system-level outcomes

Theory of Change

a coherent and plausible articulation of how actions are expected to lead to desired outcomes and impacts

Transformation (of Systems)

deep, structural, and irreversible change, often with intended directionality

Transformation Agenda

an aspirational vision for a system that is structurally and irreversibly different from the system's current state and configuration

Transformation Capital

Technical Definition:

an investment logic intending to deploy capital to catalyse directional transformative change of socio-technical systems to build low-carbon, climate-resilient, just, and inclusive societies

Practical Definition:

a systemic investment approach for catalysing sustainability transitions in the real economy

Transformation Capital Initiative

a multi-year open innovation initiative to develop, demonstrate, and scale the Transformation Capital investment approach

Transformation Strategy

a coherent set of actions intending to propel a system along a specific transition pathway

Examples: de-risking the value chain, shifting the relative economics of technologies, redesigning decision architectures, changing the law, establishing new contractual frameworks, influencing values and norms, accessing uncommon sources of capital

Transformational Return on Investment (tROI)

an impact metric measuring the effect of investments, either at the level of individual assets or at the level of strategic portfolios, on the dynamics of a system, particularly the directionality of the system's evolution in respect of a specific transformation agenda

Transition Dynamics

the forces within a system that cause it to evolve in a certain direction

Transition Indicators

metrics that measure the strength and/or direction of a system's movement along its current transition pathway

Transition Pathway

an evolutionary trajectory, understood as a series of steppingstones of "adjacent possibles", that a system might follow given its path-dependency and current directionality

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