

# The importance of system-level investing for asset owners

## SPIL Knowledge Update

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### Speed reading

System-level investing explicitly links portfolio outcomes to the health and stability of socio-environmental systems and vice versa

SPIL and PRI organised an interactive event for asset owners on system-level investing

This knowledge update highlights why a system lens is needed and how asset owners can get started to explore this emerging field

Asset owners, such as pension funds and insurance companies, invest with a long-term horizon. They aim for stable, sustainable returns to safeguard the pensions or life-insurance benefits of current and future generations. In a world shaped by fundamental technological, societal, geopolitical, and ecological disruptions, this is becoming increasingly challenging.

Long-term returns ultimately depend on the stability of ecological, social, and economic systems that underpin financial markets. System thinking helps institutional investors to understand how these systems evolve, and how investment decisions can influence long-term results in a world where these systems are rapidly changing. It can amend, contribute to, and transform (responsible) investing. System-level investing involves asking which systems (financial, social, environmental) the portfolio depends on, and how asset owners influence them to safeguard future returns.

On 12th of November 2025, the Principles for Responsible Investment (PRI) and Sustainable Pension Investments Lab (SPIL) collaborated in organising an interactive event on system-level investing for senior executives and trustees of asset owners<sup>1</sup>. This paper reflects on insights from this event. It is intended as inspiration, not a step-by-step guide. It describes why a system lens is needed and how asset owners can get started to explore this emerging field.

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<sup>1</sup> The following speakers and panellists took part in the event: William Burckart (TIIP), Johan Schot (Utrecht University), Christopher Wright (NBIM), Anne Gram (ATP), Anne Kock-de Kreuk (PGB) and Lars Dijkstra (PGGM).

## Why a system lens is needed

Systems are the foundation of society and the economy. Modern societies can be viewed as collections of interrelated socio-technical systems, such as food, energy and mobility. These systems are shaped by political, economic, social, and cultural rules. Challenges like climate change, biodiversity loss and social inequality emerge from interactions within and between these systems. Mitigating them and steering transitions requires change across multiple systems in parallel. Such system change is more fundamental than incremental changes within systems (system optimisation) as it transforms the underlying system configuration. It delivers structural change.

Historically, shocks have driven disruptive and often disorderly system change (Deep Transitions, 2022, 2025). Transitions typically start in small niches but can result in fundamental system changes. A perfect example of this process is found in the industrial revolution. The wide-spread adoption of steam engines, initially designed to pump water from mining operations, brought radical changes to industrial processes, workplaces, economies, and social systems.

**“The question is not whether the transition towards sustainability will happen, but when”**

**- Johan Schot (Utrecht University)**

We live in an unprecedented time. Seven of the nine planetary boundaries that define a safe operating space for humanity have already been crossed. These developments put significant pressure on the systems we rely on. There is an increased risk of breaching tipping points, beyond such threshold the dynamics of a system changes fundamentally, forcing the system into an entirely new state (PIK, 2025). Examples of these tipping points are the collapse of the Atlantic Meridional Overturning Circulation (AMOC) due to excessive freshwater input resulting from climate change, leading to regional cooling (especially in Europe), intensified heat in the tropics, and altered weather patterns. Or the Amazon rainforest dieback pushing it to dry savannah, leading to acceleration of global warming, loss of biodiversity and disruption of rainfall patterns.

## Asset owners are connected to the health and stability of systems

What happens in the real economy affects the asset owners' portfolio (“outside-in”). Their investment decisions can also influence the state of the world (“inside-out”). Both the “outside-in” effects (how system conditions and changes affect financial

risks) and “inside-out” effects (how investment decisions shape systems and the state of the world) matter. There is a feedback loop: investment decisions and actions shape systems (intended or unintended, known or unknown), which in turn affect investment risks and returns. Figure 1 illustrates this.

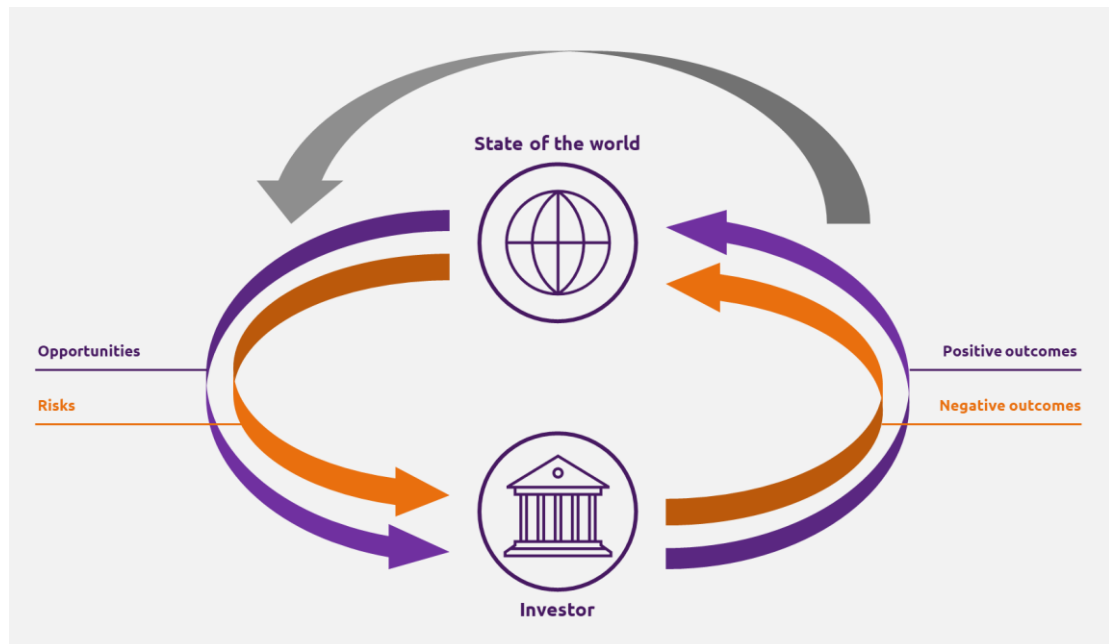


Figure 1: Simplified illustration of the connections between investors and state of the world. Source: PRI, 2020; SPIL, 2021

System-level investing explicitly links portfolio outcomes to the health and stability of socio-environmental systems and vice versa (Burckart & Lydenberg, 2021). It focuses on understanding the interconnectedness of systems, feedback loops, and cascading effects and tipping points (TIIP, 2023).

### System-level risks affect asset owners

System-level risks are non-diversifiable risks arising from major disturbances in environmental, financial, economic, or social systems. Pension funds and insurance companies with broad market exposures are universal owners: if the system fails, they lose on multiple fronts<sup>2</sup>. A stable system therefore contributes directly to stable and

<sup>2</sup> Universal owners are investors who own the externalities associated with their portfolio companies, their response being to manage the value and utility of members' wealth by addressing financial and non-financial considerations with both "within-the-system and change-the-system" actions (Thinking Ahead Institute, 2018). It is about the role of long-term institutional investors, especially asset owners, that hold a proportion of the whole market, in all regions, sectors, asset classes etc. and as such are dependent on the development of the whole economy, and societal and ecological systems.

sustainable pension outcomes. In other words, no portfolio is safe in an unsafe world (Lukomnik & Hawley, 2021). System-level risks affect asset owners of all sizes: even small funds operate within, and depend on, the same real-world systems, and are exposed to system-level risks.

These risks include both (PRI, 2025):

- Systematic risk: market risks transmitted through financial markets and economies (e.g., reduced economic growth due to physical effects of climate change)
- Systemic risk: the potential breakdown of an entire system, due to the interconnectedness and cascading consequences (e.g., societal destabilization caused by drought-induced food crises)

System-level risks are not limited to environmental or social domains. Geopolitical risks increasingly display systemic characteristics as well (WEF, 2025). Rising strategic competition between major powers influences global trade, supply chains, technological standards, security alliances, and resource access. These developments can cause abrupt shifts in energy markets, critical mineral availability or regulatory environments. This introduces new type of uncertainties for asset owners (Sverdrup Commission, 2022).

Traditional investment theory treats system-wide risks as exogenous and beyond investor influence. According to Modern Portfolio Theory, diversification is the primary way to manage risks. However, diversification alone cannot protect against risks that affect all markets, asset classes, and geographies simultaneously (TIIP, 2020). Participants in the system-level event generally acknowledged: diversification is not an adequate measure to manage these system-level risks.

**“You can’t diversify away the consequences of a broken system. When investors understand that, protecting system health becomes central to long-term value”**

**- William Burckart (TIIP)**

In the past, investors played a crucial role in driving innovations, for example in the Industrial Revolution. This required them to reinvent finance, something that might be needed in current times again.

System-level investing goes beyond current practices, beyond ESG integration and impact investing. It looks beyond individual companies or portfolio metrics toward the health of the economic, environmental, and social systems enabling real-world transitions. Asset owners focusing on system change aim to support transformations in system rules, norms, and technologies, rather than isolated improvements.

System-level investing also requires a focus on real-world outcomes and a total portfolio view. Different transitions require different forms of capital and an understanding of the interconnections between those forms of capital. It also requires a long-term mindset, meaning asset owners need to find a balance between short-term requirements and long-term objectives.

### **Current tools are not fit for purpose**

Traditional risk models and scenarios are not fit for purpose. They are mostly backward looking and have a short-term horizon. They cannot capture the longer-term effects of developments characterized by profound uncertainty such as climate change and biodiversity loss. Many climate scenarios, for example the Network for Greening the Financial System (NFGS) scenarios, underestimate certain impacts from climate change as they amongst others do not consider tipping points and cascading effects of climate change (IFA & University of Exeter, 2023).

**“Benchmarks are remnants of the past; they don’t capture opportunities”**

**- Lars Dijkstra (PGGM)**

Participants of the system-level event noted the limitations of relying heavily on quantitative estimates in a world defined by structural uncertainty. Current models do not always allow for more qualitative inputs for topics for which quantification is more difficult, like geopolitical shifts. Traditional Asset Liability Management (ALM) and strategic asset allocation models are not equipped to cover systemic risks and opportunities. Most of them rely on historical quantitative series; they are predominantly backward-looking. The historical series offer comfort and “proof”, but in a world of major transitions, they are a poor predictor.

To achieve good results in the long term, asset owners will have to make their strategic allocation more forward-looking, provide room for qualitative analyses, and create substantiated visions on the development of the world's systems and associated transitions (SPIL, 2022).

## How to implement system-level investing in practice

System-level investing is an emerging topic. Though asset owners may acknowledge the existence of systemic risks, the number of asset owners with a comprehensive approach is still limited.

The event provided a platform to exchange initial thoughts on how to implement an approach to system-level investing, both from a conceptual and practitioners' points of view. The discussions touched upon scenario analysis and risk models, capital allocation and active ownership. In broad terms there are three steps investors can take in *implementing* system-level investing: 1) identify outcomes and develop strategy, 2) take action, and 3) monitor, assess, and report (PRI, 2025).

### Strengthen scenario analysis and uncertainty management

Although prevalent tools have limitations, scenario analysis can complement traditional risk models. Looking at a wide range of scenarios and patterns can help asset owners to understand the potential impact of shifting systems, to prepare potential responses, and take actions. It supports the (board-level) conversation about system-level risks. In addition, scenario analyses may help identify potential investment opportunities (SPIL, 2022).

Norges Bank Investment Management (NBIM) for example defined a series of geopolitical scenarios and calculated the expected impacts on their portfolio. The "fragmented world" scenario reflects a world fragmenting into multiple distinct economic blocks. Such a challenging geopolitical environment leads to higher tariffs, increased regulations, restrictions on foreign investment, and reduced fiscal discipline in their scenario. This results in higher inflation and lower growth, with a potential total fund drawdown of 35 percent (NBIM, 2024a). This is illustrated in Figure 2<sup>3</sup>.

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<sup>3</sup> The stress testing report of NBIM contains a table with a full breakdown of impacts by region and asset class (NBIM, 2024b).

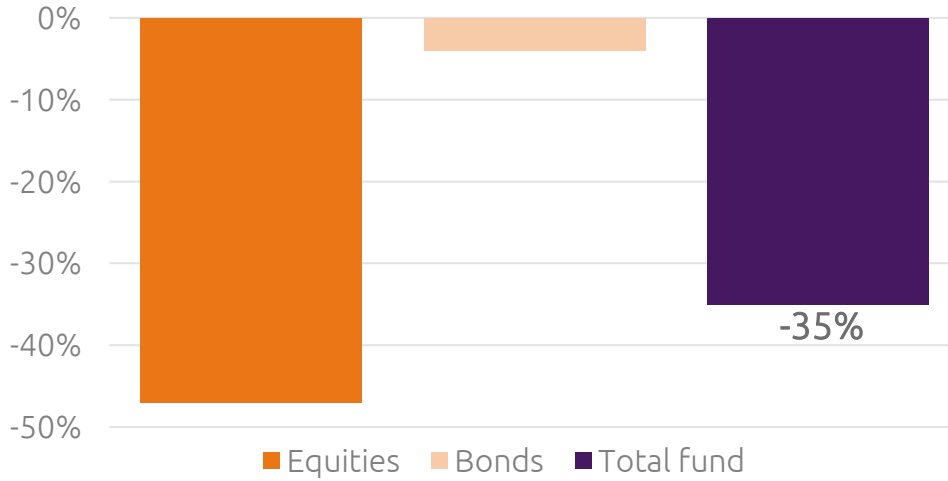


Figure 2: Calculated impact on the portfolio of a "fragmented world" scenario. Source: NBIM

NBIM also presented its work on climate scenario analysis and stressed the importance of measuring climate risk using different methods (NBIM, 2024b). Combining bottom-up company level metrics (e.g. the impact of climate variables on corporate revenues, e.g. Climate Value at Risk) with top-down scenarios, (e.g. the impact of climate variables on GDP, and subsequently asset prices) can show model limitations and provide a fuller understanding of climate risk and uncertainty. NBIM estimates that the potential cumulative impacts of physical climate change until 2080 on its US equity portfolio under a "current policies" scenario is 2 percent and 19 percent, using a bottom-up and top-down approach, respectively. While both estimates are uncertain, the difference between them are significant<sup>4</sup>. Both approaches are based on underlying academic models that do not fully incorporate the interconnected risks of climate change, nor do they account for the potential of adaptation measures to reduce the risk.

**"Combining different approaches to scenario analysis can show model limitations and provide investors with a fuller understanding of climate risk and uncertainty"**

**- Christopher Wright (NBIM)**

The reinvention of how scenarios can support investors' decision making, is still very much work in progress. New developments allow, or sometimes force, investors to

<sup>4</sup> While the top-down approach uses outputs from the NGFS Phase V physical risk scenarios which are based on an academic paper that has since been retracted for containing errors, NBIM believes it would yield significantly higher loss estimates than a bottom-up approach even when correcting for these errors

look for new data sets, collaborations, and more qualitative scenarios to identify and understand uncertainties (PRI, 2020). When trying to get a better grasp on nature, one of the participating pension funds mentioned that a collaboration with WWF allowed them to build internal capacity and tap into relevant external expertise.

### **Use capital allocation to embed system transitions**

Institutional investors can act on system-level risks and opportunities through capital allocation at three levels: strategic asset allocation (e.g., building on scenario analysis), total portfolio management, and/or within asset strategies.

When investors are trying to infuse their strategic asset allocation processes with system-level investing, a few common themes can be highlighted. There are multiple ways of doing so and we list three methods here: 1. consideration of long-term system-level trends in macroeconomic factors, 2. development of scenarios and their impact on investable regions and/or sectors, 3. tail risk management (SPIL, 2022). As soon as investors have shaped their investment beliefs from a vision of the future and the importance of and their role on systemic risks and opportunities, then it will no longer suffice to have sustainability only marginally impact investment decisions.

Some asset owners are experimenting with a total portfolio approach (TPA), a more dynamic approach compared to strategic asset allocation (SAA) (Thinking Ahead Institute, 2020). This enables investors to have an integrated and holistic view of portfolio construction and, for example, redesign KPIs. Such an approach breaks down siloed thinking in asset classes. A common starting point sees investors identifying which sustainability outcomes and real-world outcomes they target. System-level investing allows them to develop a long-term vision of the future economy and may lead to the creation of a theory of change for their whole portfolio. This can guide allocation decisions and stewardship efforts across asset classes.

System thinking also changes financial analysis in which investors will increasingly assess investee companies not only for their own impacts and dependencies, but also for second-order impacts. This means analysing how company actions enable or hinder broader system transitions. By looking at second-order impacts an assessment is made on how much a company is investing in and contributing to the desired system change. This may reset focus on specific companies or redirect investment flows, as those may yield better results on getting the transition forward.

## Rethink active ownership

For system-level investing, asset owners need to utilise the full potential of active ownership. Current engagement activities look predominantly at company-level improvements. With system-level investing, the system-level risk and impact potential takes priority in defining engagement targets and designing the asks of companies, markets, policy makers, regulators, and financial intermediaries.

Asset owners may opt to engage with:

- Companies that influence industry-wide practices (e.g., a mining company that sets new industry standards)
- Value-chain actors with outsized influence (e.g., global purchasers of commodities driving deforestation)
- Investment managers (e.g., Net Zero Asset Owner Alliance call to action to asset management industry<sup>5</sup> and the People's Pensions expectations on asset managers<sup>6</sup>)
- Policy engagement, like a call for a whole-of-government approach to economic transitions
- Collaborative initiatives such as Climate Action 100+ or the Investor Initiative on Human Rights Data
- Cross-industry initiatives that address system-level risks, such as TCFD, TNFD, TISFD, ISSB, national stewardship codes, corporate governance codes, and sustainability disclosure standards

Stewardship activities can be a force for change as they start aiming for clearer systemic outcomes. This requires a broadening perspective on active ownership to use all the levers at their disposal including that of policy engagement. The rules of markets, society and economies are decided by policy makers, and that will define the eventual success and direction of transitions.

## How to get started

Starting off at the top of the investment process, the narrative and rationale of system-level investing needs to be understood and embraced by the decision making and strategy setting functions at asset owners. The board and trustees need to

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<sup>5</sup> [Serving Asset Owner Clients through Climate Stewardship: A call to action to the asset management industry – United Nations Environment – Finance Initiative](#)

<sup>6</sup> [Asset Owner Statement on Climate Stewardship | People's Pension](#)

develop an understanding of the system-level risks and opportunities stemming from sustainability issues, which is a prerequisite to identify the most relevant outcomes and to adopt a long-term systems focus.

To get this *thought process* started at a governance and policy-setting level at an asset owner, we propose to follow the three-stage approach most asset owners are used to: the formative phase, judgement phase, and decision-making phase.

**“It is essential that there is within the board room at least one person that pushes the topic”  
– Anne Gram (ATP)**

In the *formative phase* it is helpful to bring external perspectives into the boardroom. Do not start with what you already know or what you are already doing. Embrace thinking outside the box, get fresh ideas in from academia, thought leaders, and practitioners outside your traditional stakeholders’ network. Create room to ask questions on what system-level thinking and risks are, why they are relevant to me, what is my role and influence, what can I potentially do today, tomorrow or in the future?

The traditional equilibrium mindset (“markets revert to the mean; diversification solves most things”) is no longer suitable in a world defined by never-before experienced shocks, growing uncertainties, cascading disruptions, and systemic tipping points. System-level investing involves asking which systems (financial, social, environmental) your portfolio depends on, and how do you influence them to safeguard future returns? Therefore, be cautious with using traditional lenses, approaches, or perspectives. In this phase the mindset is open with no room for limiting parameters like size, current structure, or role.

In the *judgement phase*, it is helpful to iterate the formative phase with what you can do, need to do and want to do. Your investment size or focus may limit certain implementation choices as current governance and risk models may not be fit for purpose for system-level investing. Is there appetite to change those? What are levers of no-regret? What is the minimum that you can do to get started? System-level risks may be long-term in nature, while your actions may have short-term impacts: how should you deal with these? What are your thoughts on peer group risks? What

investment beliefs, investment policy, KPIs need to be set? Do you need different investment strategies, investment tools or risk models? What needs to change in any outsourced advice, asset management and risk management?

In the *decision-making phase* you draw up a plan for action, with clear attention to resources needed, regulatory, financial, reputational and communication risks involved. Following a normal governance process you decide on the targets, plans and actions.

### Conclusion

System-level investing is not a replacement for existing approaches but a necessary evolution. Financial returns depend on the health of the systems that underpin society and the economy. Asset owners have both the ability and responsibility to help steward those systems. Starting now, through better scenarios, total portfolio thinking and system stewardship, investors can safeguard long-term returns for beneficiaries while contributing to a more resilient world.

**“System-level investing can be overwhelming but there is a need to start. Investors should not be afraid to make mistakes and can learn while doing”**

**- Anne Kock-de Kreuk (PGB)**

Quite some knowledge has been made available by a range of academic and investors' platforms. Asset owners are encouraged to collaborate with others to further their level of understanding and experience. A non-exhaustive list of guiding concepts can help:

- Create an open mindset within the board with broad buy-in for moving to system-level investing
- Encourage continuous learning, knowledge sharing and collaboration, within the board and with other stakeholders
- Combine a top-down with a bottom-up approach: build on what is already available within your organisation and at your intermediaries, like data providers, external managers and membership-based organisations
- Think in real-world transitions and outcomes, both outside-in and inside-out
- Allow for a total portfolio lens and perspective, do not get lost in line-by-line items across your entire investment portfolio

- Understand the interconnectedness of system-level risks across your investment universe, strategies, asset classes, sectors and regions
- Be more creative with traditional allocations, as a siloed asset-class approach may not fit well with system-level investing
- Focus on beta and system stability, rather than alpha alone<sup>7</sup>
- Explore feedback loops in systems and how you can influence them and/or how these can influence your investment portfolio and investment returns
- Complement backward-looking data and perspectives with forward-looking data and qualitative scenarios so you can go from (quantitative) risk management to managing uncertainties
- Reinvent and redesign risk models to capture system-level risks. Move from relative risks to absolute (real-world) risks
- Develop or adjust your governance model to govern system-level policies and actions
- Develop tools and KPIs to monitor system-level actions, impacts, and performance
- Broaden stewardship: engage across value chains, for example, with policymakers, international peers, and your external asset managers
- Communicate system-level actions and outcomes to beneficiaries

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<sup>7</sup> Note: this doesn't necessarily mean either active or passive investing, it can be either or both. This is part of your investment beliefs and implementation.

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# Colofon

## SPIL

The Sustainable Pension Investments Lab (SPIL) consists of around ten board members and experts in the field of pensions and investments who attach great importance to sustainability. In a personal capacity, they develop ideas for further enhancing the sustainability of investments made with Dutch pension assets and engage in dialogue on these ideas with the sector and other stakeholders.

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