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POLICY FOCUS

# Towards a public sustainable finance paradigm for the green transition

Philipp Golka[1], Steffen Murau[2,3,4] and Jan-Erik Thie[2,5,6]

[1]Max Planck Institute for the Study of Societies, Cologne, Germany, [2]Global Climate Forum e.V., Berlin, Germany, [3]Freie Universität Berlin, Berlin, Germany, [4]Boston University, Global Development Policy Center, Boston, United States, [5]Macroeconomic Policy Institute (IMK), Düsseldorf, Germany and [6]Universität Potsdam, Potsdam, Germany

**Corresponding author:** Philipp Golka; Email: Philipp.Golka@mpifg.de

## Abstract

Sustainable finance is often discussed as a solution to the climate crisis, but its impacts are limited and its discourse focuses on mobilising private investments through public de-risking, without considering direct government action. We argue that this is due to an implicit reference to mainstream economic theory assuming that an active state leads to time inconsistency problems and crowding-out effects. However, these assumptions have been sufficiently refuted as public investments may actually crowd-in private capital. We therefore propose a paradigm shift towards what we call Public Sustainable Finance, aimed at empowering the role of the state in the green transition on the discursive, policy, and political economy levels. Studying the case of Germany, we show how Public Sustainable Finance can be introduced despite tight fiscal regimes. To this end, we propose that the Climate- and Transformation Fund be given its own borrowing powers. By borrowing an average of 23 billion euros annually from 2024 to 2030, the existing financing gap that has been exacerbated following the November 2023 constitutional court ruling can be closed, enabling a more rapid and effective green transition.

**Keywords:** climate crisis; financial markets; fiscal policy; green transition; sustainable finance

## Introduction

The role of 'sustainable finance' in the green transition to net-zero carbon emissions has become a salient topic in academic and policy debates. The concept of sustainable finance is connected with the hope that greener investments will bring about a rapid transformation of the economy. In its present form, however, sustainable finance has been degraded to a catchphrase for various practices developed by the financial sector itself, providing financial actors various opportunities to actually circumvent a real 'greening' of their activities. The practice of so-called environmental, social, and governance (ESG) investing is a case in point as its sustainability impact remains, at best, limited (Fichtner et al., 2023). The discourse surrounding sustainable finance privileges private for-profit investments (Egerer et al., 2023), while relegating public investments merely to a supporting role. This rather limited understanding of sustainable finance reflects a paradigmatic example of what Daniela Gabor (2023) has called a 'small de-risking state' which hopes to promote the green transition by supporting private capital rather than through carrying out direct public investments.

In this policy brief, we argue that the narrow focus of sustainable finance on private capital undercuts the potential impact of both public and private investment. In its present form, sustainable finance combines three important misconceptions regarding the respective roles of the private sector and the state in the green transition. First, it overestimates the sustainability impact that can be achieved through mobilising private capital. Second, it is grounded on outdated economic assumptions on the role of the state in the economy. And third, it is based on incorrect perceptions of the existing institutional constraints as it assumes that the role of the state could not be strengthened within the current fiscal framework. From a macro-financial perspective, current conceptions and discourses on sustainable finance thus reproduce a 'weak de-risking' regime in which the role of the state is confined to enhancing the profitability of green assets (Gabor and Braun, 2023), and where the definition of what counts as 'green' often emanates from the financial sector itself. As a result, sustainable finance in its current form confines the role of the state to supporting financial assets with an unclear sustainability impact while missing out on direct state investments as an essential transformation lever.

In our view, addressing these problems requires a paradigm shift that recalibrates the link between finance and the state in the green transition. Therefore, we propose 'Public Sustainable Finance' as a new paradigm that addresses the three misconceptions of the current sustainable finance approach. On the discursive level, Public Sustainable Finance puts the state front and centre. Thus, it corrects the image that only large-scale private capital that needs to be subsidised by the state can be the driver of the green transition. On the policy level, Public Sustainable Finance includes a variety of policies that are geared at strengthening state capacity and directing public investments towards the green transition. Importantly, Public Sustainable Finance policies span not only government agencies but also off-balance-sheet fiscal agencies (OBFAs) at different layers of a multi-level governance system (Murau et al., 2023). While the most effective policies may vary across countries, Public Sustainable Finance emphasises the importance of direct public investments into various domains of the green transition, such as infrastructure and energy. Depending on the setup of the respective monetary architecture, Public Sustainable Finance policies may comprise measures such as granting lending powers to OBFAs or providing discounted funding to municipalities and state-owned enterprises. Finally, Public Sustainable Finance also has a political economy dimension. Instead of furthering regressive distributive impacts through de-risking, Public Sustainable Finance policies prioritise public ownership and public benefit. While this does not necessarily exclude all subsidies to the private sector, these would necessarily be bound to rigid conditionalities and much stricter regulation.

As Public Sustainable Finance policies would need to fit into existing institutional arrangements, they will likely show considerable cross-national variability. As such a global mapping would exceed the scope of this policy brief, we limit ourselves to one paradigmatic case that shows both the problems of the current sustainable finance paradigm as well as the realistic solutions offered by a Public Sustainable Finance paradigm. We study the case of Germany where a constitutional 'debt brake', combined with the European Union's fiscal rules and a widespread aversion towards sovereign debt, have led to one of the lowest fiscal deficits of Western countries that have come at the cost of very low growth rates (IMF, 2023). Although we share concerns that the debt brake unnecessarily constrains fiscal space (Süddeutsche Zeitung, 2023), we argue that the urgency of the climate crisis creates the need for solutions that can be rapidly implemented even *within* such institutional constraints. The need for such pragmatic solutions is particularly urgent following the constitutional court ruling from November 15, 2023, that has triggered a budget crisis that, at the time of writing, was still unfolding.

Our suggested Public Sustainable Finance approach contributes to a growing body of policy-oriented scholarship that calls for a greater engagement of the state in the green

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transition (Deleidi et al., 2020; van't Klooster and van Tilburg, 2020; Mazzucato, 2021) and the implementation of comprehensive green industrial policies (Rodrik, 2014; Kemp and Never, 2017). Developing a proposal how the state can pursue considerable direct investment even within current political and institutional realities, we argue that significant elements of what Gabor and Braun (2023) would call a 'Big Green State' – such as the targeted use of public direct investments for the purpose of decarbonisation – can be achieved even in a tight fiscal regime dominated by fiscal hawks. The key here, we argue, are OBFAs that can be used to quickly mobilise public funds, structure long-term investments, and to forge political compromise.

The remainder of this policy brief is organised as follows. In a first step, we analyse the German government's position on sustainable finance and show how it builds on unproven – and indeed frequently disproven – myths regarding the effectiveness of sustainable finance. Subsequently, we explain the underlying rationale for this ineffective approach by tracing it back to its outdated underlying economic assumptions. Thereafter, we demonstrate how a Public Sustainable Finance approach could be implemented even within Germany's current austerity framework. This policy brief ends with a short discussion.

## Public investment and sustainable finance

Many countries across the globe have adopted policies to strengthen sustainable finance in a hope to boost the green transition. Germany is a paradigmatic case as it blends fiscal restraint with significant hopes on private finance. According to its coalition agreement reached in 2021, the 'traffic light coalition' – consisting of the social democratic, the liberal, and the Green party – wants to develop Germany into a leading location for sustainable finance (SPD, Bündnis90/Grüne and FDP, 2021: 171). This objective neatly follows the statements and strategies of the previous legislative period when the 'grand coalition' of conservatives and social democrats saw sustainable finance as a 'powerful lever' to complement regulatory sustainability goals (Bundesregierung, 2021: 6). Despite these aspirations, sustainable finance and its objectives remain conspicuously vague. The ambiguities start with the definition: The Sustainable Finance Strategy, for example, acknowledges that there is no universally accepted definition of sustainable finance, which is why the government understands it to include all private and state actors in the financial market who take sustainability aspects into account in their decisions (ibid., 10). The result is that the definition of sustainable finance is ultimately left to market participants. Accordingly, sustainable finance comprises at least four historically developed financial market practices with often unclear sustainability effects.

First, by far the largest part of the practices encompassing sustainable finance consists of ESG investments (usually fund products) that have, according to their issuers, been developed with the help of environmental, social and governance (ESG) criteria. Currently, the market for ESG products comprises more than 35 trillion US dollars, or almost one third of global financial markets (Bloomberg, 2022). Yet, despite this substantial sum, the impact of ESG investments is rather limited (Fichtner et al., 2023). A major reason for this is that ESG funds are often largely identical to conventional funds (Financial Times, 2023). A study by German think-tank Finanzwende Recherche found that the investments of 114 funds advertised as sustainable hardly differ from conventional investments (Schultz and Senn, 2021). One ESG fund issued by the Deutsche Bank subsidiary DWS even invested exclusively in fossil fuel companies (Senn et al., 2022).

A second sustainable finance practice is divestment, which refers to the exclusion of certain capital investments, such as investments in fossil fuels or cluster ammunition. Although in some EU countries, such as the Netherlands, some divestments are legally

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binding, the issue is mostly driven by non-governmental organisations. For example, the Fossil Free initiative targets universities, churches, and pension funds worldwide with the aim of persuading them to divest from fossil fuels. Despite successful campaigns, the impact of divestment is unclear as well: Divestment attempts to lower the share price of the companies concerned – but this makes only little difference for corporate investments that are commonly financed through debt or retained earnings (Braun, 2022). This means that even successful divestment campaigns hardly reduce the funds available for fossil fuel projects. Moreover, other investors may take advantage of falling share prices, thereby shifting ownership of fossil fuel companies towards less sustainability-oriented investors. Finally, it should be noted that oil and gas companies are often fully or partially state-owned and therefore less affected by divestment of private investors.

Third, against the backdrop of ineffective ESG investments and divestment, voting at shareholder meetings and direct contact between investors and management ('engagement') play an increasingly important role. However, voting is rarely directly related to sustainable finance products, as large asset managers such as Blackrock may carry out voting themselves and often do so in order to stabilise share prices (cf. Braun, 2022). Therefore, when investors buy sustainable finance products, they are not necessarily voting and engaging to support the green transition.

Fourth, the greatest hope for existing sustainable finance strategies lies in so-called impact investing that aims to achieve measurable social or ecological goals in addition to a financial return. To date, impact investing lacks a uniform definition, and thus impact investors themselves usually define impact goals, measure them, and sometimes even change them in the process itself (Golka, 2019). But rather than strengthening impact goals and ensuring accountability, policy geared at impact investing primarily focusses on mobilising private capital (G-8 Social Impact Investment Taskforce, 2014). Thus, even in impact investing, investors are given a variety of options to circumvent sustainability targets, or to set low ambitions that are not in line with the Paris Agreement. The prospect that risky, transformative projects are financed through private impact investing therefore remains doubtful.

While the sustainability impact of current sustainable finance practices remains questionable, it is telling that 'sustainable finance' does usually *not* include practices that would directly deliver green impacts, nor does it impede the financing of fossil fuels. For instance, the rise of sustainable finance has not hindered banks, many of which are themselves listed in ESG funds, to give 1.8 trillion dollars of financing for 'carbon bombs' in between 2016 and 2022 alone (The Guardian, 2023). Nevertheless, the goal of mobilising 'sustainable' finance capital increasingly determines the actions of public actors. For example, the Sustainable Finance Strategy of the previous German government describes that public spending makes a significant contribution to sustainability if it stimulates additional private investment through complementary effects (Bundesregierung, 2021: 17). The coalition agreement of the current government goes further and defines the goal to activate more private capital for transformation projects (SPD, Bündnis90/Grüne and FDP, 2021: 159). In doing so, the German government follows the example of the European Union, which plans to mobilise private capital of at least €278 billion as part of the European Green Deal (EU Commission, 2020).

However, public strategies for private capital mobilisation primarily subsidise the profits of private investors. The core of these strategies is the 'de-risking' of private investments through public funds (Gabor, 2021), or – as the coalition agreement describes it – a risk hedging through public development banks (SPD, Bündnis90/Grüne and FDP, 2021: 159). However, de-risking may result in an ends-means reversal, in which the focus shifts to mobilising private capital rather than achieving publicly defined impact goals. In this context, the so-called conditionality – i.e., the terms private investors need to suffice to receive public funding – is often relatively weak (Bulfone et al., 2023). As a result, private profits are subsidised even for investments that would have occurred also without government support (Gabor, 2021). Even when crowding in private finance, the transformative impact of de-risking strategies often remains limited. A case in point here is the attempt of the UK government to create a market for impact investments through direct and indirect subsidies. Although investors did absorb these subsidies, barely any additional capital was mobilised and no notable long-term successes were achieved (Golka, 2023). The hope to accelerate the green transition through de-risking is therefore often a mirage.

Instead of continuing to rely on largely ineffective indirect financing through subsidising private investment, the public sector should instead implement green investment projects through direct public investments. Such a Public Sustainable Finance approach would break with the misguided discursive hopes for private capital inflows and would instead make additional funds for financing the green transition quickly available, and without the uncertainties associated with the indirect approach. This would also create transparency about the impact goals actually achieved and subject them to parliamentary control. It would furthermore enable the government to take faster and more targeted countermeasures in case of implementation problems. Financing green public investments through government bonds would also strengthen the sustainability impact of current experiments with green sovereign bonds. This is because current issuance of green sovereign bonds – such as the four billion Euro German 'Green Bund' federal bond – often repackage already approved and budgeted expenditure (Stocker, 2020). By contrast, a Public Sustainable Finance approach would centre on the provision of new, debt-financed fiscal resources for direct public investments. As in countries such as Germany the biggest public investment gap is located at the level of municipalities (Bremer et al., 2023), Public Sustainable Finance could thereby strengthen a decentralised green transition by funding projects or reducing financing costs for municipalities and state-owned enterprises.

## How outdated economic beliefs are holding back public investment

The idea that the state should support the green transition as a politically desired large-scale transformation through direct public financing may seem rather obvious. It is therefore all the more surprising that public investments hardly play a role in current sustainable finance discourse. To understand how the state has been largely discredited as an autonomous investor, it is important to unpack key changes in economic theorising regarding states and markets over the last decades. Following the Second World War, economic policy discourse was dominated by the neoclassical synthesis (Blanchard, 1991) after John Hicks and Paul Samuelson, who attempted to bring together the neoclassical theory of Alfred Marshall with the ideas of John Maynard Keynes. The central implication was the advocacy of active monetary and fiscal policy for macroeconomic management (Hansen, 1949). Public Sustainable Finance would have been quite conceivable in the macroeconomic paradigm of the time.

However, this changed quite significantly in the wake of the stagflation crises of the 1970s and following the turn to rational expectations theory (Lucas, 1976), whereby the neoclassical synthesis was supplanted by the macroeconomic New Consensus model (Arestis, 2009). Key to this model is the assumption that markets are fundamentally efficient and tend towards equilibrium. Based on this assumption, economists argued that planned government action through fiscal and monetary policy was unable to achieve better outcomes than the sum of decentralised action on private markets. Market interventions through fiscal policy in particular were dismissed as ineffective in the longer run and disruptive to optimal market outcomes. Moreover, democratic control over

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monetary policy was seen as a threat, as elected politicians would be tempted to buy short-term electoral success at the expense of long-term efficiency and sustainability – the time inconsistency problem (Kydland and Prescott, 1977).

These theoretical developments gave rise to two important arguments in the realm of economic policy. The first was that a central task of the state should be to achieve price stability through rules-based monetary policy with the help of an independent central bank that would deprive electoral politics of monetary policy instruments. The second argument referred to the strict separation between monetary and fiscal policy, which should be accompanied by structurally balanced national budgets. While the role of fiscal policy in weakening economic cycles through 'automatic stabilisers' such as unemployment benefits had been acknowledged, states were tasked with balancing their budgets over the course of the economic cycle. This prescription followed from the crowding-out argument that was based on the loanable funds theory (Modigliani, 1961). The loanable funds theory argues that states compete with private investors for scarce investment funds. Direct public investments would thus not lead to increased private investment activity, but, by winning the competition over scarce resources, crowd out more risky private investments. Although the loanable funds theory is rarely made explicit today, the sustainable finance discourse is often implicitly based on it (Murau et al., 2023). The idea of Public Sustainable Finance, however, contradicts the logic of the New Consensus Model.

The economic theory of the 1970s formulated in the New Consensus Model has found its way into today's European institutional reality. On the one hand, it was influential in the construction of the European Monetary Union (EMU) in the 1980s (McNamara, 1998) and is reflected in the Maastricht Treaty adopted in 1992, as well as the Stability and Growth Pact. Here, it is particularly prominent in the EMU member states' self-commitment to limit their annual budget deficit to 3% of their gross domestic product (GDP) and their total public debt to 60% of their GDP (Guter-Sandu and Murau, 2022). On the other hand, the model's sedimented assumptions have informed member states' debt regimes, such as the German debt brake that was incorporated into Basic Law in 2009 (Articles 109 and 115). The debt brake is even stricter than the European fiscal rules: The federal government may only borrow new debt of 0.35% of GDP per year, unless in exceptional situations. The debt brake replaced the previously existing 'golden rule', according to which new government debt was permitted for investment purposes (Breuer, 2021). With such limited scope for investment by the state, Public Sustainable Finance activities seem to be more or less ruled out.

However, there are three important counter-arguments against the New Consensus Model and related theories discrediting direct state investment. First, the crowding-out argument collapses if one recognises the reality of the modern credit money system. The funds necessary for investments are created out of nothing at the moment of lending. This means that limited loanable funds simply do not exist and can therefore not be missing or represent an obstacle to investments (Murau et al., 2023). Rather, the opposite is theoretically justifiable and empirically evident: Direct state investments in transformation projects can crowd-in private investments. Indeed, even the current sustainable finance discourse acknowledges crowding-in effects from state spending but advocates only for de-risking. But rather than hoping for uncertain transformative impacts from de-risking private finance, in our Public Sustainable Finance approach, direct public investments would directly generate impacts, set standards, and generate investment environments (such as effective public infrastructures) that lower the threshold for private investment.

Second, the assumption of efficient (financial) markets has been permanently discredited at least since the Global Financial Crisis of 2007–2009, but continues to lead a 'strange non-death' (Crouch, 2011). The retreat of the state from investment activity is based on the assumption that discretionary state action must necessarily produce worse

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results than markets' efficient equilibria. However, if markets are not 'time consistent' to begin with, then it makes little sense to claim that political actors are generally time inconsistent. If anything, current fiscal rules that, by limiting borrowing, force states to fund long-term investments from short-term tax revenues prevent state actors from acting in a time consistent manner. Moreover, many future technologies require new infrastructures, which implies that merely ensuring the continuation of market economies in face of the climate crisis requires seemingly time inconsistent state interventions. A dichotomous separation of efficient markets and time inconsistent political actors is therefore simplistic and out of date.

Third, the rejection of autonomous investment by the state is based on the perceived failures of coordinated monetary and fiscal policy interventions surrounding 1970s stagflation. The promise of the New Consensus model in response to this crisis was that the existence of an independent central bank and a strict separation of monetary and fiscal policy could guarantee monetary stability and keep the economy stable. However, in today's era of new record inflation, this argument is hardly credible, and factors other than monetary policy play a much bigger role in explaining inflation (Weber and Wasner, 2023).

Despite these criticisms, significant reform or abolition of outdated European and national debt regimes does not seem in sight. The conservative and liberal spectrum in the German party landscape tends to see fundamental adherence to the debt brake as an end in itself (Sauga, 2021). Although many studies show that the analogy between macroeconomic debt brakes and microeconomic budget planning commonly made by fiscal conservatives is misleading (e.g. Dullien, 2020), such economic insights do not automatically translate into public discourse and political realities. For Public Sustainable Finance to be viable and fast enough to counter the urgency of the climate crisis, it therefore needs to be implemented *within* existing debt regimes.

## The Climate and Transformation Fund for Public Sustainable Finance

A feasible strategy to implement large-scale public investments despite constrained macro-financial conditions is the usage of OBFAs, which have historically offered financial leeway in the United States (Quinn, 2019; Orian Peer, 2020; Murau et al., 2023), the European Union (Mertens et al., 2021; Guter-Sandu and Murau, 2022), or countries such as Mexico, Canada, Norway, Japan, and China (Mikheeva and Ryan-Collins, 2022).

In the German context, 'special funds' (*Sondervermögen*) are a particularly relevant type of OBFAs. Special funds are financing vehicles that are separate from the federal government's core budget, which is renegotiated annually and does not allow carrying over funds from one year to the next. Special funds, by contrast, are a parallel budget that can secure earmarked funds for a longer period of time and are therefore suitable to carry out a long-term investment strategy. They provide greater planning security as they are not subject to the regular political cycles. Some but not all special funds have autonomous borrowing powers and issue their own debt. As such, they are a proven construct for organising long-term public-sector investments. For example, the German post and rail services were set up as special funds before their privatisation. Furthermore, the costs of German reunification were shouldered to a significant extent by special funds (Deutsche Bundesbank, 1998).

An already existing special fund that supports the roll-out of green investments is the Climate and Transformation Fund (*Klima- und Transformationsfonds,* KTF). As the federal government's key financing instrument for climate protection and the energy transition, the KTF finances projects such as building refurbishments, the decarbonisation of industry, or charging stations for electric vehicles (BMF, 2021). More recent KTF expenditures include broader transformational aspects such as subsidies for microelectronics production plants in

Germany but also investments in the rail infrastructure (Knopf and Illenseer, 2023). Current discussions about an industrial electricity price cap also focus on the KTF as the main financing vehicle (Handelsblatt, 2023a).

While funding for the KTF had already been insufficient, the KTF's funding shortage has been significantly exacerbated following the ruling of the German constitutional court from November 15, 2023 (2 BvF 1/22). While the Basic Law explicitly mentions natural disasters or extraordinary emergency situations as reasons to suspend the debt brake (Art. 109, para. 3 and Art. 115, para. 2), the court has ruled that unused borrowing power from these periods cannot be transferred to special funds and used in later years (Reuters, 2023). As a result, the ruling nullified the transfer of 60 billion euros worth of unused borrowing powers from the COVID-19 pandemic relief debt brake suspension to the KTF.

The ruling has triggered a budget crisis that, at the time of writing, was still unfolding. On November 23, the German government has announced its decision to suspend the debt brake for the current year (Tagesschau, 2023). Moreover, calls for a reform of the debt brake to exclude public investments are rapidly gaining momentum – even among some prominent members of the centre-right opposition party CDU (Spiegel, 2023), which had until recently celebrated its 'balanced budget fetish' on social media. Although these unforeseen developments have made a reform of the debt brake more likely, it remains uncertain not least because of strong fiscal hawkish sentiments and a lack of support in the German public (ZDF-Politbarometer, 2023).

While a reform of the debt brake would allow for the implementation of Public Sustainable Finance policies, they may also be implemented *within* the current fiscal framework. Next to exceptional situations such as the COVID-19 pandemic it is possible to explicitly exempt individual special funds from the debt brake via a two-thirds majority in parliament. A precedent for this has been created in 2022 when the Bundeswehr Special Fund ('Sondervermögen Bundeswehr') was introduced and explicitly exempted from the debt brake by a new clause in Art. 87a (Basic Law). Hence, the German parliament has de facto added wars as an additional exemption. This decision has been supported not only by the ruling coalition but also by the opposition CDU.

From the perspective of building a political consensus, targeted exemptions of special funds from the debt brake have an important benefit. Although, like a reform of the debt brake, they require a supermajority in parliament, special funds exemptions are much more narrowly defined in comparison to a *carte blanche* for the ruling government by wake of a debt brake reform. While there are very good reasons for a reform of the debt brake – not least that it would significantly facilitate the implementation of Public Sustainable Finance – our argument is solely that mobilising a supermajority for an exemption may be easier and faster than for an overarching reform. This is because the tasks and the governance structure of special funds can be defined in law, which represents a strategic opportunity to seek support from opposition parties. For example, the currently ruling 'traffic light' coalition could seek support from opposition CDU for a supermajority in exchange for accommodating some of their demands into the KTF. Such a compromise could see legal constraints on the remit of the KTF, or the introduction of a governance structure that includes representatives from all major political parties. Such concessions could be sold as political wins to the support groups of fiscal conservatives while nevertheless creating a state agency with capacities for significant direct investment.

No matter the strategy for political consensus-building, to fully implement the idea of Public Sustainably Finance in conjunction with the KTF, it would be necessary to endow it with autonomous borrowing powers (Murau and Thie, 2022). As of now, the KTF cannot issue bonds and borrow from financial markets on its own. Instead, its spending activities depend solely on revenues from national carbon pricing and European emissions trading (EU-ETS) as well as withdrawals from reserves, which have been stocked to a large extent

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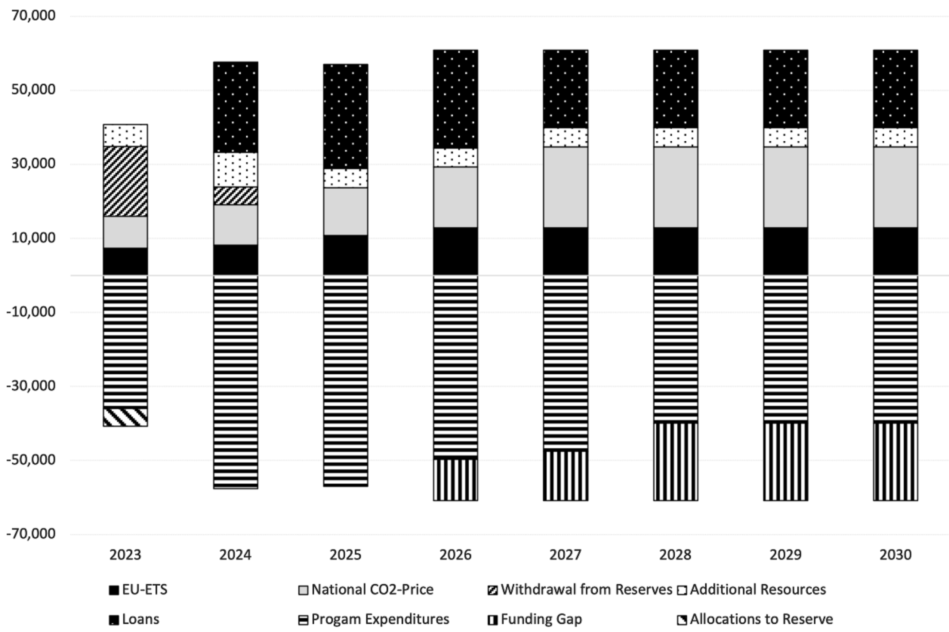


**Figure 1.** Financial planning of the KTF (in million €).

with significant allocations from the federal budget during periods when the debt brake was suspended – but that are now nullified due to the constitutional court ruling.

Due to its central role in the green transition, the KTF has planned significant expenditure over the coming years (see Figure 1). According to the current financial plan of the federal government, the expenditures of the KTF between 2023 and 2027 amount to 248 billion euro (Bundesregierung, 2023). Annual expenditure is set to increase from 36 billion euro to 47.5 billion euro. In 2024 and 2025, expenditures are planned to even exceed 57 billion euro. The annulment of the 60-billion-euro injection has jeopardised these planned expenditures. At the same time, even these planned expenses only partly cover financing needs on the part of the federal government amounting to 425 billion euro (Krebs and Steitz 2021). This leads to significant funding gaps in the second half of this decade (see Figure 1). The KTF's revenues from national carbon pricing and EU-ETS are far from sufficient to cover the planned expenses. By 2030, the KTF will face a funding gap of at least 87 billion euro, severely threatening Germany's decarbonisation and transition to carbon neutrality. Together with financially uncovered but already planned expenses and the 60-billion-euro loss, a total of 163 billion euros in revenues is missing. Thus, updating the work of Murau and Thie (2022), we estimate that, to enable the KTF to finance the green transition with around 60 billion euro per year, it will be necessary to endow it with autonomous borrowing powers of more than 23 billion euro per year on average from 2024 on (24.4 billion euro in 2024, 28.2 billion euro in 2025, 26.4 billion euro in 2026 and 21 billion euro from 2027 to 2030).

The approach proposed here also has important benefits from the perspective of economic theory. As a special fund, the KTF is not subject to political-economic cycles in which long-term spending decisions can be torpedoed by short-term parliamentary moods or economic downturns. As was the case with reunification, the KTF can master long-term structural tasks and thus avoid the time inconsistency problem. Endowing the KTF with borrowing powers would also create crowding-in effects. With a spending plan for years or decades independent of uncertain future revenues from carbon prices, firms will likely

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invest in their own capacities in anticipation of future public investment and demand. Direct public investments can thus achieve the goal of increased private investment much more effectively than the currently favoured indirect de-risking approach.

At the same time, the fund is already showing signs of active government involvement. For example, subsidies for chip manufacturers not only include a strategic element against the background of supply chain problems in sensible industry sectors. They also contain conditionalities as subsidies are tied to a 'recourse clause' that allows the state to recover parts of the subsidies when supported companies score major unexpected profits, or when certain job figures and research expenditures are not met (Handelsblatt, 2023b). In addition, recently planned investments in rail infrastructure show that the KTF already strengthens public ownership. The fund further supports transparency and political accountability by publicly listing the revenues it receives and the projects it invests in. Although often called a shadow budget (*Schattenhaushalt*), it is rather the opposite. As the key government balance sheet to invest in climate-neutrality, the KTF brings government action out of the shadow and into the public in a concise and accessible way. Thus, the KTF can not only be a practical way of dealing with the current debt brake regime, but also an important tool to support the development of an active (green) state. Granting the fund borrowing powers would further consolidate its central role for active, transformative state investment policies. This way, the KTF would be able to make a further contribution to the green transition and serve as a prime example of the Public Sustainable Finance paradigm that we propose.

## Conclusion

The green transition of national economies is one of the biggest challenges of our time. Proponents of sustainable finance stress the importance of greening the financial system. However, driven by the misconception that public finance would be insufficient, crowd out private investments, or lead to suboptimal outcomes, the discourse on sustainable finance has so far focused on private, for-profit investments, and confined the state to an ancillary role. In this policy brief, we have argued that such a view is not only based on outdated economic theories but also centres on mechanisms that have a questionable sustainability impact. Hopes to finance the green transition by mobilising private finance thus risk not to achieve sufficient progress.

To remedy the ills of the current sustainable finance approach, we proposed a paradigm shift towards Public Sustainable Finance that re-centres the state on the discursive, policy, and political economy levels. The core idea here is to empower the state – discursively and institutionally – to take a central role in steering and financing sustainable investments. This complements discussions on green industrial (Rodrik, 2014; Kemp and Never, 2017) and monetary/fiscal policy (van't Klooster and van Tilburg, 2020; Gabor, 2023) by directly addressing the current sustainable finance approach that serves as an important source of motivation and legitimacy for economic policies that, in our view, are misguided. While a 'big green state' operating through non-market coordination and disciplining rather than de-risking private capital would lead to a comprehensive decarbonisation trajectory (Gabor and Braun, 2023), countering the urgency of the climate crisis also requires political proposals that do not necessitate a far-reaching and thus time-intensive transformation of institutional frameworks. As we demonstrate using the rather extreme case of Germany, a Public Sustainable Finance paradigm may be carried out within current institutional and political constraints.

On the discursive level, a shift to the Public Sustainable Finance paradigm would acknowledge that current sustainable finance practices are ill-equipped to foster the green transition and would require a much more rigorous greening of the financial system.

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Moreover, it would bring the state back as a capable, transformational economic actor that can drive fast, direct and democratically legitimated sustainability impacts. While, ideally, this would lead to considerable fiscal strengthening and strong regulatory responses on the policy level, our proposal for an updated KTF shows that strategic use of available policy tools such as OBFAs can already create significant impacts. By acknowledging that direct public investments can actually crowd in private investments, perceptions of the green transition would shift from a zero-sum game where public and private interest are juxtaposed to a positive-sum game that may see the rise of new cross-sectoral collaborations. Eventually, these may lead to a disposal of the current institutional framework that builds on and thus reinforces outdated economic beliefs. However, rather than waiting for a green 'big bang', implementing our Public Sustainable Finance paradigm would get the state to work immediately.

The perspective developed in this policy brief opens at least three avenues for future research. First, our analysis of special funds and their relationship to the German debt brake has largely left out the European dimension. Public Sustainable Finance via the KTF must also be reconciled with the Maastricht criteria and European state aid rules (Jaeger et al., 2021). Each of them is constructed differently. They tend to allow larger deficits than the German debt brake but have a wider definition of the state's fiscal activities. The relationship between both is the subject of ongoing legal and academic debate. Second, while our case study was Germany, the Public Sustainable Finance concept is applicable to many different contexts. It would be interesting to use our proposed framework in different jurisdictions. Finally, on a more theoretical level, Public Sustainable Finance raises questions about public ownership, public works, and the role of the public in the governance of (green) investments. As we seem to be approaching a post-neoliberal era, it may be necessary to re-address these old issues in a changed geo-political, macro-financial, and environmental context.

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