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Green macrofinancial regimes

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ABSTRACT
Debates about climate policy have neglected the question of macrofinancial pathways to decarbonisation, not all of which are economically and politically viable. We propose a theory of macrofinancial regimes, understood as combinations of monetary, fiscal, and financial institutions that shape the creation and allocation of credit/money, and hence the speed and nature of the green transition. Focusing on two dimensions—the scale of green public spending and the degree of discipline imposed on private capital—we derive a typology of four regimes. Derisking regimes are low-discipline: under weak derisking, a fiscally constrained state tweaks the risk-return profile on infrastructure assets to reduce the carbon footprint of the economy's existing sectoral structure; under robust derisking, the state subsidizes capital expenditure in cleantech manufacturing directly, and with the ambition to alter the economy's sectoral composition. Derisking regimes are rendered unstable by coordination problems and regressive distributional consequences. This may tip societies into a carbon shock therapy regime under which discipline is enforced by carbon prices and market competition, resulting in a disorderly transition path. Alternatively, institutional reforms that increase the state's capacity to spend and to discipline capital may give rise to a big green state regime where coordination is achieved through state-led planning.

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KEYWORDS Climate policy; green transition; industrial policy; green finance; derisking; big green state

Introduction

Both recent science and recent lived experience have dramatically raised the stakes for climate policy.[1] Six major climate tipping points will likely be reached even if the global temperature increase remains within the Paris Agreement range of 1.5–2.0°C (Armstrong McKay et al., 2022). Reflecting the urgency of the climate crisis, the Intergovernmental Panel on Climate Change has dropped its restraint to call for dramatic action (IPCC, 2022). As Blyth and Downey (this issue) note in their introductory essay, the energy transition alone amounts to 'nothing less than the greatest feat

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of engineering at scale that humans have ever attempted'. The crucial question is: What actions are societies capable of? Answering this question, we argue, requires a consideration of the macrofinancial institutions under which both private and state actors operate.

Rich countries have come to understand 'dramatic action', in the words of France's President, as 'encouraging not prohibiting' (Macron, 2023). In the United States, the Biden Administration stressed that the 2022 Inflation Reduction Act (IRA) aimed at 'crowding in private investment—not replacing it' (Sullivan, 2023). Echoing this language, the European Commission wants to 'help de-risk private investment in future technologies and industrial production capacities' (Gabor, 2023). The green industrial policy turn in the Global North thus built on the 'development as derisking' paradigm already firmly established in the Global South. Citing macrofinancial constraints, states have sought to 'mobilise' private institutional capital pools to finance infrastructure investment (Gabor, 2021; Larsen, 2024; Schindler et al., 2023). However, the scale of the political economy challenges posed by the climate crisis raise doubts about the suitability of this approach (Paterson, 2021).

If derisking has become the hegemonic approach to climate policy, what—if any—are the alternatives? We start from the observation that decarbonisation requires a deep reordering of capital—high-emission activities need to be phased out, while renewable energy and cleantech manufacturing need to expand. The path towards such a reordering depends on the nature of the state-finance nexus—macrofinance is key. We propose an analytical perspective centered on *macrofinancial regimes*, defined as combinations of monetary, fiscal, and financial institutions that shape the creation and allocation of credit/money, and hence the speed and nature of the green transition. Unlike a purely state-centered approach, the regime concept has room for the public-private entanglement at the core of financial systems (Braun, 2020; Hockett & Omarova, 2017). A macrofinancial regime is green if it offers a plausible—at least in theory—pathway towards rapid decarbonization.

We present a regime typology organized around two axes: the *degree of discipline* and the scale of green *public spending*. Where the reallocation of capital is enforced either by market competition or by the state, discipline is high; where decarbonisation is organised 'by encouraging, not by prohibiting', discipline is low and capital is in the driver's seat. Market discipline *via* higher carbon prices can trigger rapid, market-led structural transformation, albeit disorderly, whereas state-imposed discipline forces capital reallocation according to state priorities. Low levels of public spending, by political choice or necessity (in financially subordinate countries), imply that the greening of the capital stock must be achieved *via* market competition, whereas high public spending enables the state to directly intervene in the sectoral allocation of capital. This typology yields four macrofinancial regimes: weak and robust derisking, carbon shock therapy, and the big green state.

Our green macrofinancial regimes are ideal types, constructed to examine the differences between, and probing the fault lines of, alternative macrofinancial pathways to decarbonization. As with other regime typologies in political economy, we do not expect to find clear-cut manifestations of these types in the wild. While countries may mix and match these institutions in various ways and to more or less ecological effect, we argue that this typology is useful to characterise the overall decarbonisation approach of countries under International Monetary Fund (IMF) conditionality or austerity (carbon shock therapy), the United States under

the Biden administration (robust derisking), the European Union (weak derisking), and China (big green state).

Macrofinancial regimes

The regime concept suits our purposes precisely because it does *not* draw sharp boundaries around 'the state' and 'the market'. Instead, it has been used by political economy scholars grappling with the question of coordination in economic systems characterized by an advanced division of labor—from the French regulation school (Aglietta, 1979) and the social studies of accumulation (Kotz et al., 1994) to varieties of capitalism (Hall & Soskice, 2001) and growth model/growth regime theory (Baccaro et al., 2022; Hassel & Palier, 2020). We agree with climate policy scholars who, while rightly highlighting the 'environmental silences' in this literature, have argued that the insights from this field should be 'repurposed' (Green, 2023, p. 330, 338) for the study of the political economy of decarbonisation (Baer et al., 2021; Cahen-Fourot, 2020; Copley, 2023; Driscoll, 2024; Nahm, 2022). Such repurposing requires serious engagement with the role macrofinancial institutions play in determining which regimes offer an orderly path to decarbonization, which do not, and why.

Critical macrofinance scholarship is premised on the idea that the state's policy choices are shaped and constrained by money and credit as the core institutions of capitalism (Dutta et al., 2020; Gabor, 2020). Countries occupy different rungs in the hierarchy of the global monetary system, and therefore operate under different degrees of 'financial subordination' (Alami et al., 2023) and different 'monetary architectures' (Murau et al., 2024). As a result, they develop different climate policies and institutions, which may become (temporarily) stabilized to form what we call a green macrofinancial regime. Our typology provides an analytical grid that allows students of climate policy to assess macrofinancial constraints across different regimes, their sources of (in-)stability, and the dynamics of regime switching.

To this end, we organize our typology around two key dimensions: the scale of public spending on the green transition, and the degree of discipline imposed on private (carbon) capital. The former reflects the massive need for green investment. Whereas the volume of annual global climate mitigation (and adaptation) finance almost doubled from USD 0.75 trillion in 2019 to just under USD 1.5 trillion in 2022, staying on a 1.5 °C pathway would require an instant, and sustained, five-fold increase to USD 7.4 trillion each year through 2030 (CPI, 2024). Historical comparison with war-time expenditure; contemporary comparison with China; and analysis of private capital market preferences and capacities—all suggest that infrastructure and fixed capital investment on this scale cannot be met without large-scale public spending (DiPippo et al., 2022; Finance Watch, 2024).

The analytical importance of discipline reflects the need to rapidly shrink greenhouse gas emitting economic activities even—and especially—when they remain profitable (Ergen & Schmitz, 2023; McDowall, 2022). That rapid and massive transformations of capitalist production and infrastructure require a high degree of discipline is well established in the development and industrial policy literature (Amsden, 1989, p. 15). Crucially, we conceptualize discipline as orthogonal to the state-market dichotomy—discipline can come from the market *or* from the state. Thus, in the shock therapy approach to post-communist Eastern Europe, the source of discipline for firms was competition in the global marketplace—created and

Table 1. Typology of green macrofinancial regimes.

		Discipline	
		Low	High
Public spending	Low	Derisking (weak)	Carbon shock therapy
	High	Derisking (robust)	Big green state

enforced through state-led privatization, deregulation, and liberalization (Lipton et al., 1990). To this day, the idea that market competition disciplines firms is a key plank in economic theory and practice.

Alternatively, discipline can come from the state. Here, we prefer the concept of discipline over that of conditionality, which Mazzucato and Rodrik (2023, p. 6) define as targeting either 'behavior that can be certified or observed ex ante', or 'behavioral changes that will unfold over time and in conjunction with or following the provision of benefits'. Thus defined, conditionality conflates two distinctive state-capital relationships. The state may derisk investments using ex-ante conditions for subsidies ('carrots')—examples include the conditions attached to European Investment Fund subsidies and subsidies under the Biden administration's CHIPS Act and Inflation Reduction Act (Bulfone et al., 2024; Cooiman, 2023). However, where private investors can evade monitoring and ex-post subsidy claw-back or, alternatively, opt out of specific carrots with burdensome conditions altogether, the state effectively puts them in control of the pace and nature of decarbonisation (Gabor & Samba Sylla, 2023). In contrast, discipline requires public institution-building to keep private capital *continuously* aligned with the strategic priorities of the state, be they manufacturing growth and exports or decarbonisation. For instance, East Asian developmental states built a set of compulsive institutions, including credit, to continuously monitor and penalise 'poor performers' that were benefiting from extensive state support without meeting performance criteria (Amsden, 1989, p. 15). The state was 'in charge', and dictated the terms. The challenge, there and elsewhere, remains that implementing state-imposed discipline is, always and everywhere, politically difficult. It requires a high level of what Evans (1995) called 'embedded autonomy'.

Bringing the two dimensions of public spending and discipline together, Table 1 defines a 2×2 matrix that yields a high (market) discipline, low public spending regime (carbon shock therapy); a high (state) discipline, high public spending regime (big green state); and two variants of low-discipline derisking, reflecting the dominance of different factions of capital: weak derisking is organised around the priorities of institutional financial capital, robust derisking around manufacturing capital.

We examine the core features of these regimes cohering across five institutional spheres (see Table 2). The *macroeconomic policy mix* captures the relationship between fiscal and monetary policy. Variants fall on a spectrum from monetary dominance under inflation targeting to coordination between the monetary and fiscal arms of the state. These macrofinancial parameters determine the shape and scope of *industrial policy*, across two sectors (infrastructure versus manufacturing), and two different modes of policy implementation (tweaking risk-return profiles of financial instruments versus directly subsidizing capital expenditure by non-financial firms).

Together, the monetary, fiscal, and industrial policy dimensions amount to fundamentally different mechanisms to achieve economic *coordination*. At one end of

Table 2. Four green macrofinancial regimes.

Regime	Coordination mechanism	Fiscal-monetary architecture	Industrial policy architecture	Control over credit flows	Factions of state managers
Carbon shock therapy	Prices	Fiscal and monetary austerity reinforce price signals	State- or externally imposed carbon price	(Global) finance as arbiter of discipline	Fiscal hawks + IMF & World Bank
Derisking (weak)	State-modulated prices	Monetary dominance (re-risking); market neutrality	Carrots: State tweaks financial asset returns	(Infra-) structural power of finance: veto power	Fiscal hawks + geopolitical hawks
Derisking (robust)	State-modulated prices	Monetary dominance (re-risking); market neutrality	Carrots: State subsidizes capital expenditure	Structural power of industrial capital: veto power	Geopolitical hawks
Big green state	Planning	Fiscal-monetary coordination	State capacity to offer carrots and enforce sticks	Captive finance State-ownership in key sectors	Green planners (+ geopolitical hawks)

the spectrum, coordination operates *via* price signals alone. Investment is guided by capitalists' profit expectations, under the disciplining force of global market competition, actively upheld by the state and by international organizations. In particular, the IMF has long imposed structural reform programs designed to increase debtor countries' exposure to international product market competition and the disciplining force of global financial markets (Kentikelenis et al., 2016; Lane, 1993).

Compared to the Washington Consensus, the 'Wall Street Consensus' has the state play a more active role in economic coordination *via* monetary, fiscal and regulatory derisking policies (Gabor, 2021). However, industrial policy under the derisking regime is tightly constrained: Since it depends on private-sector profits and on private finance as a governance conduit, the state is subject to the structural and infrastructural power of private capital (Braun, 2020; Dafe et al., 2022). This power asymmetry explains why derisking policies operate almost exclusively *via* incentives, or 'carrots'—state actors believe that they cannot afford to impose discipline on private capital.

By contrast, the hallmark of state-led planning is the ability to directly steer investment and, crucially, divestment. The big green state can draw from the full arsenal of carrots and sticks, which ranges from state-directed credit allocation to private companies in strategic sectors, to production targets for state-owned enterprises, to targeted phase-outs of dirty or otherwise unsustainable lines of production and consumption (Durand et al., 2024; Mason, 2023). Nevertheless, state planning is no panacea for the necessary 'destruction of fossil fuel incumbencies'—imposing discipline on carbon capital remains politically difficult even for a developmental state such as South Korea or an authoritarian one-party state such as China, both with deep traditions of economic planning (Thurbon et al., 2023, p. 3).

Finally, these regimes empower, and are sustained by, different *factions of state managers*. Focusing on distributive conflict and political coalitions, recent scholarship has shown that governments seeking to implement climate policies need to navigate dirty and clean business-sector interests, as well as of voter preferences and electoral groups (Gaikwad et al., 2022; Kupzok & Nahm, 2024). By sequencing policies and compensating losers, governments have the capacity to craft support coalitions for their preferred policies (Aklin & Urpelainen, 2013; Finnegan, 2022; Meckling & Nahm, 2022). While interest group and electoral politics are central to climate policy, the macrofinancial lens highlights the importance of what Block (1977) called 'state managers'—political and technocratic elites who keep those parts of the system running that exceed the scope, or capacity, of private capital. While social interest groups—first and foremost, organized labor—are crucial actors in the green transition, their positions and political influence are shaped by macrofinancial institutions. With this caveat in mind, we distinguish three factions of state managers. *Fiscal hawks* subordinate the goal of decarbonisation to the goal of maintaining a low-tax, low-redistribution regime. *Green planners* seek to accelerate decarbonisation by establishing non-market modes of coordination for green investment, usually through a mix of state-led planning and socialization of key sectors.

Positioned between these right and left factions, *geopolitical hawks* act as key arbiters for green macrofinancial regime choice. Geopolitical and national security considerations have long been central to industrial policy. This is true for the US 'entrepreneurial state' (Mazzucato, 2015) as well as for East Asian developmental states such as South Korea, whose developmentalism emerged under military rule

and whose heavy industry push during the 1970s was 'fundamentally security-driven' (Lane, 2024, p. 5). In recent years, as the energy transition gathered pace, climate policy has become energy policy, and thus deeply geopolitical (Seidl & Schmitz, 2024). While China's dominance in renewable energy and battery supply chains, and its advantage in critical mineral mining, are a direct consequence of the Chinese government's deliberate elevation of security as a core strategic goal of its industrial policy (Naughton et al., 2023), increased awareness of that dominance has re-oriented climate policy in the West around a 'security-sustainability nexus' (Riofrancos, 2023). In this context, geopolitical hawks can be macrofinancial king-makers—joining forces either with fiscal hawks to their right, or with green planners to their left.

While real-world regimes constantly evolve and invariably carry hybrid elements, ideal types facilitate comparative analysis. Crucially, the regime lens is dynamic and allows scholars to examines questions of regime stability and transitions. The hegemonic weak derisking regime promises structural transformation *without* changing the macrofinancial status-quo. Its stability is undermined, however, by coordination and distributional failures. The resulting political backlash can even tip countries into carbon shock therapy, and thus into a disorderly transformation of productive structures, with negative consequences for social and political stability. Robust derisking can mutate into a big green state regime through institutional changes that increase the state's monetary-fiscal capacity to spend and its political-technocratic capacity to plan and discipline capital. At the same time, the mismatch between the incumbent hegemon's derisking regime and the challenger's big green state regime may fuel a dynamic of great power conflict that could derail global decarbonization efforts. In the Global South, clearing the way for a big green state regime would, at a minimum, require new global governance mechanisms to overcome entrenched financial and technological dependencies (Bradlow & Kentikelenis, 2024; Löscher & Kaltenbrunner, 2023; Mkandawire, 2001; Musthaq, 2021).

Status quo: weak and robust derisking

Both derisking regimes frame climate policy as a question of 'mobilising' private capital—of crowding in rather than substituting the market. Governments 'don't have the money', the argument goes, and the only place to find it is in 'the private sector' (Hook, 2022). 'Finding the money' means rendering green infrastructure assets 'investible' and green manufacturing assets profitable, which in turn means meeting capitalists' demands for lower—and more calculable—risk (Eich, this issue). Under *weak derisking*, the state ushers private institutional capital into infrastructure assets (see Table 3). This variant is politically less demanding because the

Table 3. Weak versus robust derisking.

	Weak derisking	Robust derisking
Policy target	Financial claims/liabilities ('investible infrastructure')	Fixed capital assets (manufacturing)
Private partner	Institutional capital	Industrial capital
Fiscal derisking	PPPs for infrastructure; PPAs and CfDs for energy; underwrite user demand	Tax credits for cleantech; preferential credit rates
Regulatory tasks	Financial: taxonomy, disclosure, stress testing	Non-financial: conditionality monitoring
State managers	Fiscal hawks dominate	Geopolitical hawks dominate

state's partnership with private capital adheres to the neoliberal logic of 'markets not industries', and because fiscal costs are lower and can be concealed *via* off-budget vehicles such as public banks (Guter-Sandu & Murau, 2022) or public-private partnerships (PPPs). Institutional capital acquires and holds the financial claims issued to construct non-financial assets (e.g., loans or bonds issued to finance a private wind park) or owns infrastructure assets directly. Under *robust derisking*, the state expands the scope of derisking to new industrial assets in strategic industries such as cleantech. A shift back into weak derisking is possible where the political coalitions for green industrial policy disintegrate, as for instance when fiscal hawks in the European Union pushed against robust derisking of cleantech under the Net Zero Industrial Act (Gabor & Samba Sylla, 2023).

Weak derisking

Under the weak derisking regime, the state intervenes in the organisation of production *indirectly*, through infrastructure. It does so by partnering with institutional capital pools, with the goal of channeling their capital into infrastructure asset classes, broadly understood to encompass energy, social services (hospitals, schools, housing), transport, water and 'nature'.

Institutional capital pools—a category that includes asset owners such as pension funds or insurance companies, as well as asset managers—increasingly dominate

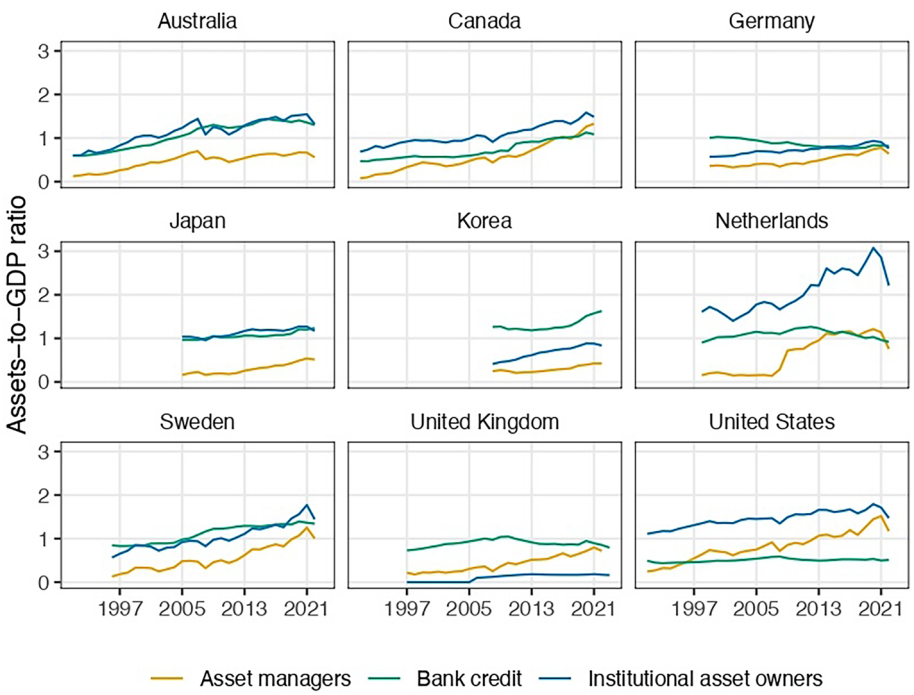

Figure 1. Domestic bank credit to the non-financial sector versus asset managers and institutional capital owners (pension funds and insurers).
Data: Bank for International Settlements, World Bank.

the financial system, illustrated in Figure 1. This portfolio glut is the product of a series of mutually reinforcing factors—rising wealth inequality, the growth of funded pension systems, and a regulatory and monetary-fiscal apparatus designed to stabilize asset valuations and thus the returns for institutional capital pools (Braun, 2022; Gabor, 2020; Thiemann, 2023). Making infrastructure an attractive asset class for institutional capital requires state intervention: risks are too high, and risk-adjusted returns too low for institutional portfolios. To crowd in private money, the state has to assume some of those risks, and thus boost risk-adjusted returns (OECD, 2021).

Institutional capital can benefit from three types of derisking—fiscal, monetary, and regulatory. *Fiscal derisking* involves a broad range of measures to crowd-in private capital, *via* tax credits and guarantees, carbon contracts for difference, and contingent liabilities in PPPs. The latter have, historically, been the most popular derisking tool. PPPs are long-term contractual arrangements through which the private sector commits to financing and operating projects such as hospitals, highways, airports, renewable energy plants, or water and sewage facilities—as long as the state shares the risks. PPPs—or in energy markets 'Power Purchase Agreements' (PPAs)—legally define the distribution of risks, with the share assumed by the state reflecting its capacity to negotiate good terms. PPPs are politically attractive because the fiscal burden is recorded off-budget, in contingent liabilities: it materialises only when demand, political, or climate risks materialise (Gabor, 2021). If and when they do, the fiscal costs can be substantive. In PPAs, the state guarantees a price or demand for private energy producers.[2] As shown in Figure 2, global PPP volumes have collapsed since 2010. This picture would be even clearer if China was excluded, whose continued participation has propped up East Asian PPP volumes in recent years. For high-income countries, studies have shown that 'the risk allocation between public and private partners was often inappropriate, incoherent and ineffective', tilted in favour of private capital (ECA, 2018). For PPPs to close the

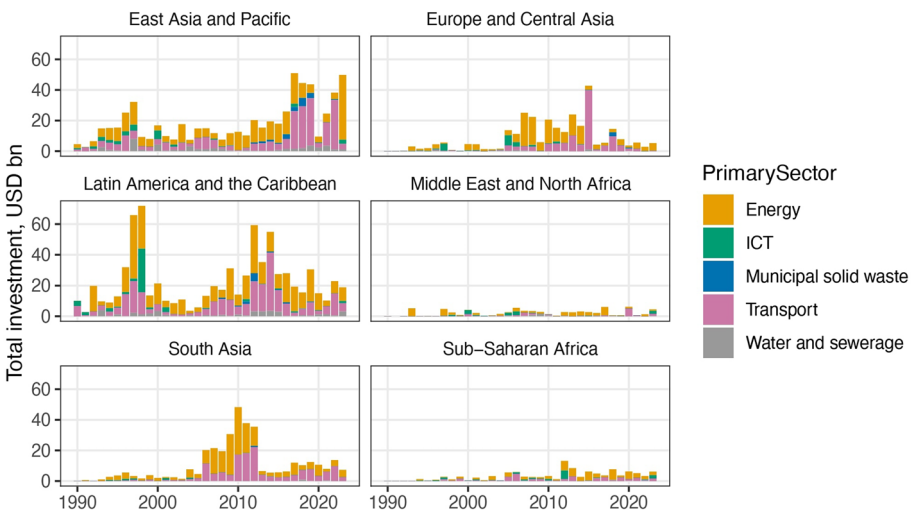

Figure 2. Geographic distribution, infrastructure as an asset class (private participation), 137 low- and middle-income countries, 1990–2023.
Data: World Bank Private Participation in Infrastructure (PPI) Project Database.

infrastructure gap in poorer countries, the state there would have to significantly ramp up fiscal transfers to investors (Leigland, 2024).

Another popular instrument of fiscal derisking is (carbon) contracts for difference (CfDs). The state offers public price support for new private investments in energy or hard-to-abate industrial sectors. It can subsidise the cost gap between producing clean and dirty energy, or guarantee a certain reference price, negotiated bilaterally with the private beneficiary. Rather than expressing an overt preference for the sectoral allocation of capital, the state seeks to shrink the carbon footprint of hard-to-abate existing sectors, such as the steel industry.[3]

Fiscal derisking is typically flanked by *regulatory derisking*, aimed at removing legal barriers to the construction of new asset classes. An essential step is the dismantling of state ownership in strategic sectors, thus introducing privatisation through the back door. In the energy sector, for instance, regulatory derisking to attract renewable investments means that the state dismantles vertically integrated, state-owned energy monopoly utilities; reduces public subsidies for fossil fuels and price controls on energy costs, and guarantees grid access and demand for private operators (Gabor, 2021).

Fiscal and regulatory derisking are typically bundled at the project level. Take the USD 680 million Lake Turkana Wind Project (LTWP), Kenya's largest wind farm (see Figure 3). LTWP was financed through a complex mixture of private equity, commercial debt, and development finance, with a syndicate of banks led by the African Development Bank as the senior lender. The main equity owners included various Nordic public entities, which then sold their stakes to Anergy Turkana Investments (owned by a state-owned South African asset manager) and to Blackrock's Climate Finance Fund. On the fiscal side, the Kenyan state entered a 20-year power purchase agreement that commits the state-owned Kenya Power and Lightening to purchasing the wind power generated. This fiscal derisking of

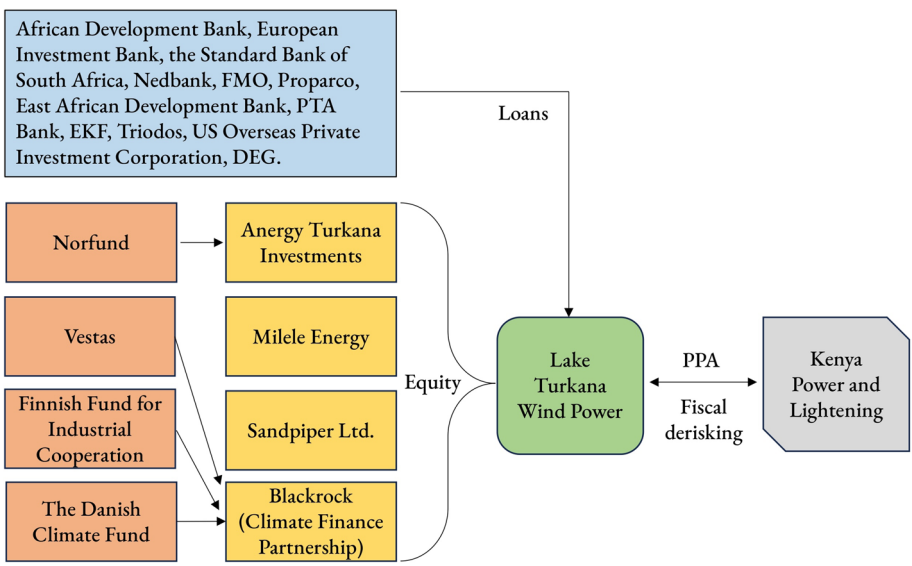

Figure 3. Financial structure of the Lake Turkana wind power project in Kenya.
Source: Authors' depiction.

demand was so generous to private investors that the World Bank refused to support it.

In Europe, a good example of weak derisking is the response to the Russian invasion of Ukraine, 'RePower Europe'. The Electricity Market Design Reform plan relies on PPAs and contracts for differences (CfDs), as do various initiatives to promote green hydrogen. The European Hydrogen Bank's 'targeted use of public resources' will 'leverage private sector investments by de-risking renewable hydrogen production', with price guarantees to be offered to both European and international producers (European Commission, 2023). At the national level, France promised private producers of green hydrogen EUR 4 billion worth of CfDs, on a 15-year term, with the aim of bridging the cost gap between clean and grey hydrogen produced from unabated fossil gas (Martin, 2023). In the US, the Biden administration's Investment and Infrastructure Jobs Act, was welcomed by BlackRock for '[unlocking] surface transportation (e.g., rail, road, etc.) for new concessions that allow private investors to come in as operators' (BlackRock, 2021). Meanwhile, the President's National Infrastructure Advisory Council, chaired by the CEO of Global Infrastructure Partners, a leading alternative asset manager, recommended to '[r]emove barriers to privatization, concessions, and other nontraditional models of funding community water systems' (NIAC, 2023, p. 15).

Finally, central banks are the main conduit for *monetary derisking*, often flanked with regulatory measures. Central banks have developed a series of climate policy instruments, yet overall have been treading timidly (Deyris, 2023; DiLeo, 2023; Siderius, 2023). Their inability to move beyond weak derisking is rooted in the principle of market neutrality—a key plank of the inflation targeting framework—which dictates that central banks' collateral policies and asset purchases must mirror existing market volumes so as to not 'distort' the sectoral allocation of credit (van't Klooster & Fontan, 2020). However, if financial markets fail to price greenhouse gas emissions, 'market-neutral' central banks are bound to reinforce preferential financing conditions for dirty activities (Schnabel, 2023).

At best, green central banking under inflation targeting operates *via* indirect green prudential measures and incentives for green lending. The former involves better disclosure of climate-related financial risks, alongside scenario analysis and climate stress tests (Battiston et al., 2017; Smoleńska & van't Klooster, 2022). Incentives include direct and regulatory subsidies for green assets. Direct subsidies, as the Bank of Japan's incentives for banks' green loans, reduce the cost of green lending, and are the preferred intervention across the more than 100 central banks in the Network for Greening the Financial System. In parallel, national development banks often have a mandate to create green credit—e.g., in Germany, concessional lending to solar panel producers and household buyers (Marois, 2021; Mertens & Thiemann, 2019). Indirect credit steering can be implemented through green capital requirements on banks. However, where banks are amply capitalized, higher capital requirements on dirty loans are largely ineffective in deterring profitable lending (Oehmke & Opp, 2022); whereas lower capital requirements for green loans are vulnerable to other credit pricing factors, including higher policy rates.

At worst, inflation targeting compels monetary policymakers to 're-risk' green investment—with serious, material consequences for climate policy. Faced with inflationary pressures in 2022–2023, central banks increased policy interest rates without considering the cost of financing of the highly capital-intensive renewable

energy sector. For instance, in late 2023, Ørsted, the world's largest offshore wind-farm developer, cited increased financing costs to cancel two projects off the New Jersey coast that were key to the state's energy transition plans (Millard, 2023). The political economy of inflation targeting thus stands in direct conflict with the macrofinancial demands of climate policy, which would require central banks to give up market neutrality in favor of green credit policy. As argued in section five, such a shift, while facing serious political obstacles, is by no means impossible.

In sum, under the weak derisking regime, the pace and nature of decarbonization are outsourced to private finance, with little disciplining of carbon lending. The structural and infrastructural power of private finance are hard-wired into this regime: governments depend on primary dealers and rating agencies to issue sovereign bonds (Rommerskirchen & van der Heide, 2023); central banks depend on shadow banking institutions to implement monetary policy (Braun, 2020; Gabor & Ban, 2016); pension systems depend on (alternative) asset managers to deliver returns on retirement portfolios (Braun, 2022; Christophers, 2023); and public investment vehicles depend on venture capital firms to carry out investment decisions and monitor portfolio companies (Cooiman, 2023). When one state actor attempts to establish disciplining mechanisms—be it through the greening of monetary policy, macroprudential interventions, or the introduction of a 'dirty' taxonomy—private institutional capital can easily mobilize other state actors to oppose these policies. A case in point is the European Sustainable Finance Taxonomy, which was originally conceived as a 'double materiality' regulatory framework to support green and penalise dirty lending, but which was watered down after strong financial-sector opposition (Smoleńska & van't Klooster, 2022). The financiers' strategy of cajoling the European Commission to drop the dirty taxonomy worked in part because the largest holders of future stranded fossil fuel assets are OECD-country pension funds (Semieniuk et al., 2022). By necessity, weak derisking is a low-discipline regime.

Robust derisking

Both the US Inflation Reduction Act and the European Net Zero Industrial Act were justified, in large part, as measures to secure 'technological sovereignty' against China (Gabor, 2023; Riofrancos, 2023; Seidl & Schmitz, 2024). The salience of geopolitical competition allowed policymakers to push for robust derisking and, in the case of the Biden administration, facilitate what one inside account described as the 'confluence' of the national security and progressive wings within the democratic party (Foer, 2023, p. 125). Geopolitical hawks worried that weak derisking cannot benefit countries that have embraced green industrial policy, and were willing to break with fiscal hawks to promote a more robust approach (Table 3).

Under robust derisking, the state uses its fiscal and regulatory levers to directly steer capital expenditure in strategic manufacturing sectors (Mason, 2023). Along the *fiscal* dimension of our typology, the US under the Biden administration qualified as a high-public spending regime (Bistline et al., 2023). When it comes to *discipline*, however, there is no fundamental difference with weak derisking—discipline tends to be in short supply under robust derisking, too.

To see why, consider how discipline worked in East Asian developmental states. Seeking to render local capital internationally competitive, developmental states used incentives, controls and disciplining mechanisms to reward good performers and penalise poor ones (Öniş, 1991; Wade, 2018). In the exemplary case of South Korea, the overriding criteria for state support were ambitious export targets. The government favoured big business in strategic sectors to harness economies of scale but encouraged intense competition. The 'special set of institutions that rely on a significant element of compulsion' (Öniş, 1991) included state-controlled credit flows, limits to entry, and extensive price and capital controls (Amsden, 1989). A 'nationalist mobilisation for export-led growth' allowed the state to impose its development priorities on private capital (Woo-Cumings, 1999, p. 19).

By comparison, under the robust derisking regime, the state's capacity to shrink high-emitting sectors or to discipline subsidy-receiving firms is weak. The Inflation Reduction Act (IRA) sought to scale up private investment in cleantech manufacturing and renewable energy production through tax incentives, loan guarantees and grants. In doing so, it stacked carrots: businesses could opt to increase the 6% base tax credit bonus for carbon-free energy to 70% of upfront investment costs if the project met other criteria (up to 24% bonus multiplier for wages and apprenticeships; 10% for domestic content; 10% for energy community location; 20% low-income community location). However, the volume of public spending *via* those tax credits, as well as their sectoral distribution, were left to the profit calculations of private capital (Gabor, 2023). Ex-ante conditionalities—such as the 'prevailing wage' clause or domestic content requirements—were part of both the CHIPS Act and the IRA, as were ex-post monitoring provisions that could lead to claw-back in cases of non-compliance (Bulfone et al., 2024, pp. 15–18). Nonetheless, tax credits are not instruments for discipline in the strict sense, since companies can simply choose to opt in only for tax credits with 'acceptable' conditionalities, while opting out of others.

Within one year, projections of the expected nominal volume of IRA energy and climate tax credits up to 2031 doubled, with electric vehicle (EV) tax credits five times higher and advanced manufacturing credits as well as carbon capture and clean fuel credits four times higher. Stacking carrots works: between December 2021 and August 2023, CHIPS Act and IRA tax credits helped spark a doubling of fixed capital expenditure in the manufacturing sector (Van Nostrand et al., 2023). However the sectoral composition of private investment was heavily dominated by individual mobility: EV battery manufacturing and supply chain (USD 100 billion), EV manufacturing (USD 30 billion), solar panel and parts manufacturing (USD 9 billion), offshore wind manufacturing (USD 3.5 billion) in 2023. One of the largest beneficiaries, Tesla, expected a USD 1.8 billion windfall from the IRA in 2023 alone, and around USD 42 billion by the end of 2032.

In sum, the two derisking regimes are vulnerable to failure in the areas of coordination and distribution. First, the derisking regime's method of *economic coordination* is to tweak market prices. However, the size, complexity, and uncertainty of the transformation—which encompasses greening activities *and* fossil-fuel elimination—are too large for decentralized market coordination (Durand et al., 2024). Although the robust derisking regime puts some pressure on the state to build out its planning capacity–for instance, the US Treasury and Internal Revenue Service issued guidelines on tax credit eligibility, while jointly engaging in ex-post

monitoring—the state lacks the means to prevent disorderly expansions fueled by subsidies. The problem is perhaps best illustrated by the SUV boom in Western EV manufacturing. Similarly, state priorities are easily counteracted by financiers. In the United States, private equity rushed into heat pump manufacturing and deployment, with the intent to *raise* prices on a product that the IRA seeks to make affordable to millions of households (Murray, 2023). Derailing profit expectations through monetary re-risking—rate-hikes to combat inflation—are a constant possibility because institutional alternatives such as captive finance and monetary-fiscal coordination remain outside the scope of the derisking regime.

Second, derisking regimes are unfit to meet the *distributional challenge* of decarbonization. As the weak derisking regime promotes the (de facto) privatisation of social infrastructure and public goods, and their transformation into asset classes, the question of access becomes 'will people pay to use it?' Even under the robust derisking regime, the state is structurally constrained to prioritise profitability. It lacks the tools to ensure equitable distributional outcomes—a key condition to avoid political backlash and maintain electoral support for climate policies (Gaikwad et al., 2022). The fact that Bidenomics, which produced an investment-led boom but, amidst a cost-of-living crisis, failed to distribute the gains equitably—ended with a Republican victory in the 2024 Presidential election illustrates the robust derisking regime's vulnerability to distributional failure.

Distributional failure becomes even more pronounced at the global level. Macrofinancial conditions in the Global South are characterized by 'international financial subordination' which, among other things, comes with higher financing costs (Alami et al., 2023). Although many financially subordinated regions have built renewable energy faster than core countries in recent years, many nevertheless are at risk of getting locked into unequal ecological exchange—they export commodities and generate financial yield, while their path up the green value chain is blocked (Gabor & Samba Sylla, 2023).

Carbon shock therapy

In neoclassical economics, prices function as signals for the optimal allocation of resources in competitive markets. Price-based competition imposes a survival constraint that disciplines firms to invest in production processes that generate marketable commodities, and that eliminates noncompetitive firms. In a capitalist economy, the role of enforcer falls to the financial sector—a firm fails not when its products stop selling but when its creditors stop lending. Hence the centrality of finance in the IMF's definition of 'market discipline':

> [A]s a borrower begins to incur debts that can only with difficulty be serviced, the lender's response is first to require a higher interest rate-to compensate for the increased risk of default–and eventually to exclude the borrower from further borrowing, thereby depriving the borrower of access to financial markets (T. D. Lane, 1993, p. 54).

Applied to climate policy, this framework implies a clear preference for carbon prices, carbon taxes, or emission trading schemes. A carbon price forces dirty companies to invest to reduce greenhouse gas emissions, or else become uncompetitive, and loose access to credit. This approach conceives of climate policy as an exercise

in correcting the market's failure to price climate destruction. Conservative political actors and private capital prefer carbon pricing because it promises a fiscally light solution, which works through private-sector innovation rather than through state planning. Get prices right, the argument goes, and the market will deliver.

This approach echoes the rhetoric of 1990s shock therapy in Eastern Europe. Distrustful of politics, shock therapists believed that discipline was best outsourced to, and administered by, anonymous market forces (Lipton et al., 1990). The goal was to shrink state-owned heavy industry. Shock therapy would subject these economies to market discipline by immediate and full price liberalisation, and by ending cheap credit, subsidies, and tax concessions (Weber, 2021). Only a strong dose of fiscal and monetary austerity would finally eliminate the 'soft budget constraint' that kept moribund state-owned firms alive, tying resources in the wrong sectors. As the shock therapists argued, 'a credit squeeze and tight macroeconomic policy cannot be sustained unless prices are realistic, so that there is a rational basis for deciding which firms should be allowed to close' (Lipton et al., 1990, p. 99). The price mechanism sorts out good from 'bad', inefficient firms.

In the language of climate politics today, shock therapy pursued a strategy of stranding assets in the state-owned sector. This was an austerity test even committed governments failed when shock therapy delivered social and economic upheaval, including massive deindustrialisation (Murrell, 1993). With the IMF and the World Bank, however, who believed in the power of price signals reinforced by macro austerity, shock therapists had a formidable institutional apparatus on their side to discipline not only firms, but also governments. Formerly planned economies depended on crisis support from these international organizations; and conservative economists in local central banks were successfully rallied to their cause (Gabor, 2012).

As a green macrofinancial regime, carbon shock therapy adapts the Washington Consensus for decarbonisation: Firms are disciplined into green investment *via* price signals and market competition (Gabor & Weber, 2021). Since, like its precursor, carbon shock therapy is inherently inflationary (Weber, 2021), the emphasis on carbon pricing recreates the institutional politics of the original shock therapy, which accorded a key role to the central bank. Freely floating exchange rates and monetary tightening, the argument went, would reinforce price signals and thus force domestic firms to become more productive and competitive; but what countries got instead was higher inflation from weaker currencies.

Carbon shock therapy can be administered in two ways: Price signals can be shifted through *discretionary state policy*, or through exogenous *external pressures*. In the former scenario, the state plays a proactive role by introducing carbon prices or taxes, or emission trading schemes, in order to correct the market's failure to price negative climate externalities. In addition, carbon border adjustment mechanisms may serve to safeguard the territorial integrity of domestic carbon prices against foreign competitors. More generally, as climate change mitigation fails, the cost of adaptation will increasingly fall onto private actors, as in the case of higher insurance premiums paid by owners of properties affected by climate-related flood or weather risk (Smith et al., 2024).

While the global debate about higher carbon prices used to be focused on high-income countries, the institutional apparatus of carbon shock therapy increasingly targets middle-income and poor countries. In the Global South—for instance,

in Pakistan or Indonesia—the IMF or the World Bank turned to pressure highly indebted governments to eliminate fossil fuel subsidies (Stubbs & Kentikelenis, 2023, p. 4). Indeed, the IMF has consistently urged fiscally constrained countries to prioritise carbon taxes in order to improve fiscal revenues and debt sustainability (Dabla-Norris et al., 2023). The IMF's Climate Strategy presented carbon pricing as the only viable strategy for transition, mentioning it 22 times, versus a single mention each for green industrial policy and climate-related public investment (IMF, 2021). The IMF's plans to 'green' its loan agreements suggest a turn towards carbon shock therapy: (fuel and energy) subsidy cuts, carbon pricing, and financial resilience building will all be part of the IMF conditionality playbook, without consideration for the impact on domestic industries.

Besides deliberate state policy, state *inaction*, too, can raise competitive pressures on domestic industries. In a world in which green mercantilism proliferates and in which fossil fuel prices remain volatile, carbon shock therapy can be the default stance of states unwilling, or unable, to protect local industries from the impact of external shocks. A good example of inaction-led carbon shock therapy is Germany. In 2022, when energy costs spiked following the Russian invasion of Ukraine, the German government capped gas prices for households and non-industrial businesses, without shielding energy-intensive industrial firms (Babić & Mertens, 2024). In 2023, a proposed power price cap to support the electrification of production in energy-intensive industrial sectors was blocked by the finance minister, an arch fiscal hawk (Krebs & Weber, 2024, p. 38). The ensuing energy cost shock caused a dramatic contraction of energy-intensive industrial output, which in late 2024 stood at 20% below pre-Ukraine levels. This is mirrored by industrial production more broadly: since its peak in late 2017, the index of industrial output (excluding energy production and construction) has contracted by 17%.

The example of Germany shows that fiscal hawks do consider carbon shock therapy a viable green macrofinancial regime. In a speech about the 'green transformation', one Bundesbank official explicitly likened the adjustment pressure in the hard-currency regime of the D-Mark to that from increased energy prices. Noting that German firms had long 'recognized the signs of the times', she praised the 'enormous adaptability of our economy' (Mauderer, 2023). If the industrial core shrinks, then so be it. To wit, the Bundesbank's Monthly Report:

> A certain convergence in the size of the German industrial sector to the proportions seen in other advanced economies would not be cause for concern, per se, especially if it were to occur gradually (Bundesbank, 2023, p. 16).

The Bundesbank's nod to gradualism does little to mitigate the impression that German fiscal hawks regard a shrinking German car industry as a necessary and efficient adjustment to competitive pressures emanating from US and, increasingly, Chinese EV manufacturers. When, in a September 2024 speech, the Bundesbank president addressed the question of the decline of German industry, he offered a bullish rebuttal—'No, in my opinion Germany is not in decline!'—while avoiding any reference to the automotive sector, electric vehicles, China, or industrial policy (Nagel, 2024). For carbon shock therapists, shrinking manufacturing capacity reflects an adjustment process brought about by market coordination. Governments may accelerate the process by imposing a carbon price but should otherwise stand back. Monetary and fiscal policy should be restrictive to contain inflationary

pressures, and to reinforce competitive pressures and price signals that discipline firms into shifting resources towards low-carbon technologies—or, alternatively, into shrinking their operations.

The big green state

Carbon shock therapy and the derisking regimes both require private profits to coordinate investment (Christophers, 2024; Copley, 2023). By contrast, the hallmark of the big green state is economic coordination through non-market means, that is, through economic planning (Mason, 2023). Compared to the institutional status quo, this requires significant changes along both sides of Table 1: greater fiscal capacity to finance large-scale public investment; and greater technocratic and political capacity to discipline private capital, including through close control of credit flows. Our discussion focuses on an aborted European experiment and on China.

Controlling dirty credit: the ECB experiment

Controlling credit is the hallmark of state-led planning regimes (Monnet, 2018). The big green state regime assumes close control over credit flows in order to shrink the climate footprint of high-emission sectors (Durand et al., 2024; Kedward et al., 2024). The European Central Bank (ECB) offers a rare example of a Western central bank attempting precisely this. Under its 'climate policy but within the price stability mandate' approach, it designed a new institutional framework for penalising dirty corporate credit: the 'tilting' of its 'unconventional' corporate bond portfolio (Dafermos et al., 2023). Tilting involved computing a climate score for each corporate bond issuer, in turn calculated from three sub-scores: a backward-looking carbon intensity sub-score; a disclosure sub-score that captured the quality of the emissions data; and a target sub-score that rewarded companies whose targeted decarbonisation pathways were consistent with Paris Agreement targets. It thus sidestepped both private ESG taxonomies and the diluted sustainble finance public taxonomy. The ECB then used the aggregate climate score to redirect its (re)investments into corporate bonds, away from poor performers and towards good climate performers (Dafermos et al., 2023). Planning to continuously monitor those climate scores and feed them into its tilting strategy, the ECB had taken closer control over credit—a hallmark of green planning.

This regime penalised 'dirty' corporations by increasing the cost of their bond funding. This major—albeit short-lived—foray into state-led planning established a policy framework with biting penalties for carbon capital. It required the ECB to build capacity to closely monitor and enforce corporate compliance with decarbonisation targets (Dafermos et al., 2023; ECB, 2022). With this, the ECB offered a way out of the political economy problems governments face when seeking to impose discipline on carbon capital.

Since the climate score expressed public preferences for private corporate behaviour, tilting amounted to a credit policy that moved the ECB beyond the principle of market neutrality at the core of inflation targeting. While the ECB recognised that adhering to market neutrality effectively hardwired a carbon bias in its operations, it

worried about charges of interference with credit allocation. This explains why tilting lasted only for the brief period from October 2022 through mid-2023. The ECB's failed experiment illustrates that the politics of inflation targeting constitutes a significant obstacle to decabornisation, and that close control of credit flows requires a different macrofinancial regime (Kedward et al., 2024).

China's big green state

The country that comes closest to a big green state regime is China. Not because it has been particularly aggressive in reducing greenhouse gas emissions—which, together with its energy consumption, have soared in recent decades—but because the Chinese state deploys fiscal resources and disciplining powers on a significant scale. Although difficult to quantify for its sheer breadth and scope, China's *fiscal spending* on industrial policy—across all sectors, green and dirty—is in a different league entirely. For 2019, it was estimated at 1.7% of GDP, exceeding corresponding fiscal outlays in Germany or the United States (prior to the IRA and CHIPS Act) by a factor of four (DiPippo et al., 2022, pp. 21–33). China's renewable energy build-out has been extraordinarily ambitious, and successful. In 2023, deployment in China beat deployment in the rest of the world combined for new wind and solar capacity, electric vehicles, heat pumps, and (green hydrogen) electrolysis capacity (Wiatros-Motyka et al., 2024, pp. 12, 44).

China's big green state is a *high-discipline* regime that combines both state-imposed discipline ('sticks') and fierce market competition between rival firms. Here, we focus on the former, *via* two examples. First, a mix of 'sticks, carrots, sermons, and prohibitions' sought to reduce fossil consumption in the industrial sector (Yang et al., 2015). Besides monetary rewards for lower coal consumption (carrots) and stringent disclosure requirements (sermons), the Differential Electricity Pricing Policy program 'created surcharges on electricity prices for certain energy-intensive industrial sectors' (Yang et al., 2015, p. 21). Under the prohibition category, the 2007 'Comprehensive Working Plan on Energy Conservation and Emissions Reduction' defined phase-out targets for 13 energy intensive sectors, while the government issued deadlines for specific plant closures (Yang et al., 2015, p. 23). We are unaware of similarly stringent phase-out policies in the West (Ergen & Schmitz, 2023; McDowall, 2022).

Second, the 'Made in China 2025' industrial policy strategy has relied on a 'carrots-and-sticks' institutional framework (Government of the People's Republic of China, 2015). Take EVs, a key battleground in the escalating cleantech trade war. Designed in close cooperation between several state institutions—including the National Development and Reform Commission and the Ministry of Science and Technology—the EV strategy set clear performance targets: two million EVs by 2020 and 20% of all auto sales by 2025. The carrots for local producers of EVs and EV batteries included subsidised credit, technological transfer requirements in joint ventures, trade barriers against foreign battery producers, consumer subsidies and tax breaks to increase demand, public procurement benefits, and charging infrastructure investment. The Ministry of Industry and Information Technology wielded the most important stick, production penalties—a dual-credit system that rewarded EV producers with tradable credits, while forcing firms which did not meet EV sales thresholds to purchase credits. For instance, state-owned Chongqing Changan Automobile

Co. lost 4000 yuan in profit for each car sold in 2020 as it bought credits to avoid the penalty. These sticks ensured intense competition among local firms in spite of large and numerous carrots. By 2024, China had emerged as the leading, and fastest-growing, EV producer.[4]

The notion of there not being 'enough money' to finance green industrial policy spending is not part of the discourse of the CCP. Instead, the Chinese state has built an institutional architecture for public and private credit creation that allows it to allocate credit without regard—at least in the short run—for private-sector profits. The state is thus empowered not only to foster investment in new infrastructures and industries, but also to *shrink* dirty or otherwise unsustainable economic activities. This approach has been characterized as 'top-down', whereby strategic decisions at the highest level of government feed through regulatory and monetary policy authorities (Larsen, 2022; Wang, 2018a). Building on earlier credit policies, which had first defined green loans through a list of 12 sectors and activities, the People's Bank of China (PBOC) issued the 'Green Bond Endorsed Project Catalogue'—then, in 2015, the world's first green bond taxonomy (Larsen, 2022, p. 363). Identifying green activities at the project-level rather than at the firm-level (Durand & Keucheyan, 2024), the catalogue makes firms in polluting sectors eligible to issue green bonds if the proceeds fund pollution control or resource conservation and recycling projects (Zhang & Zhou, 2023, p. 3). The catalogue was followed by the 'Guidelines for establishing the green financial system', jointly issued by the PBOC and six other, finance-related ministries and commissions; and by the PBOC integrating green finance into its macroprudential assessment system and its collateral framework (Wang, 2018b). On top of these formal mechanisms, the China Banking Regulatory Commission (CBRC) and the PBOC, engaged in green 'window guidance' from as early as 2006, a policy described as using 'benevolent compulsion to persuade financial institutions to extend additional credit to sustainable sectors, companies or activities or away from heavy-polluting ones' (Dikau & Volz, 2023, p. 125).

Furthermore, and on a different track, China has built a vast network of policy-driven venture capital funds. Instead of pensioners, these funds have local and central government actors as investors and beneficiaries. As a result, these state-guided funds are empowered to prioritise strategic industrial policy goals rather than financial returns (Li & Ban, 2025; Xu, 2024). This 'shareholding state' retains the autonomy to discipline its portfolio companies (Wang, 2015).

Although the Chinese state's capacity to discipline capital is clearly higher than that of Western states operating under derisking, state planning—even by an authoritarian one-party state—is no panacea for the problem of discipline (Thurbon et al., 2023). As illustrated by local government actors in China refusing to shut down energy-inefficient plants (Yang et al., 2015, pp. 24–25) or resisting reductions in coal-power investments (Nahm & Urpelainen, 2021), the big green state regime reduces, but does not eliminate, the political economy hurdles that make it difficult for the state to systematically and continuously discipline capital.

Conclusion

This article proposes a typology of green macrofinancial regimes, organized around the dimensions of public spending and discipline enforced on private capital. Under *carbon shock therapy*, state intervention is limited to carbon pricing policies designed to correct

for market failure. The goal of shrinking dirty sectors is to be achieved through price signals and market competition alone. The status-quo regime is *derisking*. Built onto the institutional foundations of inflation targeting, the weak derisking regime seeks to steer private capital into infrastructure projects, while the robust derisking regime operates *via* carrots-based industrial policy. With capital in the driving seat, the coordination and distributional fault-lines undermine decarbonisation ambitions. Under the *big green state* regime, both investment and discipline are coordinated and enforced by the state—through planning, public spending, and 'sticks-and-carrots' coalitions with private capital. The big green state regime curtails the structural and infrastructural power of private capital by disentangling social provisioning from private profits.

Our discussion of the robust derisking regime deliberately emphasizes the role of geopolitical hawks. Confrontation between the United States and China—while clearly paving the political ground for the IRA—threatens to reduce (green) industrial policy to a weapon in a conflict in which global warming is no longer the main enemy. Faced with the success of China's green industrial policy, the United States and, to a lesser extent, the European Union, responded by mobilizing geo-economic and geopolitical fears in order to bolster support for industrial policies. This turn towards economic nationalism is older (Clift & Woll, 2012). Nevertheless, the protectionist measures started under the first Trump administration and further escalated by the Biden administration—including a 100% import tariff imposed on Chinese EVs in mid-2024—mark a new stage in the United States' 'low-grade economic warfare against China' (Bateman, 2022). Why did an economically progressive Democratic administration embrace the Trump administration's policies, thus fueling a conflict whose escalation could easily derail the global green transition? From a macrofinancial regime perspective, this continuity reflects the strategic choice of an incumbent hegemon stuck with a derisking regime that cannot match the challenger's highly effective big green state regime.

Our focus on macrofinance should not be read as a case for green technocracy. A successful green transition will involve long-term ambition and the redistribution of resources between sectors, classes, and nations. In democracies, that requires citizen participation and buy-in on a scale that technocratic policymaking cannot provide (Downey, 2024; Kapczynski & Michaels, 2024; White, 2024). Recent experience has raised the question whether governments faced with political backlash against climate policies have any alternatives to retreating to weak derisking, or even to carbon shock therapy. The political value of the macrofinancial regimes perspective consists in providing an alternative for progressive political actors—to make a public case that truly ambitious climate policy has not yet been attempted; that it requires macrofinancial reform; and that a democratic big green state regime constitutes the only macrofinancial regime in which investment decisions can, in principle, be 'politically negotiated in an open and contentious way' (Benanav, 2022, p. 202).

Is the big green state regime a utopia, irrelevant to the political economy of climate policy today? We do not think so. Thinking about its contours helps us identify what social movement scholars call 'non-reformist reforms'. In the context of green macrofinancial regimes, these are reforms designed to increase the state's capacity for green fiscal spending and for disciplining capital to scale back unsustainable economic activities. One real-world example is the US IRA's direct pay provision, which is designed to lift the fiscal constraint on state and municipal governments, and thus to enable large-scale local public investment in clean energy projects (Lala, 2023, p. 1). Another promising area is policy-making to reduce the structural and

infrastructural power of finance. Here, a particularly non-reformist reform would be the uncoupling of funded pension systems from the ability of pension funds to generate short-term returns, when in reality their ability to meet pension liabilities in the second half of this century will depend, above all, on the pace of decarbonisation.

Notes

1. Both authors contributed equally to the conception, design, research, analysis, and writing of this article.
2. Private-to-private PPAs are increasingly popular, but we only include contracts between public sector entities and private producers in our definition of derisking (World Bank, 2024).
3. For instance, under Germany's 'Steel Action Concept', the state subsidises steel companies' investments in (green) hydrogen-based technologies (BMWK, 2020). The premise is that in the absence of a substantive carbon price, green steel cannot be competitive. Through CfDs, the state offsets the difference between the green and dirty companies' cost of production, until the government delivers a carbon price at which the dirty companies are no longer competitive. The level at which that strike price is set determines how much the state compensates private capital while the market price remains below the price of green steel.
4. Note that 'managed competition'—combining generous state support with fierce market competition between firms—is well established even in sectors dominated by state-owned enterprises (Chan, 2022).

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