

Climate change challenges and the sustainable development convention

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Abstract

This paper argues that to minimise the climate change crisis, the rescuing of effective development strategies led by the State is necessary. In this sense, the neoliberal State is not well equipped to face the climate change challenges that demand the government to act as a long-term planner to promote the green transition – the passage from a high-intensity to a low-intensity carbon dioxide economy. The green transition requires restructuring production and consumption profoundly and swiftly, as well as extreme societal changes. In particular, as we primarily focus on this paper, this transition presents an inherent risk to the financial system's stability in the face of a growing amount of stranded assets. Consequently, the green transition process demands a profound change in the funding structure both to redirect investments to cleaner projects and to ensure the shift does not affect the financial system's stability due to its current leverage in sectors intensive in CO₂ emission. Coordination between the central bank and development banks, so concludes the paper, should be pursued as the leading public policy arm to implement a green industrial policy.

Key Words: Green transition, sustainable development convention, development banks, sustainable finance.

JEL Classification: E60; G20; G28; O11; O16; O20; Q58

1 Introduction

The impacts of climate change represent a cross-cutting risk for humanity, generating economic, social, and environmental effects. Given these far-reaching consequences, attempts to achieve a just sustainable green transition – the passage from high-intensity greenhouse gas emissions to a low-intensity one – must be coordinated among countries, governments, and private entities, involving as many actors as possible at global, national, and local levels. Assessing the intensity of greenhouse gas emissions, identifying critical activities and sectors, and devising scenarios are fundamental initiatives to focus on both prevention and mitigation efforts in the right direction.

Since the late 1970s, the World Meteorological Organisation has recognised that the effects of climate change are a severe problem for humankind. Further discussions led to an international treaty to regulate collective action against global warming, the United Nations Framework Convention, signed in 1992 at the Earth Summit in Rio de Janeiro. In 2005 the Kyoto Protocol came into force stating that developed countries must comply with a carbon emission goal. Developing countries were also encouraged to take on greenhouse gas reduction targets yet with no binding obligation. A more recent step came with a new international treaty linked to the UN Climate Convention, the Paris Agreement, adopted by 196 parties at Cop 21 in 2015. This agreement set up a target to control the increase in the earth's temperature well below 2°C above pre-industrial levels, calling countries to limit the rise to 1.5°C above these levels. It also committed to making financial flows compatible with low greenhouse gas emitting and climate change resilient development. The Paris Agreement has also pushed the fight against the climate crisis to the search for global-level coordinated measures and binding agreements that connect all nations.

Despite the urgency, actions taken so far can be considered timid and lacking practical outcomes. There is still weak cooperation among countries and a virtual absence of public policy coordination to effectively implement climate change initiatives. An Intergovernmental Panel on Climate Change (IPCC) report highlights that the world will hardly reach the goal of limiting the temperature increase to a maximum of 1.5°C. Moreover, the countries must act swiftly and drastically to get even the 2°C target (IPCC, 2021).

The current sanitary and economic setback due to the Covid-19 pandemic adds to the dilemmas concerning deepening social and economic inequalities, rapid environmental destruction, and drastic climate change. The pandemic's economic crisis, coupled with the ecological and sanitary disaster, evinced the inherent systemic instability (Chomsky & Pollin, 2020). Covid-19 demanded new public policy instruments, for the current ones

reproduce the financialised economic system that caused the problems in the first place – underdevelopment, deforestation, environmental impact, poverty, and inequality, to name but the most evident ones (Stiglitz, 2019). From the 2008-09 global financial crisis to the economic crisis of the Covid-19 pandemic, to the lack of results in dealing with the climate crises, the significant challenges facing society point equally to a necessity of changing direction at the strategic level of public policy. In this sense, the axis of any development strategy must be the green recovery that leads the way for a green transition.

The green transition involves long-term investments in new sectors and technological innovation, among other dimensions of structural transformation. Achieving this transformation requires promoting a new sustainable development convention by the State and private institutions, comprising a distinct arrangement of economic policies and new financial architecture. Bringing private institutions together implies that the political economy will play an essential role in the green transition. The leading role of monetary policy and the reduced space for fiscal policy, constrained by targets aiming at balanced budgets, are not adequate to address the environmental and social risks concerning the production model. Thus, there is a need for specific instruments supporting the green, economical, and social transformation (Crocco & Feil, 2020). In this sense, the State must act as a long-term planner, stimulate innovative enterprises, and enable structural change guided by the aims of the green transition. This transition will only succeed through a developmental convention coordinating private decisions towards long-term green growth.

When there is a rupture of current conventions due to a severe crisis, the State should rebuild confidence and guide private agents' decision-making in an uncertain context. The pandemic economic crisis sets up a context of high uncertainty. This paper argues that the pandemic crisis reinforces the importance of the green transition so that the State's role should change to become the leading actor inducing private agents towards a new productive and technological paradigm under the post-pandemic context. In particular, the State should be equipped with institutions and policy instruments to coordinate public and private actions according to a sustainable development convention.

Besides this introduction and final remarks, the paper has two main sections. Section 2 discusses the importance of a sustainable development convention guided by the State, whereas section 3 deals with the risks of the green transition to the financial sector. Structural change requires new, greener sectors with less greenhouse gas emissions, meaning that most of the existing leading industries will be extinct or have to readapt. Hence, the sustainable transition presents an inherent risk to the financial system's stability in the face of the growing amount of stranded assets. The final section summarises our proposals for the green transition.

2 Sustainable development convention for the green transition

The Covid-19 crisis can be seen as an opportunity to shift public policy focus from what Reinert (2008) calls a palliative economy that targets economic misery's pain relief to the development economy, aiming to change the production architecture. We argue that structural change in the green transition implies several simultaneous steps. First, at the national level, the State has to combine long-term planning with the need for sustainable structural transformation to coordinate long-term decisions. Second, at the international level, challenges imposed by Cop 21 combine a conversion to environment-friendly production processes and consumers' behaviour, development of new technologies, and investment in infrastructure (Chenet, 2019).¹

The green transition demands synergetic actions with the private sector, as it is a phenomenon that requires a diversified industrial sector. According to Chenet et al. (2017), the green transition calls for financing (public and private), tax benefits for selected activities, cheap credit, and subsidies, as a massive capital reallocation will be necessary to limit global warming. Furthermore, capital flows are expected to shift from high-carbon assets to low-carbon ones over the transition time.

The proposal of a sustainable development convention as a policy guide to the government action in a green transition opposes the neoliberal convention that market coordination is superior to State coordination. The sustainable development convention implies that government is the chief agent to promote structural transformation required by Cop-21 goals. The “Entrepreneur State,” as Mazzucato (2014) would put it, acts directly, shaping the market, assuming risks, generating a new convention. The green transition needs market transformation, both on the demand and supply sides. It is up to the State to affect the structure and functioning of both markets and private sector investments, giving life to the sustainable development convention.

A historical experience of a well-succeeded development convention is the State-led industrialisation process in Latin America (Bértola & Ocampo, 2015). As for the Brazilian case, Antonio Barros de Castro (1993) argues that the government's commitment to growth and industrialisation between WWII and the late 1970s generated favourable expectations among economic agents that stimulated productive investment and rapid growth. The growth convention then promoted structural change, and in this sense, development became a self-fulfilling prophecy. Fabio Erber (2012), also analysing State intervention in Brazilian industrialisation, deepened the understanding of the

¹ For more information, see <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.

development convention, arguing that a pro-development collective perception provides policymakers, economic agents, and society as a whole a sense of certainty in a non-ergodic world.

A convention is a social representation, a form of socially produced and shared knowledge that sets up collective reality (Erber, 2011, 2012). Therefore, we can also interpret the sustainable development convention as a change in the State's mission and actions by coordinating policies, institutions, and tools towards a green transition. It signals to the private market and society that policies will ensure sustainable development despite the green transition's risks and uncertainties. As this transition is an uncertain process, which reduces the scope for market coordination, a sustainable development convention must also be concerned with rules focusing on the financial, institutional, economic, social, environmental, and technological dimensions of change.

2.1 The investment decision and the formation of sustainable convention and green transition

Structural change towards a greener economy depends on investment decisions. Assuming economic decisions in a non-ergodic world, expectations on future returns are the principal guide to long-term commitment choices. As in Keynes (1997), if we accept that the economy does not show a systematic tendency towards full employment equilibrium, there is no market coordination capable of linking future decisions to current investment determinations. As a result, the agents' behaviour to maximise their profits may generate crises due to the fall or lack of effective demand.

In a non-ergodic world, the fall in investments affects income levels and decreases marginal capital efficiency, starting a vicious circle that will only reverse through an external incentive. Thus, the economic policy should ensure a macroeconomic environment favourable to investments. Keynes (1997) argued that decisions based on long-term expectations rely on the agents' confidence in the economy's future outcomes. In this sense, conventions built upon economic practices supported by governmental institutions and policies are central to back long-term decisions. The state of confidence regarding the potential yields and the liquidity preference determines the flow of new investments. It is the perception of positive long-term expectations that drive agents to invest.

Green transition projects are highly uncertain and not necessarily the most profitable ones according to the perception of private economic agents, once they require innovation and the creation of new markets and production's mode (Mazzucato, 2014). However, they are the ones with the highest returns from a social perspective. Therefore, the private sector will most likely not risk new investments aimed at the green transition.

This concern points to the need for an intelligence centre that coordinates the socialisation of investment to manage expectations to drive investment decisions towards a long-term policy to sustain growth. Keynes did not design specific public policies that would achieve the goal of socialising investment. Nevertheless, according to Seccareccia (1995), Keynes supported creating a National Investment Board (NIB), which encouraged full employment balance by promoting long-term investment financing. In the process of green transition, the NIB is the intelligence centre that should pool investment funds, public and private, and ensure funding at competitive costs to attract private investors. (Seccareccia, 1995: 49). The social purpose of the well-oriented investment by an intelligence centre is to counterbalance the forces surrounding private decisions guided by uncertain expectations of money returns.

The claim for the State's superior coordination capacity of economic decisions can be explained considering how private agents, in a non-ergodic environment, make their expectations about the unforeseen future. According to Knight (1921), risks are linked to a measurable probability, while uncertainty is connected to a non-ergodic situation. Uncertainty results in a scenario where it is impossible to make reliable estimates about the future because fundamental information does not exist to formulate probabilistic calculations.² Although that is the case for all investments, in the green transition's case, it is more exacerbated once investments are made in a scenario where there is no evidence about potential risks. The transition process will require a complete reorganisation of the economic and social structure. Therefore, profit-orientated private agents lack the means, comprehensive knowledge, and the social requirement to undertake such a process without State coordination.

Based on the neoliberal convention, current premises, essential for formulating expectations and confidence level, might no longer exist. The neoliberal convention relies on an extremely structured analytical framework and micro-foundations based on rational expectations. It assumes the State is unreliable due to its "inflationary bias" and inefficiency once agents anticipate its actions. Under this perspective, the State is not only inefficient but also harmful. Accordingly, the solution is to decrease the scope for State intervention and, when this is inevitable, to insulate the bureaucracies (Erber, 2012).

The alternatives to tackling down climate changes have highly relied upon the neoliberal convention. That is, the logic follows market premisses establishing voluntary mechanisms to fixed the problem. The results deepen the climate crises, with GEE

² Dow (2020) explains that when decisions are made under uncertain expectations, prices that guide decisions are 'conventional prices' and not 'true prices', as assumed in the conventional literature that work with the concept of probabilistic risk.

constantly increasing for the last 30 years. It is necessary now a rupture in the processes. State intervention will be required to redirect investment and reinforce a new convention—a sustainable development convention.

In an essay on the State's role in economic theory, Carvalho (1999) explained that the active and continued State intervention in the economy had become an essential aspect of modern capitalism, notably after WWII. We can add that this intermediation remains vital despite financial globalisation, the dismantling of economic planning institutions, companies' privatisation, and social security systems' disassembling. Thus, bringing Keynes's theory on an environmental approach would be a permanent conflict between sustainable development and the pursuit of profit maximisation once there is high uncertainty in the green transition.

In line with the argument that the State coordination towards climate transition is essential, Krogstrup and Oman (2019) argue that productive and behavioural transformations required to limit global warming will have profound implications for economic policies' instruments once it depends upon a rapid revolution of global economic structure that will not occur through market alone. Hence, besides the argument that only sustainable development convention can endorse climate transition in the production processes and stimulate ambiently conscious consumption behaviour, there is also a sense of urgency. Furthermore, that is why Bolton et al. (2020) argue that the disputes faced to mitigate climate change pose unprecedented challenges for society, government, and the financial system in the sense that a green transition means moving towards a new production system based on lesser CO₂ emission.

In sum, due to the green transition's scope and nature, it can only be coordinated by the State and its institutions to socialise the investment, in the sense that Keynes foresaw in the last chapter of the General Theory. That is not to say that the private sector and civil society are not prominent players; they must act alongside the State to successfully transition. Sound public institutions capable of facing such challenges are fundamental for the green transition's success. Therefore, public sector articulation with the private market's structures is necessary.

2.2 The role of the financial sector in the green transition

As well documented in the economic literature, severe economic and financial reforms will be fundamental to catalyse a transition to zero carbon emissions. The green transition requires new, greener sectors with less greenhouse gas emissions, meaning that many existing economic leading industries will be extinct or will have to be readapted. The changes go through technical and financial planning, a collective project of transformation and coordination. In other words, to cope with the goals of Cop 21, the

metamorphosis must be profound and structural once it requires a complete reordination of the production and consumption's mode towards environmental sustainability (Christophers, 2019; Zucco & Power, 2012; Gros et al., 2016; Chenet, Ryan-Collins, & Van Lerven, 2019; Carney, 2018; ICAP, 2020; Caldecott et al., 2016; Chenet et al., 2019).

In addition to long-term planning, the sustainable development convention requires a new financing structure. Different economic activities have different maturation times to adapt to the goals established at Cop 21, meaning that meeting the challenges posed by climate change will simultaneously lead to the closure of the economy's traditional sectors and the creation of new ones. The financial system will play a central role in the green transition, given its ability to drive investments to generate structural changes focused on innovation and environmental efficiency. However, the private financial system is profit-seeking. How can the current financial architecture be conciliated with its role and the targets of the green transition?

Indeed, Carney (2015) considered that the green transition presents an inherent risk to the financial system's stability. Campiglio et al. (2018) observe that provided the imminent changes required for the green transition, stranded assets risk³ is becoming a more frequent, regular, and spread-out feature of the economic system, increasingly affecting the financial stability. According to a research developed by the Inter-American Development Bank (IDB), recent events have shown they are becoming increasingly related to the environmental phenomenon, and this trend is set to rise in the next few years (Caldecott et al., 2016).

Carney (2018) claims that success in transitioning to a cleaner economy within the established time frame can generate a paradox where success is a failure. That is, a swift move towards a low-carbon economy could materially undermine financial stability. Moreover, as climate-related risks are reassessed, a general outlook review could destabilise markets, triggering a loss cycle and leading to a persistent tightening of financial conditions – which the author called the 'Minsky climate moment'.

That is to say that despite the green transition's essentiality as recognised on the international treaties being settled, the inherently unstable, procyclical, and short-term nature of private financing cannot conduct the transition process by itself. The financial system does not always operate in society's best interest as it is profit-orientated and inherently unstable, limiting the investors' ability to promote sustainable development (Kregel, 2017; Minsky, 1992). According to its institutional structure, financial services

³ Stranded assets are defined as assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities (Campiglio et al., 2018: 5).

can create gaps in the finance of specific segments, especially those demanding long-term credit, and build up barriers for the green transition. Stiglitz (1994) claims that even if the social return has an appreciable impact, the project may not be funded in the face of deficient private returns that financial institutions naturally lend top priority.

Private financial institutions function pro-cyclically, expanding credit operations in a boom-boost pattern⁴ (Minsky, 2008). Thus, financial institutions' liquidity preference is directly related to agents' expectations throughout the economic cycle. Besides, the expansion of credit in accelerated growth periods and its contraction in slow-growth times exacerbate the business cycle. That is why, in Minsky's view, the cycle is endogenous to the way decisions are made in a non-ergodic world. The green transition within the convention for sustainable development points out the need for a different configuration of the financial system, as we will see in section four.

2.3 Climate change financial risks

Climate change will affect economic dynamics and inflicts risks to the financial system once the transition impacts most economic sectors, especially those highly intensive in CO₂, influencing risk management⁵. As the transition's uncertainty tends to spread into the financial sector, such risks cannot be treated conventionally. In building the narrative of a sustainable development convention, financial regulators should actively guide market actors in a clear direction to a managed green transition – to ensure a scenario that minimises the damages to the financial system and the economy in general. It is up to central banks and policymakers to downplay such impacts, acting as regulators for the green transition (Chenet et al., 2019).

⁴ Minsky (2008) separates the financing structures into three stages: Hedge, when the income streams of agents cover as much interest as the principal of financial loans; Speculative, when short-term income streams will cover interest only; and Ponzi, when short-term revenues are insufficient to cover interest, so that debt increases. Throughout the expansionary economic cycle, financial positions evolve from hedge to speculative and Ponzi positions.

⁵ Carney (2018) points out three main channels of risk through which climate risks affect the stability of the financial system: i. Physical risks - emerged from weather conditions changes and their direct impacts on assets (e.g., global warming, heatwaves, droughts, rising sea levels, extreme weather events), causing property damage and significant trade effects in goods and services. ii. Liability risks - derived from those who have suffered losses resulting from climate change and seek compensation from those they hold responsible for such changes. iii. Transition risks - materialized from the socio-economic reaction to the rapid adjustment to the low-carbon economy resulting from policies to mitigate or adapt to the effects of climate change (e.g., the introduction of policies related to climate change, such as carbon taxes, new regulations or rules producing certain goods, technological development and deployment, changing consumer preferences, litigation).

A few central banks worldwide (European Central Bank, Federal Reserve, De Nederlandsche Bank, to name a few)⁶ started to regulate the financial market towards a greener approach, incorporating some guidelines for financial institutions into the prudential supervision measurement of the transition risks. However, Ryan-Collins (2019) argues that, despite the evidence of climate change, financial institutions have yet to incorporate the transition risk into their models, suggesting that central banks' role should become more proactive.

Climate impacts are long-term, while the financial institution's logic is limited by the short term and is profit-orientated. This is what Mark Carney (2015) coined as the "tragedy of the time horizon." There is a misassociation in the maturity of a green investment project and the period when the government (not the State⁷) or private investors demand their profits or externalities from the project (Generation Foundation, 2017). The financial market has a short-term logic that does not capture investments with long-term horizons. Hence, building a sustainable development convention that supports green transition investments requires guidance that the private financial market or capital market cannot handle. As prices do not reflect the effects of global warming, there will be no incentives for financial institutions to incorporate the transition risk into their analyses or shift their assets towards a greener portfolio. "Knowing that the tangible risk will manifest at some point is not enough to trigger a reaction from financial markets, as long as the occurrence does not coincide with their own time horizon" (Chenet, 2019: 5). Due to the natural inertia of the climate response, global temperature will continue to rise for an extended period, even if greenhouse gas emissions cease completely. The major impacts of climate change will come long after, usually with a period higher than the time horizons of public managers and financial managers (Chenet, 2019).

However, there is a more significant threat of climate change to the financial system. The financial system generally addresses the climate issue from the perspective of the projects' social and environmental risks to society and the environment. This approach meets most global monetary authorities' regulatory requirements linked to the financial institutions' reputational risk. The analysis is limited to the project's risk to the environment without considering any impact the environment can cause on the project.

⁶ A group of central banks and financial regulators form, in 2017, the Network for Greening the Financial System (NGFS) to share best practices and responses to meet the requirements to achieve the goals of the Cop 21.

⁷ The understanding that there are risks involved in the green transition that will eventually damage some business and consumers makes it a difficult political choice, leading to government not to act at the speed and scale required (Campiglio et al., 2018).

This approach is rarely part of traditional risk analysis models: credit, liquidity, market, and operational. In other words, the climate analysis carried out in financial institutions considers the environmental impact of the projects being investigated. It does not reflect the climate impacts on the economy, which can significantly transform the economic sectors. They do not contemplate the possibility of climate accidents that can destroy productive structures – out-of-season cyclones, earthquakes, tsunamis, and similar events. The dangers posed by global warming have the potential to cause considerable financial losses (Bolton et al., 2020). Not analysing the impact of the environment in the project, as Chenet, Ryan-Collins, and Van Lerven (2019) put it, is the very denial of climate change *per se*. Financial institutions' risk models consider the environment as a given and constant element, being only marginally affected by the effects of the project financed at that time alone.

Climate risks are just beginning to materialise, and their consequences are unknown, as they are only projected (Campiglio et al., 2018; Carney, 2015; Gros et al., 2016; TCFD, 2017). In this sense, environmental risks still need to be integrated into financial and market supervision models. Bolton et al. (2020) argue that financial institutions need a new risk analysis model that incorporates the environmental threats considering the microeconomic aspect of the green transition. This will depend on the resilience of the financial system itself to new changes.

3 How to finance the green transition

How to finance the green transition process is at the centre of discussions about global warming. This process relies upon a change in the funding structure to redirect investments to cleaner projects and ensure the shift does not affect the financial system's stability due to its current leverage in sectors intensive in carbon dioxide emission. A successful green transition requires an integrated State action to create markets through investment projects and sustainable products, from clean energy to sustainable agriculture. Implementing this change requires new State actions besides the current ones based on available economic toolkits. To build a sustainable development convention, the State initially enters with public investments to reduce risks and leverage climate investments to attract private investors. A State's ability to plan requires a political bargaining chip, economic tools, and strong institutions.

Development banks, in particular, play a central role in the process once they are essential in shaping the market, directing the investment process, and offering credit to those sectors and projects accountable for the transition. However, this obliges specific development banks' vision to address such challenges (Crocco & Feil, 2020). The private financial system structure strengthens the current market model, exacerbating the risks of

the green transition. Fast and ambitious measures may be the most desirable from the point of view of climate mitigation, but not necessarily from the perspective of financial stability in a short-term horizon, as the destruction of sectors could dramatically affect financial liabilities. In this case, both physical and transitional risks are characterised by deep uncertainty and nonlinearity.

Development banks are essential to ensure structural transformation funding. In this sense, they must act intentionally to fulfil their mission, inserted in a developmental State promoting the economy's structural change (Mazzucato & MacFarlane, 2019). The development bank's intentionality, its mission, is a concept of public policy. It integrates and acquires an orientation of action, industrial policy, innovation policy, and financing policy. Moreover, as proposed here, development banks will act more efficiently if aligned with a sustainable development convention.

State intervention in financial intermediation may compensate for the private financial sector characteristics of limiting credit's function for financing activities with high uncertainty regarding expected returns over a long period. However, for such intervention to have greater scope in the development process, development banks must act as a public policy arm as a means available to the government to achieve its mission (Feil & Feijó, 2021).

Development banks have accumulated experience providing long-term reimbursement resources for high uncertainty activities such as infrastructure or innovation projects and other (presumed) high-risk ones⁸. Their repeated performance in financing growth, capital formation, and infrastructure formation allowed them to gather tacit or systematic knowledge about the structure and actors of the economy, thus constituting intelligence centres that can be adequately mobilised in the planning and execution of public policies. This experience is one of the credentials of development banks to, as long as they are effectively integrated into a coordinated development strategy, act as a public policy arm, helping to operationalise projects and redesign the productive structure where they operate (Feil, Feijó, & Horn, 2021).

Thus, the role of development banks with the State is not limited to financing specific projects. Development banks in a sustainable development convention should play an essential role in coordinating public policies, reducing problems associated with information, that is to say, mitigating uncertainty in Keynes-Knight view, and fostering a

⁸ For instance, KfW, in German, was one of the first financial institutions to finance renewable energy; the CDB invested heavily on infrastructure and innovation in China in the afterwards of the 2007-2008 global financial crisis, BNDES, in Brazil issues green bonds.

state of trust that expands the supply of liquidity. This liquidity expansion is oriented to encourage companies and production chains, allow structural transformations that reinforce the green transition, and promote new productive arrangements that enhance the development and reduction of sectoral, social, and regional inequalities.

3.1 Development banks: a proposal of a Green Industrial Policy and Innovation for Productive Conversion

Development banks' operations require articulation with other State entities to carry out a national development strategy. This articulation can be summarised by inserting development banks in the centre of the planning and execution of development policy. Fernández-Arias, Hausmann, and Panizza (2019) argue that development banks may exercise their knowledge as a new intelligence agency⁹. This follows from the recognition that development banks' performance in financing economic growth and infrastructure, among others, allowed them to gather tacit or systematic knowledge about the structure and actors of the economy.

Development banks as an intelligence agency should fund the green transition exploiting the complementarities between the market and State once they are in a unique position of moderate both agents¹⁰. Also, it should establish channels of communication with other governmental institutions to incorporate an intelligence role. At the limit, we suggest that the institution president should receive a State minister's status at the federal level and secretary within the federative units' scope. So or more important is that the arrangement of development policy has the direct presence, without delegation, of the head of the government himself – in the presidency of the economic development committee or in some other way that makes the themes of this policy occupy the centre of the State. Such a structure could modify agents' perception regarding the State's economic activity, thus influencing the conventions that guide private decisions in the economic sphere (Feijó, Horn, & Feil, 2020).

The change in private agents' perception in the face of a new institutionalisation for development deserves constant attention from governments because nothing implies a priori that this reaction is necessarily positive. In particular, the years of dissemination of neoliberal doctrine have reinforced these agents' propensity to resist climate challenges. When the State plays a vital role in the national development strategy, its institutions do not constitute the mere transmission of central government policies. However, they

⁹ Similar to the National Investment Board proposed by Keynes, that is, an institution to coordinate the socialization of investment.

¹⁰ The role of an intermediate institution is also defended by Reinert (2008).

actively contribute to the formulation of the strategy by creating developmental, sustainable programs. The main idea is economic and political coordination. Skocpol (1985) argues that the intersection of actions between the State and the market makes the development process successful.

The development banks' missions will only be accomplished if inserted into a broader State policy – a sustainable development convention. In this sense, the process of assets' losses due to the leveraged sectors' intensive carbon dioxide emissions will require what we propose to be a "Green Industrial Policy and Innovation for Productive Conversion." An industrial policy that provides instruments to promote the green transition process through incentive measures and requirements allow the sectors intensive in CO₂ emission to carry out a change of action¹¹. It is worth noting here the issue of so-called stranded assets, prior mentioned. As the risks related to these assets are not yet priced in companies' value, a rapid and successful climate transition may generate a loss of substantive value for these companies with a significant impact on the entire production chain and all financial architecture that sustains it.

Another central issue is the financial institutions' mismatch between assets and liabilities. Development banks cannot have a fundraising logic with the same temporal rationality as the financial market. As a result, financial institutions' funding model is not neutral. In this sense, the implications of funding the development banks will have – public resources or the capital market – are essential. When resorting to issuing securities in the capital market, banks will need to comply with a series of governance, management, operations, and financial rules that adapt to the private market's needs and logic. Thus, the institutions will follow the capital market rules and, therefore, short-run, maximising the profit orientations. Development banks financing logic will apply to fund projects that a State mission should guide. When choosing to fund with capital market securities, there is a contradiction with development banks' activities, especially those with a longer maturity horizon.

Humphrey (2016) argues that multilateral development banks such as the World Bank, Inter-American Development Bank, and the Andean Development Corporation's initial mandates were directed to promote development and industrialisation in countries'

¹¹ In this article's vision, the Green Industrial Policy and Innovation for Productive Conversion should incorporate Chomsky and Pollin's (2020) vision to ensure workers' subsistence guaranteed by a welfare state. Workers from brown industries may be reinserted into a new expanding labor market. However, this intermediary process must safeguard their well-being so that this group no longer represents a barrier to the transition.

members. However, as those institutions are controlled by more than one country, they rapidly need to raise funds from the private capital market. In doing so, the multilateral development banks' practices shift away from the developmental mission to obey the capital market rules. Those three institutions' evidence demonstrates that financial pressures put operational practices in disarray with their developmental mandate, approaching bankable projects. Hence, the need to raise funds in the private capital market shapes their operations and financial policies.

Additionally, when issuing securities on the capital market, any institution needs to acquire a risk rating from rating agencies, indicating the market's degree of risk. Thus, development banks need to adjust their performance and financial structure to these agencies' methodology. Dealing with climate change investments and reducing economic and social structural heterogeneities requires a foundation that the capital market cannot handle.

In this context, not only financing the transition process can only be carried out by development banks, but the sources of funds to act must be guaranteed without interference from private logic, which, as mentioned, tends to deepen the contradictions of the financialised capitalist system. Considering the structural incapacities of the private financial system to face the challenges posed by the present day, it is up to the development banks to take advantage of this process, directing credit – and consequently the sector and the productive orientation itself. Not only that - coordinated action by the State and its institutions is essential. With public policies that exceed the government's temporal horizon, the developmental State is critical in this new imposed reality.

3.2 The role of the central bank: a proposal of a Green Quantitative Transition

The reformulation of the role of central banks will also play an essential part in sustainable development convention. Ultimately, central banks may have to act as climate rescuers of last resort. As Bolton et al. (2020) indicate, events caused by "green swans" affect the financial system's health and may require the central banks to buy assets.

This article claims that central banks can play an even more central role in the process. The monetary authority should develop a policy such as a "Green Quantitative Transition". To ensure that the transition does not affect the financial system, the central banks align their monetary and regulatory policies with environmental policies (Campiglio et al., 2018). Central banks would play a key role by aiding the financial system through the purchase of depreciated assets due to the rapid climate transition, with the condition that this rescue package is directed to the financing of environmental sustainability projects or green industries (Crocco & Feil, 2020).

The Green Quantitative Transition would be a policy inspired by Quantitative Easing, initially implemented by the Bank of Japan at the beginning of the century, and disseminated by the Federal Reserve, the U.S. Central Bank, and later the European Central Bank, to deal with the financial crisis that began in the 2007/2008 biennium and the subsequent euro crisis in the following years. That is the injection of liquidity into the economy by purchasing assets from financial institutions. Green quantitative easing would be implemented with the same principles but directed to the climate transition process. In this way, the central bank would also issue securities to capitalise on development banks to ensure that the institutions could finance the projects necessary for the transition without bumping into the obstacles resulting from the private credit market, discussed in this article.

At the same time, it would be up to the central bank to create a company – along the lines of the Brazilian Emgea Asset Management Company, for instance,¹² to manage the exchange of financial assets linked to old technology – or brown – for green technology assets. This process would allow central banks to rescue financial institutions in trouble during the transition and, simultaneously, imposing conditionalities for their operations in a movement to [re]regulate the financial market. That is, central banks would have the potential to rescue financial institutions from the stranded assets problems, direct their operations towards green projects (by imposing conditionalities to the asset swaps), have instruments to coordinate the financial market, and even nationalise the private financial institutions, if and when necessary.

Finally, through the Green Quantitative Transition, the federal government could finance the Green Industrial Policy and Innovation for Productive Conversion through an expansionary fiscal policy conditioned by technological and innovation changes. Nonetheless, the intentionality (according to Mazzucato's definition) to promote a successful green transition that involves inequalities' reductions requires the alignment of macroeconomic policies for this purpose. State planning, its institutions, and the strategies employed – fiscal, monetary, foreign exchange, and industrial, together with credit policy – must ensure the sustainability of the green transition. The financial system's stability and efficiency and the productive sector's productivity and maintenance focused on new technology would be guaranteed (Feil & Feijó, 2021).

¹² Emgea is a non-financial company linked to the Brazilian Ministry of Finance created by the National Treasury under the Federal Financial Institutions Strengthening Program (Proef) in the late 1990s to transfer government bonds to federal banks in exchange for their problematic (or rotten) assets (Horn & Feil, 2019).

3.3 Putting together development banks and central banks in a sustainable development convention: a proposal

In our proposal, the Green Quantitative Transition is a vital instrument for funding development banks. By taking the mission of financing the green transition, development banks will face the double challenge of capitalisation and resource availability. Special government bonds could capitalise development banks (Development Bonds). Central banks can issue and direct projects to long-term financing through development banks (Feijó, Horn, & Feil, 2020). Development Bonds issuance would be conditioned to finance the "Green Industrial Policy and Innovation for Productive Conversion."

Such an instrument would not affect public debt. The central banks are to issue bonds to fund the development banks, ensuring the necessary support to finance the process without burdening its fiscal policy.

In sum, the sustainable development convention will form by coordinating economic policies to ensure climate policies' environmental integrity and fairness impacts. In particular financial public institutions should be designed to address the policies to promote the green transition. Climate finance policies must anticipate the green transitions' changes and respond to them. "Climate finance policies should be nested in a comprehensive set of regulatory, fiscal, industrial, market-based, and other climate change policies that disincentivise investment in polluting technologies and incentivise investment in low or zero-carbon technologies" (Bhandary et al., 2021: 13).

4 Final remarks

The economic crisis caused by social isolation's measures to contain the pandemic Covid-19 advance stated the shortcomings of the neoliberal State guided by rules when discretionary action was needed. Two global crises in a short period – the 2008-2009 financial crisis and the 2020 pandemic crisis – had called for an interventionist State. At the same time, the environmental challenges that have contributed to the development of the sanitary crisis move towards society's rapid destruction. In this sense, an alternative to the neoliberal State and neoliberal economic policies must be implemented. In this paper, we have argued that development banks, together with the central bank, can ensure the financing of the green transition and innovation necessary to develop and promote sustainable economic and social structural change.

However, institutional changes in the financial architecture are the result of political power. In this sense, even if we are tied to the discussion of the scope of macroeconomic issues, we understand that the political economy will be essential in building up a sustainable development convention and in the successful implementation of the Green Industrial Policy and Innovation for Productive Conversion to cope with the Cop 21 goals.

The current macroeconomic policies are designed to reproduce the existing economic structure and are not well equipped to deal with climate change problems and do not address the need for structural change or sustainability. In our view, a successful green transition requires an integrated State action to create markets through investment projects and structure for sustainable products. In this sense, this paper has proposed that development banks, inserted in a developmental State that promotes the economy's structural change, are strategic institutions in the process once they are essential in shaping the market, directing the investment process, and offering credit to those sectors and projects accountable for the transition. Finally, the issue of public fundraising towards the green transition has been brought to discussion. Under the scope of the redefinition of the role of the State to implement a sustainable development convention, the paper proposes that the central bank would play a key role by a) aiding the financial system through the purchase of stranded assets due to the rapid climate transition, with the condition that this rescue package is directed to the financing of sustainability projects or green industries; b) implementing a 'Green Quantitative Transition' to inject liquidity into the economy directed to the climate transition; c) issuing securities to capitalise development banks to ensure that these institutions could finance the transition without bumping into the obstacles resulting from the private credit market. Therefore, this paper has developed the argument of a new developmental convention to guide State intervention and the reordination of economic agents and toolkits available to promote the green transition.

In short, in the sustainable developmental convention aiming at the climate transition, it is up to the State to plan and lead this process due to its uncertainties. To do so, its main institutions should operate towards the same goal – including the development bank, working as a development agency, and the central bank, working as a lender of the last resource for the green transition.

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