Bulletin Propague

edition 2

SUSTAINABILITY
AND FINANCIAL SYSTEM

Regulatory trends
and market evolution

Executive **Summary**

In 2019, the Central Bank of Brazil (BCB, acronym in Portuguese) launched a new regulatory agenda to modernize the country's National Financial System (SFN, acronym in Portuguese). Called "Agenda BC#", it had four pillars when announced: inclusion, education, competitiveness, and transparency. In 2020, BCB included a fifth one: sustainability. BCB follows an international trend of financial regulators being increasingly interested in the topic due to the diagnosis that climate change is not only a social and environmental concern but may also pose a risk to financial stability.

In this report, we examine international and Brazilian sustainability agendas to provide an overview of trends for the country. In the short run, we highlight more mandatory Environmental, Social and Governance (ESG) requirements in disclosure reports: the number grew by 97% between 2016 and 2020 worldwide. In Brazil, the Central Bank announced plans to require standardized reports that identify environmental risks and opportunities in 2022, following the recommendation of the Task Force on Climate-related Financial Disclosures (TCFD). BCB already opened a public consultation in April 2021.

In the mid run, the development of new stress tests methodologies may become more relevant in Brazil after the first European results showed that, without climate policy, the probability of default by European Union companies increases significantly. Changes in the methodology and eventual results may require financial institutions to revisit their funding strategies. BCB plans to execute this part of Agenda BC# in 2022.

The timeline for developing a Credit Bureau (public consultation 82/2021) is more uncertain: once developed, it will force those seeking rural credit to adapt to sustainability criteria previously defined to access to the resources.

The sustainability agenda, however, is not just being imposed in a top-down fashion by the BCB. The market is already adapting, and there has been exponential growth in sustainable credit operations in Brazil. The value of operations was USD 549 million in 2015. In the first half of 2021, it had already reached USD 9.5 billion. The market not only grew, but there were also reports of up to 15 base points rate discounts for sustainability-linked loans (SLL), and up to 25 base points for ESG operations. An international market trend also on Brazil's radar is the possibility that performance-based sustainable debt instruments (SLL) become preferred over those linked to the use of resources (Green Bonds) due to SLL's more flexible allocation.

BCB's actions, therefore, accelerate an existing trend and create standards to reduce market inefficiencies. They also help the fight against greenwashing, the adoption of sustainable discourse only for reputational purposes, without taking practical action.

Taken together, regulatory trends, market growth and the need to finance the transition to a clean economy suggest that sustainable finance practices are compatible with financial returns and may represent market opportunities beyond the social returns generated by climate change mitigation action.

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In 2019, the Central Bank of Brazil enacted *Agenda BC#*, a regulatory modernization agenda to update the National Financial System. In 2020, sustainability became a pillar of *Agenda BC#* shortly after the BCB joined the Network for Greening the Financial System (NGFS) and the Task Force on Climate-related Financial Disclosures (TCFD). The former is an initiative promoted by more than 80 central banks and financial supervisors to induce best practices in climate risk mitigation. The latter is a Financial Stability Board initiative that aims at guiding the inclusion of financial impacts of climate change on the disclosures of information made by companies and financial institutions. This includes orientation on how to report their activities and risk/opportunity management practices.

Including sustainability in the regulatory agenda shows that BCB is following an international trend: the expansion financial regulators' role on sustainability topics after institutions such as the International Monetary Fund (IMF) and the Bank for International Settlements (BIS) identified that climate change is not only a source of social and environmental concern, but also a risk to financial stability. BIS summarized the possibility of systemic crises derived from the impact of climate change on the financial system by coining the Green Swan concept, inspired by the Black Swan concept formulated amid the 2008 crisis and associated with rare, unpredictable, and catastrophic events. Green Swan differs in that it is not rare; it is a certainty if there is no immediate action to contain it[1].

In less than a year since the announcement of the BCB's sustainability agenda, discussions about the impact of climate change on the economy have accelerated worldwide, with a significant increase in the number of reports, speeches, and public consultations. Between January 2020 and June 2021, there were more than 50 speeches by Central Bank authorities focusing on the topic[2]. Between April 2018 and March 2019, there were 23[3]. In 2016, there were 135 mandatory environmental, social, and governance (ESG) topics in corporate disclosure reports worldwide. By 2020, there were 266[4].

The speed with which the theme is gaining prominence is related to climate indicators: If the annual average of catastrophic events in the 1980s was 135, in the 2010s, it was 316[5]. Simultaneously, the reduction of greenhouse gases has been timid. The volume emitted in 2020 was only 1.1% smaller than in 2010[6]. Today, the top-five financial risks in the World Economic Forum's Global Risks Report are all

[1] OMFIF. 2021. Climate change is a green swan.
Available at: https://www. omfif.org/2021/06/climate-change-is-a-green-swan/. Accessed July 5, 2021.

[2] OMFIF. 2021. Hawks, doves, and green swans.
Available at: https://www. Omfif.org/2021/06/hawks-doves-and-green-swans/. Accessed July 5, 2021.

[3] OMFIF. 2019. GPI 2019 special report: Central banks and climate change.
Available at: https://www. Omfif.org/esg/. Accessed June 28, 2021.

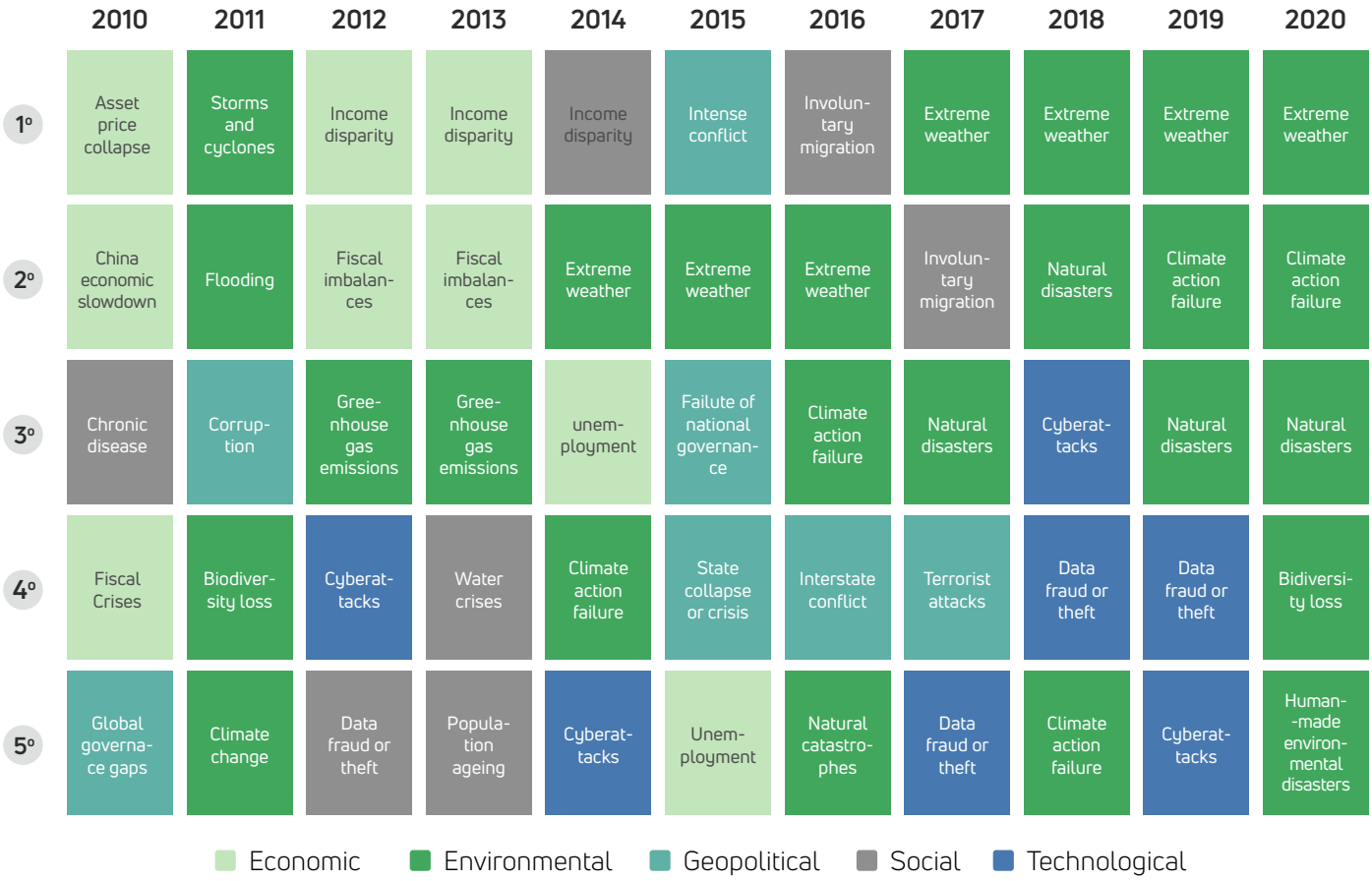
[4] Ernst & Young. The future of sustainability reporting standards.
Available at: https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/sustainability/ey-the-future-of-sustainability- reporting-standards-june-2021.pdf?download. Accessed July 5, 2021.

[5] IMF. 2021. Climate Change Indicators Dashboard. Available at: https://climatedata.imf.org/. Accessed June 28, 2021.

[6] IMF. 2021. Climate Change Indicators Dashboard. Available at: https://climatedata.imf.org/. Accessed June 28, 2021.

environmental, as shown in the figure below[7]. These results increase the pressure and call attention to the possibility of a Green Swan if actions are not more emphatic and structured.

Figure 1 | The evolving risk landscape—five likeliest global risks



Source: World Economic Forum (2020) [8]

Consequently, central banks have turned their attention to identifying the actions needed to reverse the situation and ensure stability. These involve changes in portfolio composition, changes in monetary policy conduction, mandatory provisions in disclosure reports, and the adjustment of risk measurement methodologies, among others. The development of instruments and consensus regarding which of them are actually needed and adequate varies. Even so, the overall picture—and this includes Brazil—suggests that the market will need to adapt its approach to environmental issues in the short run to meet regulatory demands.

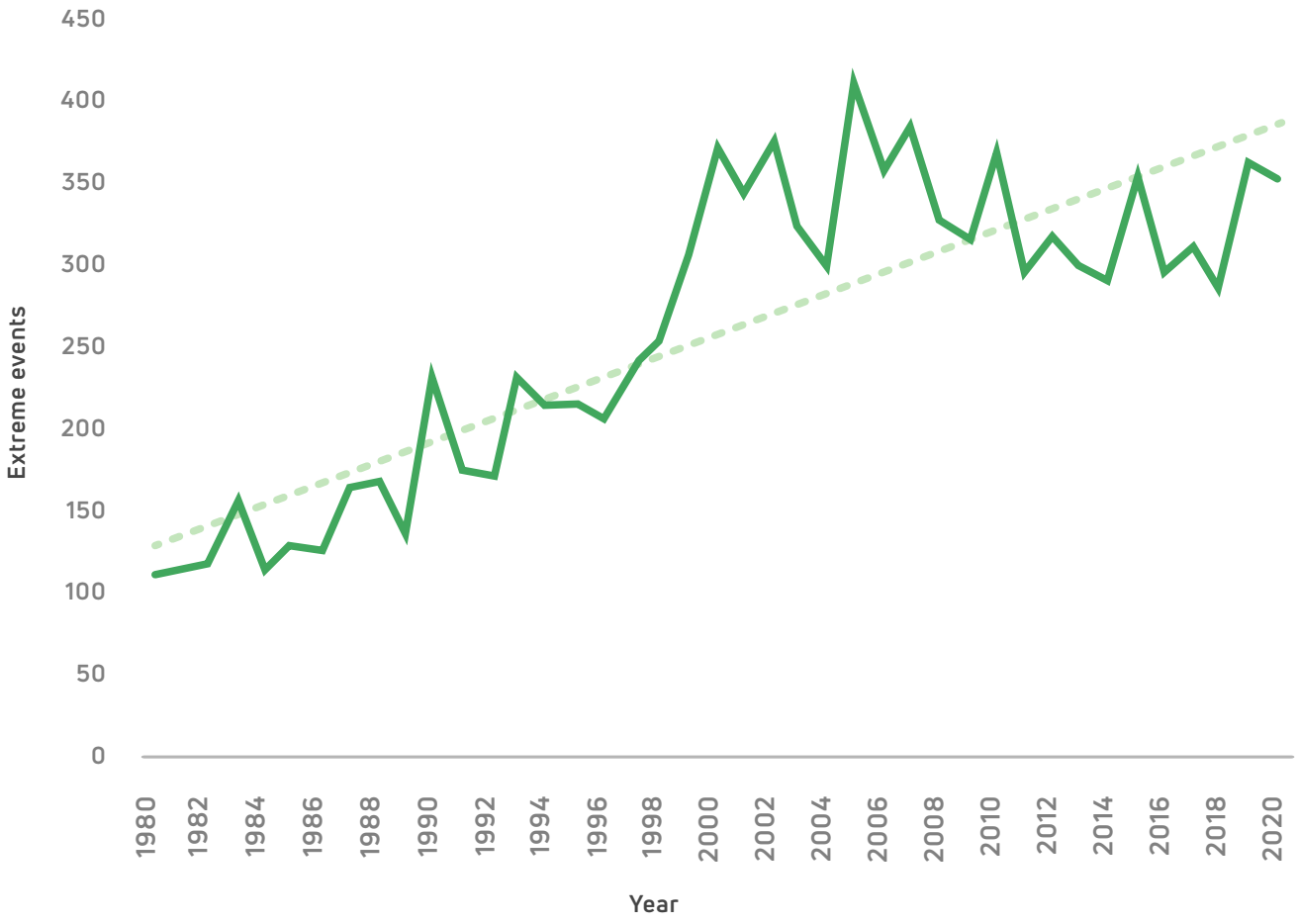
[6] GIZ. The Sustainable Finance Policy Navigator.
Available at: https://www.fs-unep-centre.org/wp-content/uploads/2021/02/SF-Policy-Navigator-Report-GIZ-and-Frankfurt-School.pdf. Accessed June 29, 2021.

[8] World Economic Forum. The Global Risks Report 2020.
Available at: http://www3.weforum.org/docs/WEF_Global_Risk_Report_2020.pdf. Accessed July 12, 2021.

1. Climate change as an obstacle to financial stability

When discussing climate change as a source of systemic risk for the financial sector, two groups of risk are considered. Physical risk is associated with the loss of assets and infrastructure necessary for the development of economic activities due to the increased frequency of extreme events such as floods, droughts, and extreme temperatures. An example that applies to Brazil is the loss of entire harvests. The graphic below shows the evolution of extreme events in the last 40 years and results indicate a clear upward trend and, therefore, increased physical risks. The insurance market exemplifies the consequences and economic vulnerability. Climate-related losses have increased fivefold since the 1980s: The average then was around USD 10 billion per year, compared to USD 50 billion today[9].

Figure 2 | Number of extreme climate events



Source: Adapted from IMF (2021) .

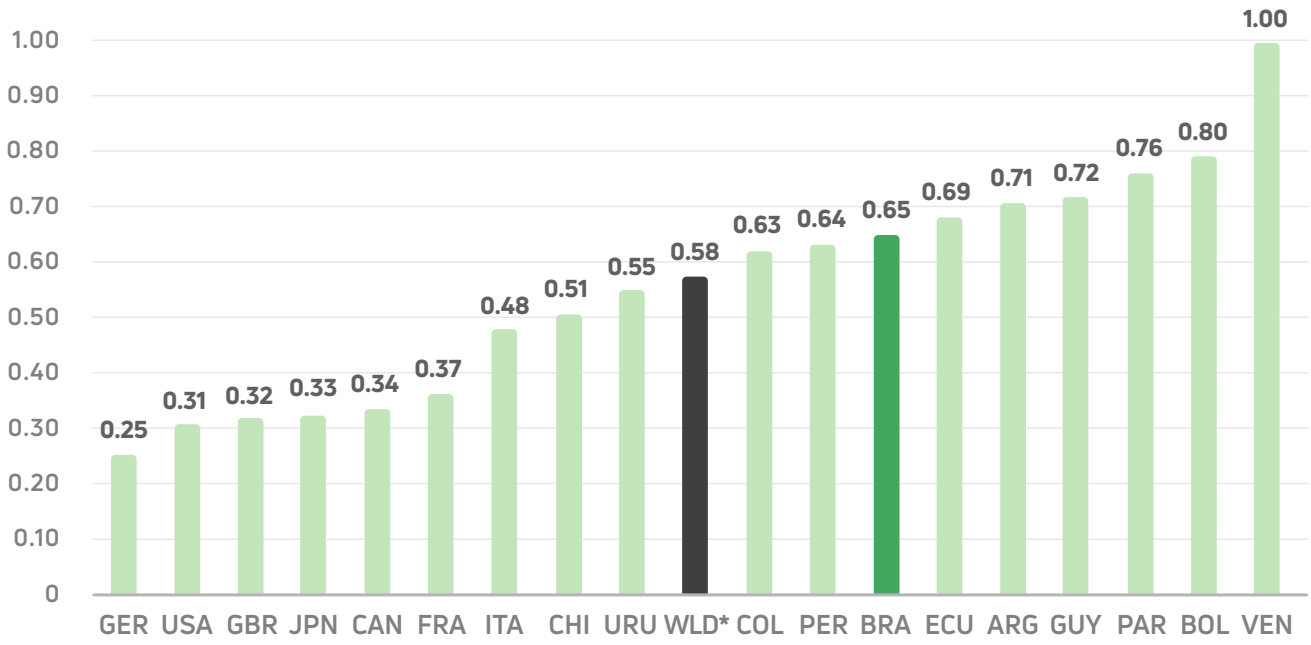
[9] OMFIF. 2019. GPI 2019 special report: Central banks and climate change.
Available at: https://www. omfif.org/esg/. Accessed June 28, 2021.

The second category are transition risks. They are associated with the political, technological, legal, and market transformation that are necessary for the economy to function on a low-carbon basis. The transitions can represent large changes in asset values or the costs of doing business in certain sectors. This is the case of the transition from fossil fuels to renewable sources of energy. Bank of England, for example, says: "it's not that policies stemming from deals like the Paris Climate Agreement are bad for our economy – in fact, the risk of delaying action altogether would be far worse. Rather, it's about the speed of transition to a greener economy – and how this affects certain sectors and financial stability.[10]"

The BIS recognizes that these are longer-term and less tangible risks but points out that disregarding them or taking too long to mitigate them is problematic for financial stability because, among other reasons, disorderly transitions are more costly and even likelier to create distortions without achieving environmental and physical risk mitigation results.

In 2019, IMF's resilience to transition risks indicator showed a 0.58 world average on a scale where zero is high resilience and one is low. In Brazil, the indicator is 0.65[11]. Much of South America results are worse than the world average, suggesting that the BCB's emphasis on sustainability is justified. This importance can be illustrated by a scenario where, if Brazil takes too long to start a transition, it may face capital flight to places that meet sustainability criteria. If the process of transition happens too quickly, it may destabilize the economy with a sudden change in asset value, mass unemployment, disruption of production, etc.

Figure 3 | Resilience to Transition Risk



* World average

Source: Adapted from IMF (2021)

[10] Bank of England. n.d. Climate change: What are the risks to financial stability? Available at https://www.bankofengland.co.uk/knowledgebank/climate-change-what-are-the-risks-to-financial-stability. Accessed July 12, 2021.

[11] IMF. 2021. Climate Change Indicators Dashboard. Available at: https://climatedata.imf.org/. Accessed June 28, 2021

Given the context, academics and policymakers are dedicating themselves to understanding the impacts of climate change on macroeconomic variables to inform the development of regulatory action. The table below consolidates research results and highlights why many central banks have accepted the role of mitigating climate change. Some results that stand out are output reductions in the short run due to extreme events destroying production and, in the mid to long run, due to productivity decline. Output may also by affected by the displacement of capital and labor.

Research also shows the effects on investments, which fall due to increased uncertainty and the destruction of capital stock. The stock of useful capital may be reduced even if it grows momentarily after an extreme event. Another effect is the redirection of investments from productivity gains to mitigation activities.

Figure 4 | Impact of climate change on key macroeconomic variables

Variables	Physical Risk: extreme weather events (Short-to medium-term)	Physical Risk: gradual warming and more volatile temperatures and precipitation patterns (Medium-to long-term)	Transition risk: transition to low-carbon economies (Short-to long-term)
Output	Lower due to physical destruction (crop failures, destruction of facilities and infrastructure, disruption of supply chains and tourism)	Lower due to labour productivity, investment being diverted to mitigation, and arable land losses	Capital and labour reallocation process could create frictions across sectors as a result of distortive (fiscal) transition policies and/or (fiscal) transition policy uncertainty and associated insufficient/inefficient investment. Mitigated impact depends on the use of proceeds from (fiscal) transition policies
Consumption	Lower due to increased uncertainty, e.g. surrounding housing wealth and future income prospects. Higher due to increased household demand to replace destroyed goods, or hoarding behaviour.	Higher volatility due to shifts in sectoral demand.	Likely lower due to increased sustainability awareness (e.g. preference for circular economy). Shift towards greener goods and/or services can also spur sectoral shifts, but the impact on aggregate consumption is uncertain.
Investment	Lower due to increased uncertainty, volatility and direct destruction of the capital stock. May pick up following an extreme event, but the effective or useful stock of capital may well be lower. Diversion of investment away from productivity-enhancing investment and towards mitigation.	Shifts in investment towards climate adaptation technologies.	Higher as investment shifts towards climate mitigation technologies. Lower because of higher uncertainty surrounding future policies, the rise in stranded assets, and reduced productivity gains from the international division of labour.

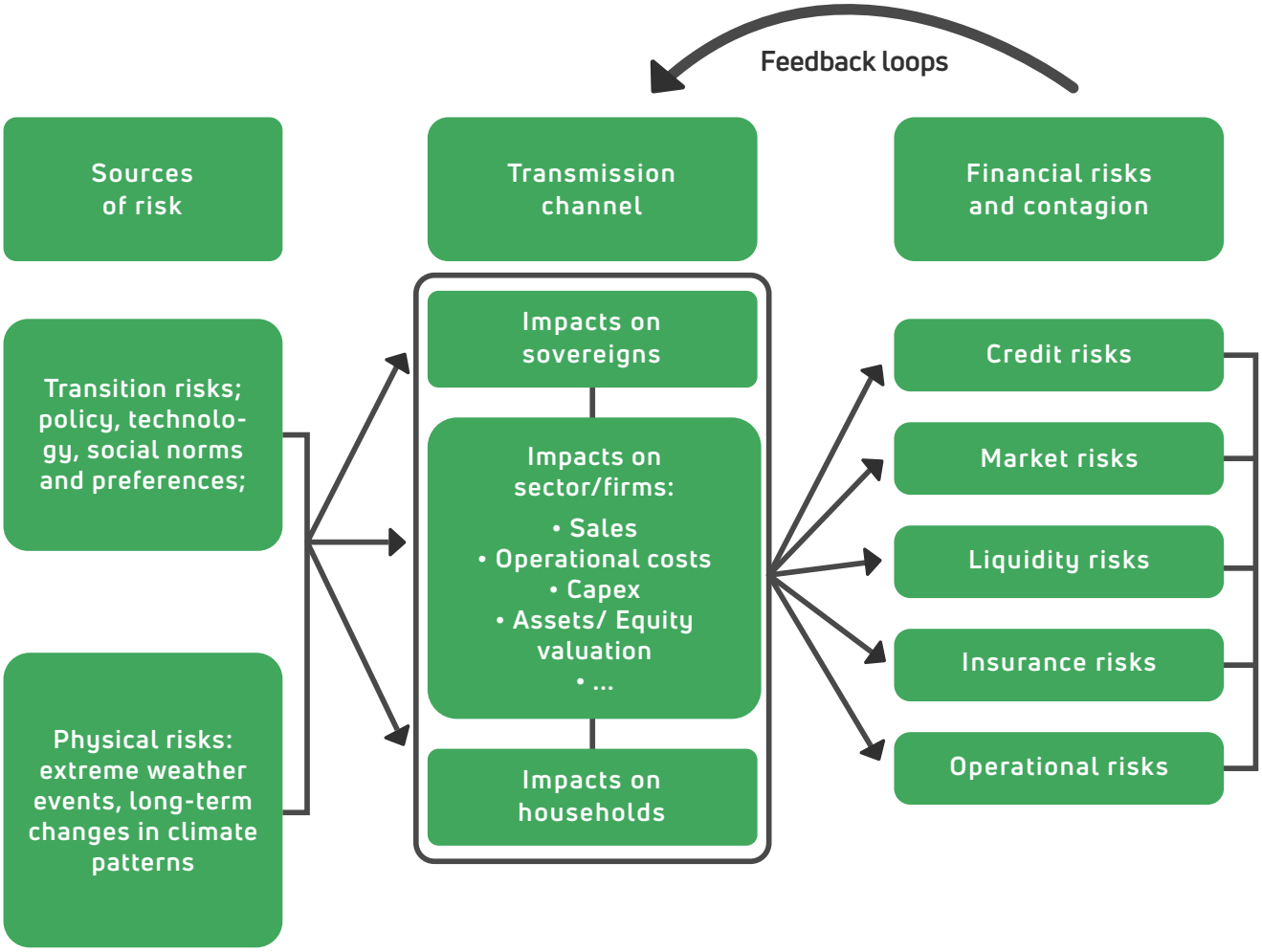
Productivity	Lower labour and capital productivity due to (possibly permanent) capital and infrastructure destruction.	Lower labour productivity because of lower human capital accumulation (as a result of increased health issues and mortality)	Effect on productivity uncertain because technological progress could offset the under-investment that is likely to materialise because of transition polices and the rise in stranded assets.
Employment	Lower because of the destruction of physical assets and the dislocation of people from the immediate vicinity of a disaster area. Potential frictional unemployment, which can be mitigated if labour mobility is sufficient.	Reduction in labour supply in exposed industries such as construction and agriculture, where it becomes less desirable to work in higher temperatures. Increased international migration flows, might raise the labour supply in less affected regions.	Changes in sectoral composition of labour market might trigger a rise in structural unemployment.
Wages	Uneven effects across sectors and economies (agriculture, tourism and construction are most exposed in developing economies). Reallocation of the workforce can generate labour shortages in some sectors where wages could increase temporarily. Wage patterns contingent on the length of the disaster effects (e.g. flooding).	Lower wages could result from lower productivity caused by gradual warming.	Potential shift of workers from one sector to another and their training needs.
International trade	Disruption of import/export flows due to disasters could lead to lower incomes via loss of export markets or higher import costs. Supply chain interruptions can lead to supply disruptions. Tourism may suffer from destruction of infrastructure.	Disruption of trade due to geophysical changes (such as rising sea levels). Increases in average temperatures could diminish export values.	Taxes, regulations and restrictions might disrupt import and export routes. Changing international demand for different types of energy products may affect energy exporters and importers differently. Risks of distortion from asymmetric or unilateral climate policies. Robust and open international trade infrastructure can act as a buffer absorbing some of the negative impacts of climate change shocks.
Exchange rate	Depreciation pressure on currencies of economies affected by climate disasters, because of negative terms of trade shocks and lower labour productivity.	Depreciation pressure on currencies of economies frequently affected by climate disasters and/or losses of arable land, because of extreme temperatures.	Freely floating exchange rate may offer an absorption capacity for shocks, especially for economies perceived as being further away from a low carbon standard.

Inflation	Increased inflation volatility, especially regarding food, housing and energy prices. Heterogeneous impacts on headline inflation, with the impact being stronger and more persistent in developing countries. Impact on inflation expectations.	Relative price changes due to shifting consumer demand or preferences and changes in comparative cost advantages.	Energy prices affected most by climate-related transition policies, such as CO2 allowances and carbon taxes. Policy uncertainty could weigh on inflation through its impact on investment, demand and inflation expectations. Inflationary pressures may be mitigated by technological changes that improve productivity or resilience, or by shifting consumer preferences towards climate-friendly products and services that should gradually enter the consumer basket weights are updated.
Inflation expectations	More homogenous, sudden and frequent revisions of expectations will be induced. Potential decline in the overall dispersion of inflation expectations (due to a more synchronised response by professional forecasters). Information rigidities tend to disappear following natural disasters (on a major scale).	Longer-term impact of climate-related shocks on actual inflation, e.g. on food and energy prices, may affect inflation expectations (due to reciprocal causality between these two variables).	Formation of inflation expectations will be affected, e.g. though changes in tax measures. Actual inflation impacts of transition policies might also affect inflation expectations.

Source: Adapted from NGFS (2021)

To facilitate the understanding of these relationships, BIS built a flow chart to explain how physical and transitional risks materialize amid financial stability. The first column reveals the two types of risk derived from climate change (physical and transitional); the middle column depicts the pathways through which these riskspillover d to the economy (impacts on households, productive sectors, securities). The third column demonstrates the source of economic contagion (credit, market, liquidity, insurance, and operational risks). Once one gets to the source of the contagion, there is a cyclical effect in which transmission mechanisms generate more sources of contagion and the system becomes unstable.

Figure 5 | How physical and transitional risks materialize in the financial system



Source: Adapted from BIS (2020)

2. Brazil's sustainability agenda in the face of the international regulatory landscape

Although sustainability is not a new topic, the financial system's focus on climate change as a source of systemic risk that demands that regulatory authorities take action gained momentum, in the last five years. At the regulatory level, the countries that pioneered the NGFS and TCFD have spent their time identifying in which fronts they should act and how to measure physical risks and transition risks well enough to induce climate change mitigation and financial stability.

Considering this, a 2019 research by the Official Monetary and Financial Institutions Forum (OMFIF) identified that many central banks are moving forward with a focus on disclosure rules, stress testing, and setting criteria and standards for green finance. Briefly explaining each of the instruments, *disclosure reports* are the recurrent disclosure of all company information that can influence investor decision making, operational data, and details that affect business development. The stress tests are simulations that analyze how financial institutions perform under extreme economic scenarios. They help evaluating internal processes and identifying investment risks and asset suitability. Finally, the *criteria and standards for green finance* refers to the creation of taxonomies that identify which types of activities are green, which are not, and what type of incentive/disincentive each category should receive.

Basically, these instruments involve producing and providing information, since correcting the lack of systematized data and information regarding environmental issues is pointed out in multiple works as one of the main bottlenecks for the development of further regulatory action. In that sense, increasing disclosure standardization is being considered a solution to the problem[12].

Other instruments, like macroprudential rules and changes in monetary policy conduction, were less popular[13] in 2019: 39% were very wary of using "market modeling" tools because of distortions risks. Only 42% saw a role for monetary policy in the sustainable agenda, with most stating that the role of central banks in the sustainability agenda should be using instruments to correct market failures, not to be this interventionist.

In 2021, discussions of prudential rules and green monetary policies gained more relevance, so the fact that the international regulatory trend has initially targeted other instruments does not mean that they will not be considered further down the line. In any case, the mapping provides the financial industry with insight into the most likely regulatory actions in the near future.

Figure 6 | Instruments that Central Banks prioritize in their sustainability agendas

Source: Adapted from OMFIF (2019)

[12] Ernst & Young. The future of sustainability reporting standards.
Available at: https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topi- cs/sustainability/ey- the-future-of-sustainability-reporting-standards-june-2021.pdf?download. Accessed July 5, 2021.

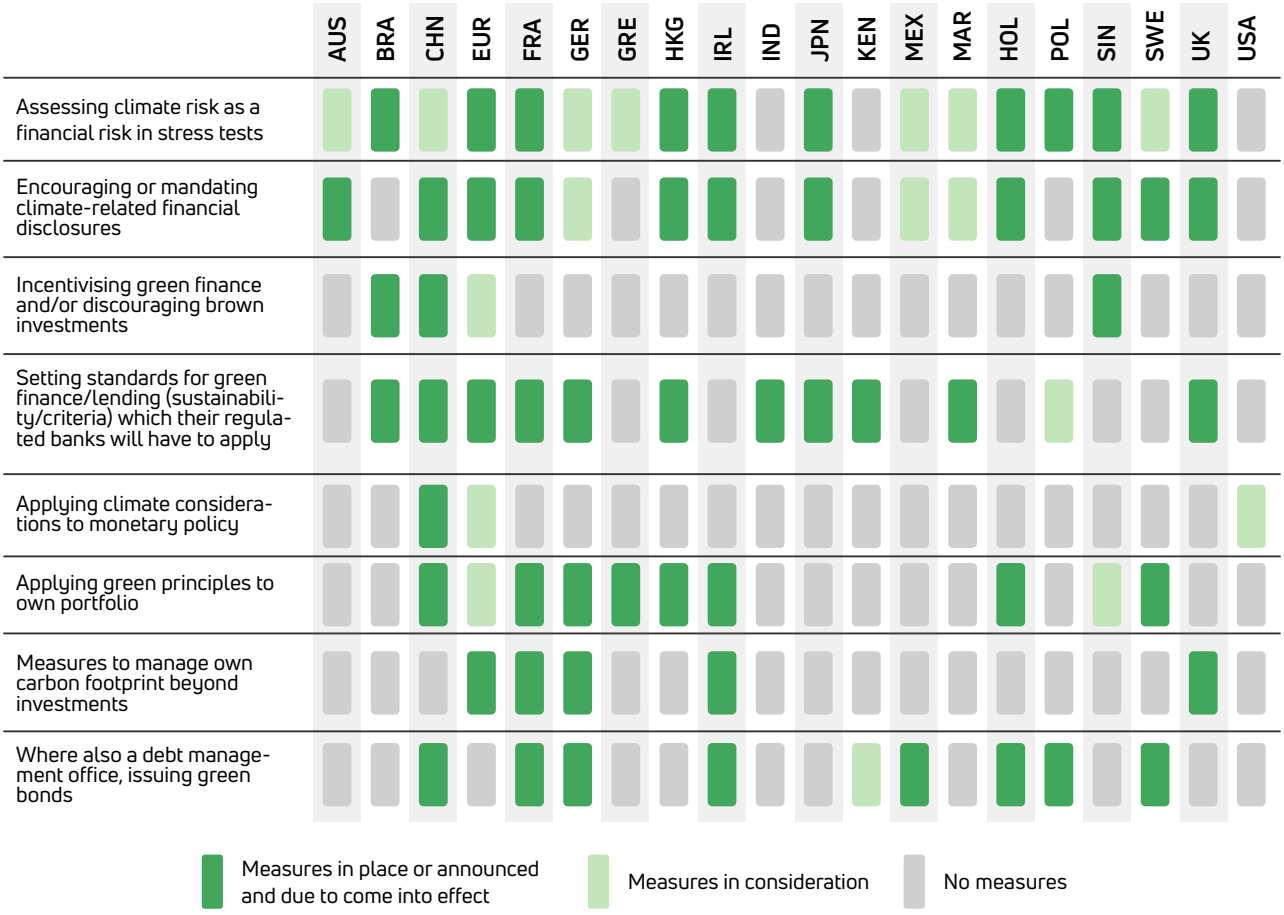
TCFD. Recommendations of the Task Force on Financial Disclosures Related to Climate Change.
Available at: https://assets.bbhub.io/company/sites/60/2020/10/TCFD-Final-Report-2017-Portuguese-Translation.pdf
Accessed July 2, 2021.

OMFIF. n.d. The role of data in sustainable investment, policy, and regulation.
Available at: https://www. omfif.org/esgdata/. Accessed July 2, 2021.

[13] OMFIF. 2019. Tackling climate change: The role of banking regulation and supervision.
Available at: https://www. omfif.org/tacklingclimatechange/. Accessed May 17, 2021.

The 2019 investigation also shows that, despite efforts to advance sustainability agendas, some countries did not leave the drawing board in some or most of the expected measured, including Brazil. For companies, this moment of growing debate without policies having been fully implemented can be an opportunity to make strategic decisions and be aware that new regulatory demands are on the way. Since 2019, there have been advances in this framework, but the issue of still having much to do remains evident in 2021.

Figure 7 | Progress on sustainability regulatory agenda



Source: Adapted from OMFIF (2019)

When we examine the green central banks ranking and focus on more than the placements, it is striking that even the highest scores are very low. This is another indication that there is still much room for central banks to become more sustainable. It is also noteworthy that Brazil ranks as the second-greenest central bank out of the 20 analyzed.

A possible explanation is that BCB already had a history of sustainability regulation even before international central banks began warming up to the idea that it is the institutional role of financial regulatory authorities to mitigate climate change and its consequences. Given the context and Brazil's position in it -joining the NGFS four years after its creation, but having a more mature trajectory than other countries in regulating environmental issues—it is worth delving deeper into the Brazilian case.

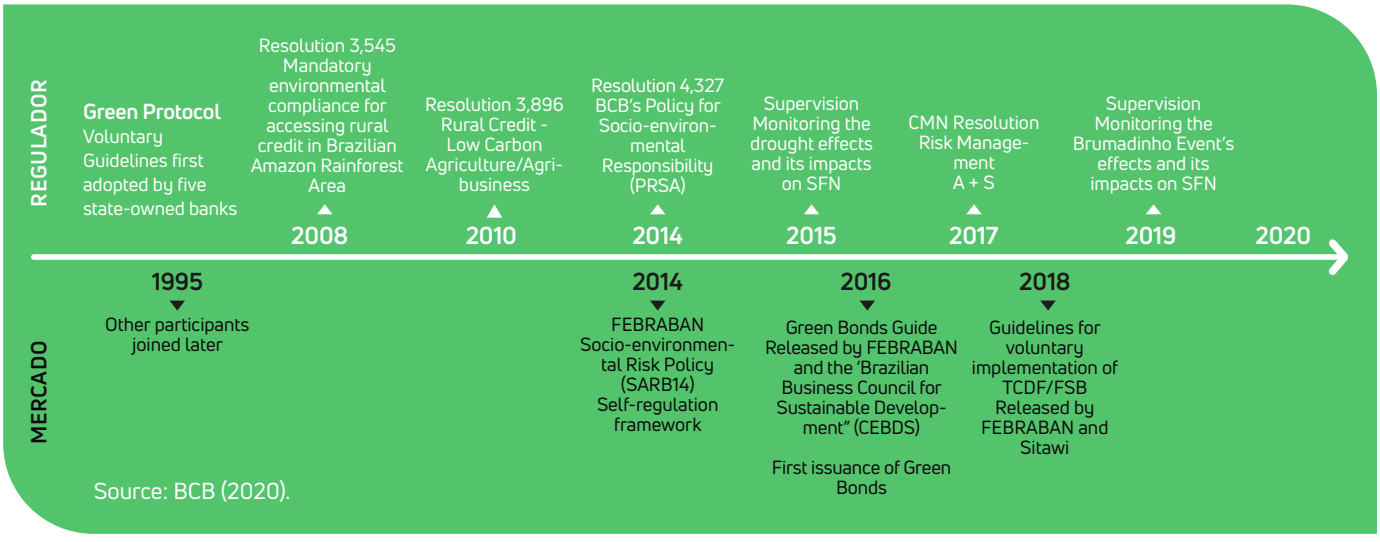
Figure 8 | Green central banks ranking

RANK	COUNTRY	Research and Advocacy (out of 10)	Monetary Policy (out of 50)	Financial Policy (out of 50)	Leading by Example (out of 20)	Aggregate Score (out of 130)	Grade (A+ to F)
1	CHN	10	16	24	0	50	C
2	BRA	10	16	18	1	45	C-
3	FRA	10	3	22	8	43	C-
4	UK	10	4	19	5	38	D+
5	EUR	10	2	15	6	33	D+
6	ITA	10	2	15	4	31	D+
7	GER	10	1	15	3	29	D
8	INA	10	1	8	2	21	D
9	JPN	10	5	4	0	19	D-
10	AUS	10	0	4	1	15	D-
11=	CAN	10	0	2	1	13	D-
11=	MEX	10	1	1	1	13	D-
13=	KOR	10	0	1	0	11	D-
13=	USA	10	0	1	0	11	D-
15	IND	3	5	1	0	9	F
16	RUS	5	0	1	2	8	F
17	SAF	7	0	0	0	7	F
18	TUR	1	0	3	0	4	F
19=	ARG	0	0	0	0	0	F
19=	KSA	0	0	0	0	0	F

Source: Adapted from Positive Money (2021).

Brazil was already prominent in sustainability-related regulation at least since 1995. Agenda BC# is a highlight of this trajectory due to the aggravation of the climate crisis, the scale of the project, and the redefinition of the role of central banks.

Figure 9 | Evolution of the BCB's sustainability regulatory agenda



Source: BCB (2020).

Analyzing the structure of the agenda, detailed in the table below, the 2021 highlight is the regulation/normative category: between March and June, BCB initiated all programmed actions, which included two of the instruments OMFIF's 2019 investigation considered priorities. The Bureau of Credit involves the "determination of sustainability criteria" for access to rural credit, while the enhancement of socio-environmental risk regulation and disclosure by financial institutions falls into the category of "ESG reporting and disclosure."

Figure 10 | Sustainability in the Agenda BC#

AREAS	ACTIONS	STATUS
BCB's socio-environmental responsibility	1. Promoting a culture of sustainability 2. Reviewing BCB's Socio- environmental Responsibility Policy 3. Reducing the environmental impact of the circulating medium 4. Including socio-environmental risks (RSA) in the Museum of Economics 5. Developing a BCB's RSA report	In Progress
Regulation	1.Creating a Green Bureau for Rural Credit (linked to the CICR Project); Public Consultation n° 82/2021 2. Improving RSA regulation: Public Consultation 85/2021 3. Improving information disclosure of financial institutions by following TCFD recommendations: Consultation Public No. 86/2021	In Progress
Supervision	1.Building stress tests for climate risks 2. Structuring and expanding the collection of information on RSA	In Progress
Partnerships	1. Joining the Network for Greening the Financial System (NGFS): Nomination of BCB representatives 2. Signing a Climate Bonds Initiative's (CBI) Memorandum of Understanding about climate change: already signed by august 9th	In Progress
Policies	1. Creating a financial line for "sustainable liquidity" 2. Including sustainability criteria when selecting counterparties for international reserves management and investment selection	In Progress

Source: Adapted from: https://www.bcb.gov.br/acessoinformacao/bchashtag_sustentabilidade

The focus on disclosure reports is justified when we consider that only six of the 20 countries listed had no actions developed or under way and Brazil was one of them. Conversely, the maturity of Brazilian regulation in certain areas becomes more evident when we notice that it is one of only five countries that already provided incentives/disincentives to green/brown finance in 2019 and, even so, plans to improve its policy by creating a Credit Bureau. Ultimately, with the implementation of Agenda BC# in its entirety, BCB can go from 37.5% coverage of sustainability regulatory instruments to 75%.

Figure 11 | Brazil's 2019-2021 regulatory agenda evolution

	BRAZIL 2019	**BRAZIL** after BC#
Assessing climate risk as a financial risk in stress tests	■	■
Encouraging or mandating climate-related financial disclosures	■	■
Incentivising green finance and/or discouraging brown investments	■	■
Setting standards for green finance/lending (sustainability/criteria) which their regulated banks will have to apply	■	■
Applying climate considerations to monetary policy	■	■
Applying green principles to own portfolio	■	■
Measures to manage own carbon footprint beyond investments	■	■
Where also a debt management office, issuing green bonds	■	■

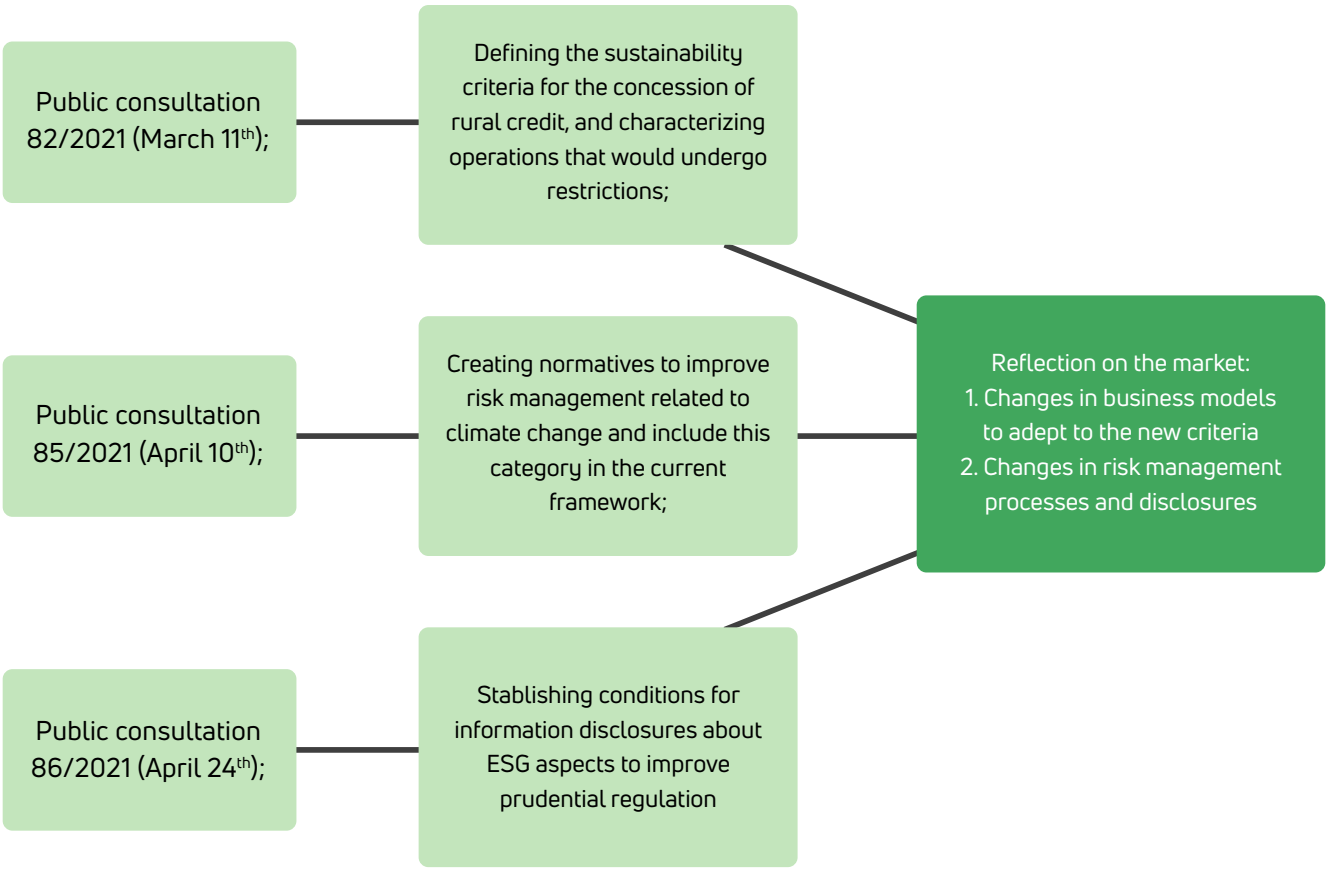
■ Measures in place or announced and due to come into effect
■ Measures in consideration
■ No measures

Source: Adapted from OMFIF (2019)

In addition to exploring BCB's sustainability agenda, we briefly analyzed open public consultations to better understand trends. There was strong interaction between society and the BCB in 3 consultations: 140 manifestations overall. The first received 80 answers, the second 43 and the latter 17. Considering that only the first has restrictive potential (not meeting the sustainability criteria would prevent access to rural credit), it makes sense that it received more manifestations. It was also the only one with a representative amount of opposition, which may result in a more uncertain schedule and development.

The flow chart below highlights the consultations, their goals, and what we consider to be some of their main effects on the market: adaptation of business models to comply with the new sustainable criteria, and changes in risk management processes derived from the new disclosure demands. The overall goal, as in other countries, is to provide the market with better information regarding the risks emerging in the system, which is important because the transition to a decarbonized economy also depends on their participation.

Figure 12 | Agenda BC#'s public consultations regarding the sustainability agenda (2021)



Source: Made by the author.

3. Development of green markets in Brazil and the world: Growth and diversification

Market participation is relevant because it is not possible to mitigate climate change and its consequences to financial stability without it. Moreover, the transition process must be financed, and the international scenario has already clarified the need for complementarity. According to BIS General Director, Luiz da Silva, almost 50% of the technologies needed by 2050 for energy transition are still prototypes[14], for example.

Projection of investments needs;

Estimates made by the FED indicate the US needs **USD 2.5 trillion** in investments to achieve 2030 targets[15].

In emerging markets, the value should reach **USD 23 trillion** for the 2030 targets.

In the European Union, conversely, this figure reaches **EUR 28 trillion** for 2050 targets.

The scenario makes it necessary for us to investigate how market instruments for sustainable investments are evolving to identify how much we need to progress. Consequently, In addition to regulatory guidelines, we provide a more detailed look into the sustainable finance market to build a more complete overview and point out trends.

Before looking at the numbers, however, it is necessary to introduce the two main instruments mentioned. The first is the Green Bond, which initiated the market for sustainable debt instruments in 2007. The second, which became available in 2016, is considered the great novelty in the market: sustainability-linked bonds or loans (SLBs or SLLs).

[14] OMFIF. 2021. Climate change is a green swan.
Available at: https://www. omfif.org/2021/06/climate-change-is-a-green-swan/. Accessed July 3, 2021.

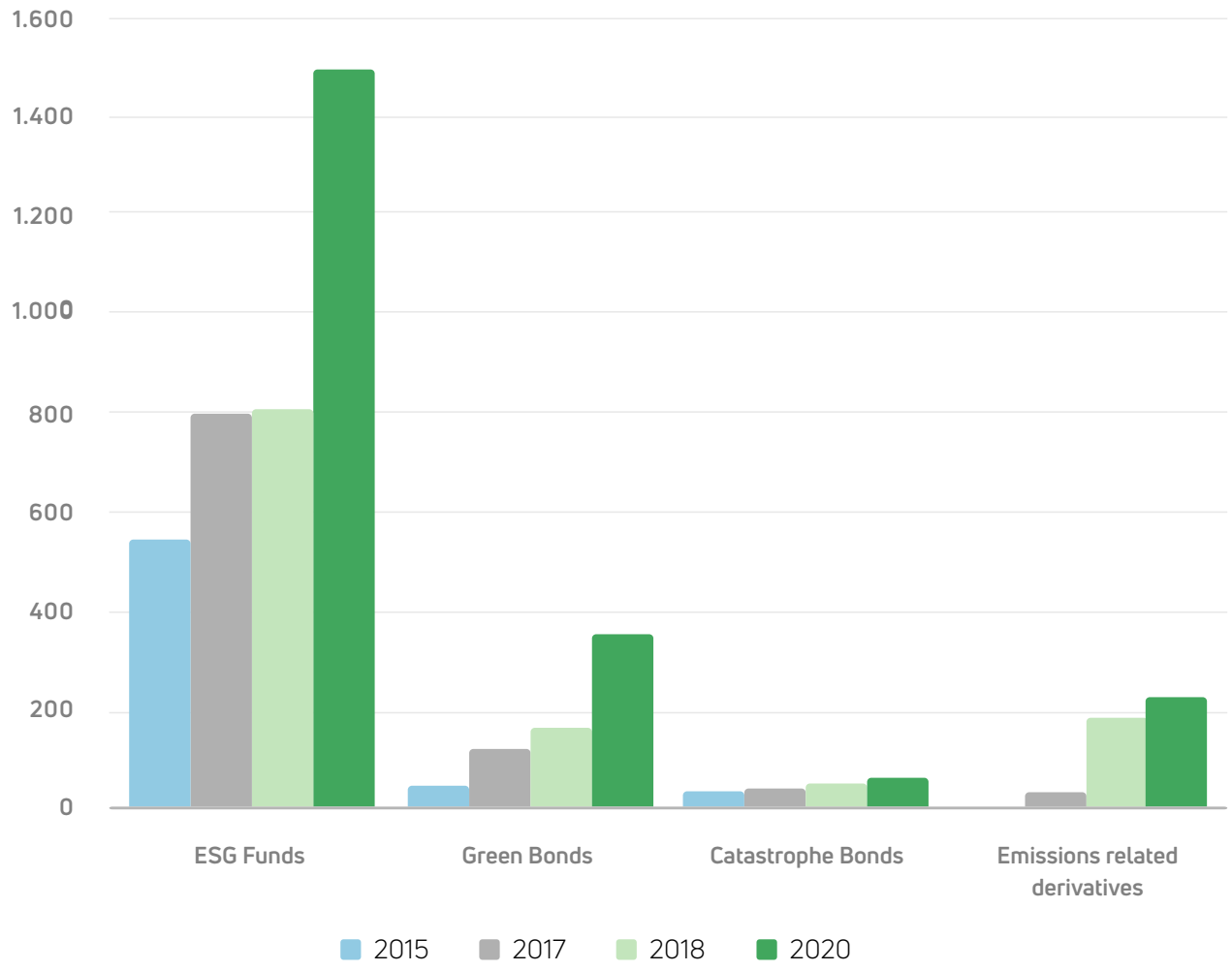
[15] YELLEN, J. 2021. Janet Yellen on financing a sustainable future | Greenbiz.
Available at: https://www.greenbiz.com/article/janet-yellen-financing-sustainable-future. Accessed June 7, 2021.

OMFIF. 2021. EU can't go it alone in green transition.
Available at: https://www.omfif.org/2021/03/eus-green-transition-needs-private-finance/. Accessed July 3, 2021.

Both are sustainable credit instruments, but Green Bonds are based on the use of resources: they necessarily finance projects with positive socio-environmental or climate attributes. SLBs and SLLs, however, allow resources to be allocated freely, and the issuer/borrower assumes a commitment to improve the company's ESG performance in exchange for better financing conditions. In short, Green Bonds finance an asset that is already adequate for the company's transition to a low-carbon economy. SLBs and SLLs finance companies that commit to making this transition, although they need not spell out how they will use the money[16].

Turning to the data, Europe, that issued the first Green Bond, shows the market's evident upward trend, both in volume and in diversification.

Figure 13 | Numbers of green instruments in the EU per year (in billions of Euros)

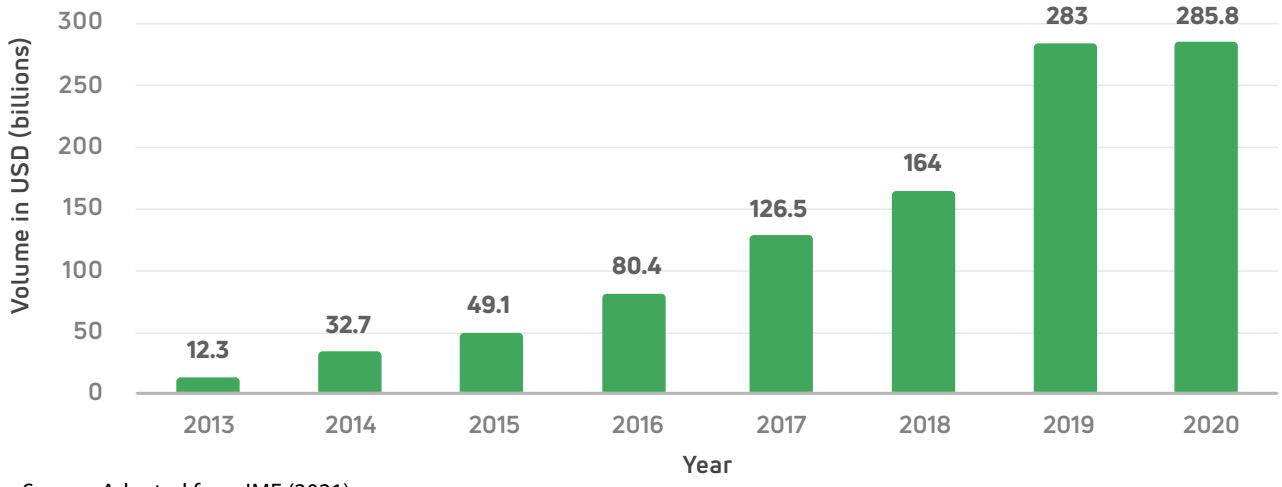


Source: ECB (2021).

[16]SITAWI. 2021. Sustainable Finance Trends in Brazil for 2021.
Available at: https://www.sitawi.net/publicacoes/tendencias-de-financas-sustentaveis-no-brasil-para-2021/.
Accessed June 29, 2021.

Focusing on volume expansion worldwide, we look into Green Bond market data provided by the IMF. We found that Green Bonds have grown exponentially in recent years. In 2020, the overall market reached USD 1 trillion[17].

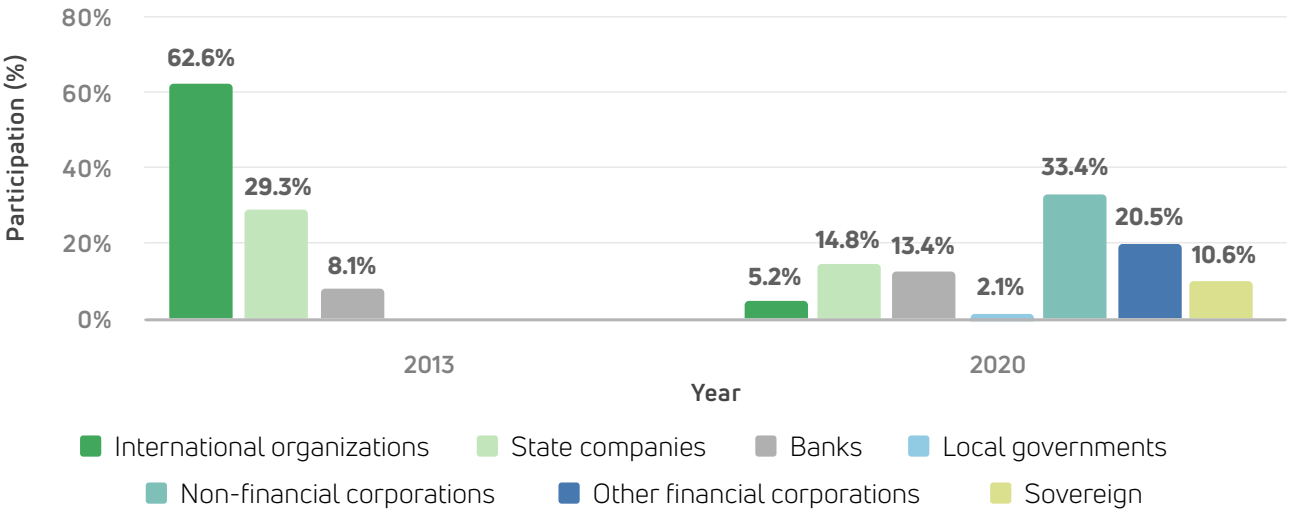
Figure 14 | Green Bonds: new issuances



Source: Adapted from IMF (2021)

Analyzing by the type of issuer, the variety of institutions is growing. In 2013, the issuers of the USD 12.3 billion were international organizations, state entities, and banks. In 2020, the issuers of the USD 285.8 billion included four other types of institutions other than the three already present in 2013: local governments, non-financial institutions, other (non-bank) financial institutions, and sovereign issues. As the chart below indicates, the number of issuer categories increased and the distribution of resources among improved.

Figure 15 | Participation in Green Bond issuance by type of institution



Source: Adapted from IMF (2021)

[17] FMI. 2021. Climate Change Indicators Dashboard.
Available at: https://climatedata.imf.org/. Accessed June 28, 2021.

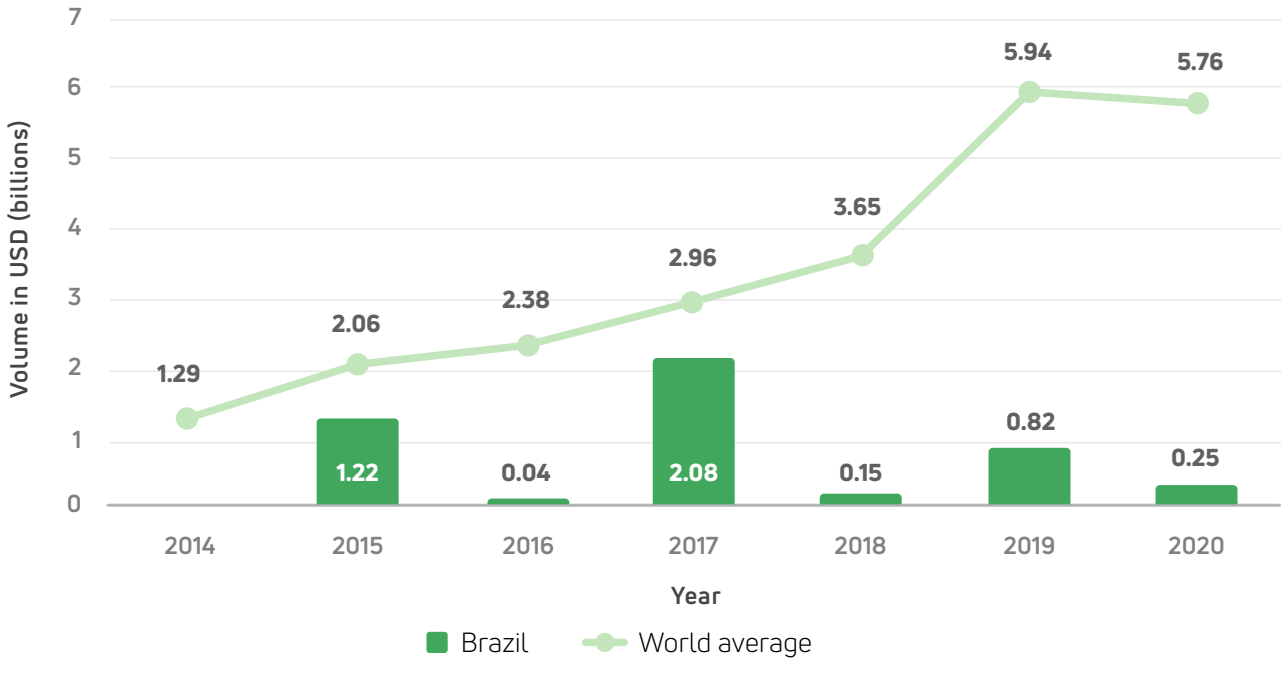
A concern is that 57% of the 2020 new emissions came from only five countries (USA, Holland, Germany, France, and China), and 95% were distributed among eight currencies (Yuan, Dollar, Canadian Dollar, Australian Dollar, Yen, Euro, Swedish Crown, and Pound). The lack of participation by emerging countries is considered a potential problem because they are also the most susceptible to the consequences of climate change and transition imbalances[18].

This indicates that there is market potential in emerging economies and that the sustainability regulatory agenda does not need to represent a trade-off with financial objectives. Sitawi (2021) documented the existence of 15 base points (bps.) "greeniums" for green transactions and up to 25 bps. For SLBs, for example[19]. Greeniums are fee reductions for green transactions in the capital market.

This perception has already been driving markets in developed countries, and emerging countries need to follow the trend if they are to mitigate environmental catastrophes, systemic crises, and lost opportunities in growing markets. There are signs that this is happening and that emerging economies are seeking greater participation[20]. Accordingly, it is worth investigating the Brazilian case.

Comparing the global average of Green Bond issuance with that of Brazil using the same IMF data, the country follows the diagnosis for emerging countries and is systematically below average. The first issuance took place only in 2015. In 2020, the country made up USD 4.56 billion of the total USD 1 trillion. Considering how young the green bond market is in Brazil, the result is expected. With sustainability agendas gaining momentum in the international financial sector and the BCB accelerating its actions, an evolution may take place.

Figure 16 | Green Bonds issuance: Brazil X World

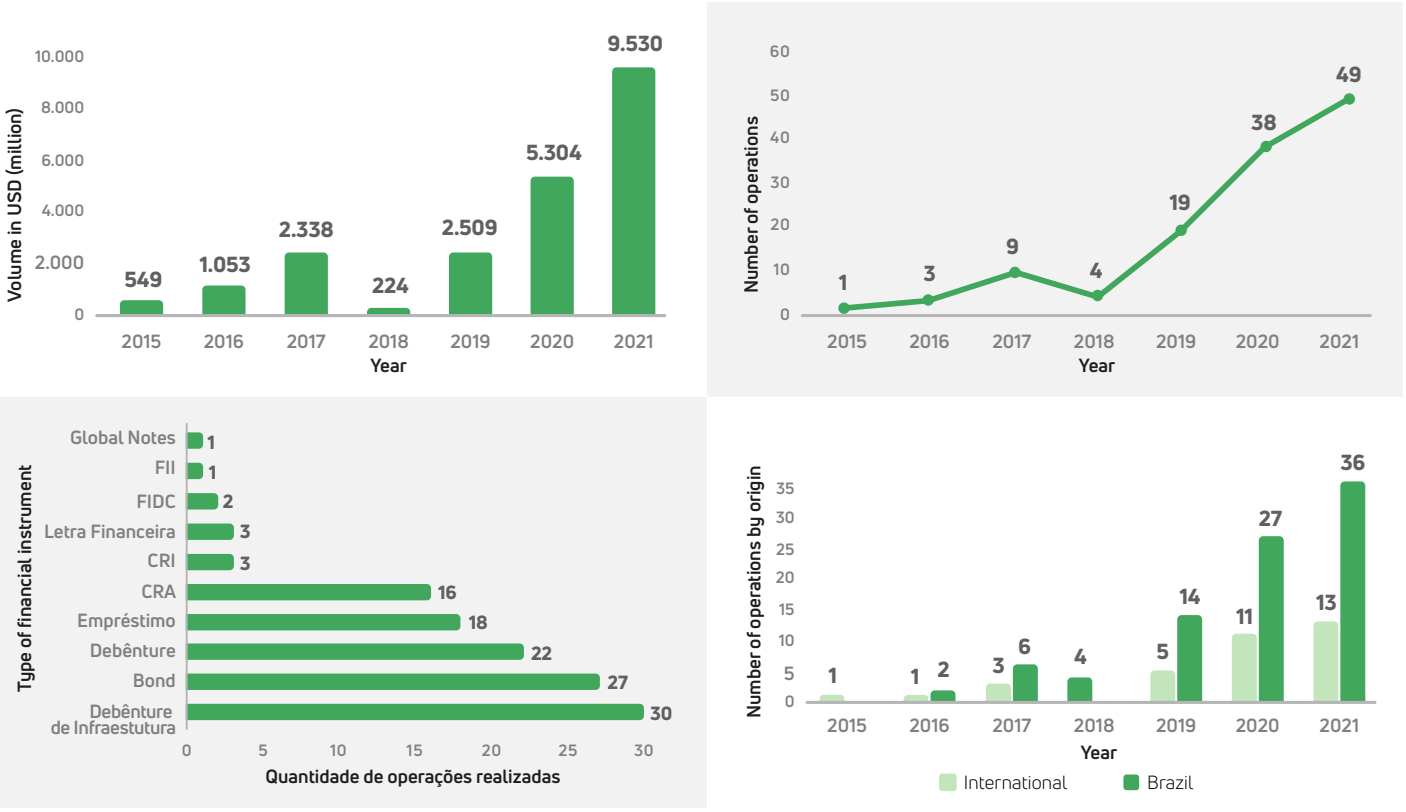


Source: Adapted from IMF (2021)

The expected evolution of the market can be seen in overall sustainable credit operations data[21]. In 2015, there was only one operation with a value of USD 549 million. In the first half of 2021 alone, there were 49 operations amounting to USD 9.5 billion. Despite an oscillation in 2018, there is an upward trend in the 5-year period. The expansion is more focused on the domestic market, which represents 73% of 2021's operations. Lastly, examining the stock of operations since 2015, the outstanding instruments are infrastructure debentures, which correspond to 24.4% of the total, and Green Bonds, with 22%.

Considering the global scenario, Brazil fits OMFIF's diagnosis that emerging economies are behind but evolving. In Brazil's case, the evolution is moving fast, even if values are not as representative internationally. With BCB's regulatory agenda aimed at stimulating development, this market should grow.

Figure 17 | Brazilian sustainable credit market: evolution



Source: Adapted from SITAW (2021)

[18] OMFIF. 2021. Emerging Markets Embrace Sustainable Bond Agenda. Available at: https://www. omfif.or- g/2021/04/emerging-markets-embrace-sustainable-bond-agenda/. Accessed June 30, 2021.

[19] SITAWI. 2021. Sustainable Finance Trends in Brazil for 2021. Available at: https://www.sitawi.net/publicacoes/tendencias-de-financas-sustentaveis-no-brasil-for--2021/. Accessed June 29, 2021.

[20] OMFIF. 2021. Emerging Markets Embrace Sustainable Bond Agenda. Available at: https://www. omfif.org/2021/04/emerging-markets-embrace-sustainable-bond-agenda/. Accessed June 30, 2021.

[21] SITAWI. n.d. Sustainable Credit Operations – Brazil. Available at: https://docs.google.com/spreadsheets/u/1/d/e/2-PACX- 1vRDp7Z82Qovj9VuupGGQGSiBi66hQPdRL5ucb6kZ80HyjtQtVjjtf7Qekh99_DVs2FRG-8ADHE05ASP/pubhtml. Accessed June 23, 2021.

4. Propague Trends

Even with more frequent debates and publications, there is still much to be done in the financial system's sustainability agenda. Brazil's more recent actions, however, put the country in a good position for developing it, especially considering the regulatory maturity built since the 1990s.

Now, with Agenda BC#'s sustainability projects scheduled to progress in 2022, there is an expectation that the Brazilian financial sector must adapt its business models to comply. Considering the diagnoses present in this bulletin, we can highlight some trends that assist decision making.

Government:

In the short run, the main regulatory concern is information, both in Brazil and internationally: providing more complete and standardized disclosure reports, more accessible data sources, and more robust measurement methodologies. This is necessary to design efficient policies and better incentives.

In the mid run, developing new stress test methodologies may become a focus in Brazil after the first European result showed that, without climate policy, the probability of defaults increases significantly. Changes in the methodology and eventual results may bring about the need for financial institutions to revisit their funding strategies. BCB plans to execute this part of Agenda BC# in 2022.

Once, and if, developed the credit bureau (public consultation 82/2021) will force those seeking rural credit to adapt to sustainability criteria. The consultation suggests measures such as the use of renewable energy sources, adequate use of water, soil correction practices, and technologies focused on animal welfare. Therefore, the development schedule for this project may be more uncertain than others, given that it was the only one with more resistance during the consultation process.

Market:

Sustainability agendas, however, are not simply being imposed top-down by the regulator. There are indications that the market is already adapting to and adhering to them.

Sustainable credit operations are growing in Brazil. Additionally, the country may be moving towards a new international trend: a shift to performance-based sustainable debt instruments from asset-based ones. An example of the former is sustainability--linked bonds or loans, while Green Bonds represent the latter. The main reason for this is that they keep resource allocation free: "[I]n a post-2020 economic scenario, where companies begin to recover from a reduction in margins, revenues, increased debt, and deteriorating equity position, the possibility of raising non-earmarked sustainable resources is also an interesting possibility[22]."

Voluntary participation in disclosure best practices as defined by the TCFD started growing within the financial sector even before BCB's consultation to determine standardization. In this sense, BCB's actions add to this movement and accelerate the trend, creating rules and standards to reduce inefficiencies that make it difficult for the market to deal with transition risks adequately. It also intends to ensure that the market does not get into a greenwashing logic, keeping sustainability actions only in speeches for reputational purposes, delaying climate change action and harming financial stability by masking results.

[22] SITAWI. 2021. Sustainable Finance Trends in Brazil for 2021.
Available at: https://www.sitawi.net/publicacoes/tendencias-de-financas-sustentaveis-no-brasil-para-2021/.
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