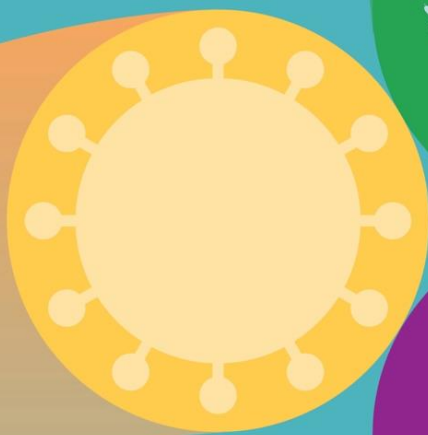


Embedding sustainability into the COVID recovery

A Primer for ASEAN Central Banks

MAY 2021



Summary

While countries implement measures to reduce and recover from the economic impacts of COVID-19, they also need to address the existential threat posed by climate change. These two problems both need international coordination to manage the risks to human wellbeing and the financial system. There have been calls for public bodies to tackle these problems together through ‘build back better’ and ‘Just Transition’ strategies. Central banks are playing an important role on these agendas.

During the pandemic, central banks have provided liquidity to the financial system, supported fiscal stimulus through purchasing government debt and directly stimulated real-economy activity through the targeted provision of credit. Such uses of the central banks’ toolkits that have protected businesses and stimulated recovery could be adapted to protect ASEAN member states from future systemic risks – particularly climate-related risks.

This report highlights the range of prudential and monetary tools that support their mandates and reduce environmental risks to the financial system. This report synthesises best practice on the ‘greening’ of prudential and monetary policies and contextualises these into lessons that can be drawn on by ASEAN central banks as they rebuild from the economic impacts of COVID-19.

The most critical step that ASEAN central banks can take is to establish clear roadmaps outlining expectations for the greening of the financial system. A core element of these roadmaps, and one recognized by the ASEAN central banks in their November 2020 report, is generating decision-useful information on FI’s environmental-risk exposure so bank management, regulators and other stakeholders can better understand and manage such risks.

Central banks have adjusted their policy toolkits to reduce to react to the pandemic. **ASEAN central banks could look at how similar adjustments could reduce** exposure to climate-related risks. Some of the changes to prudential regulation include:

- Stress tests: COVID-19 forced many central banks to delay or adjust microprudential stress testing to limit the immediate resource and regulatory burden on FIs and banks. However, it is important for central banks to resume environmental stress testing, to build capacity and understanding within FIs. France’s ACPR recently published results for stress tests undertaken with volunteer banks and insurers incorporating NGFS climate scenarios.
- Many central banks have loosened microprudential and macroprudential regulation in response to the pandemic. Such changes can quickly increase the supply of credit to distressed sectors, for example through releasing reserves from the countercyclical capital buffer. This can however inadvertently provide credit for potentially environmentally damaging activities which contribute to future climate risks. This could be lessened by excluding sectors with high transition risks from tapping this released credit.

ASEAN Central Banks could also consider calibrating their monetary policy instruments, accounting for the climate-related risks of different bank assets.

- Indiscriminate application of indirect monetary policy tools such as open market operations and standing facilities can potentially lead to a build-up of carbon intensive assets, further increasing FIs’ exposures to transition risks on their balance sheets. Changes to collateral frameworks could tilt lending activities and adjust risk exposures.
- Similarly, direct monetary policy instruments to stimulate economic recovery could be greened. For instance, corporate financing facilities, where the CB buys equity or bonds directly from issuers, could also be tilted to encourage green investment.

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Introduction

In 2020, COVID-19 devastated economies around the world. Governments were forced to take immediate and unprecedented steps to save lives and livelihoods. As the health crisis begins to stabilise and life-saving vaccines programmes are rolled out, governments and central banks can now look forward to 'building back better', selectively boosting economic growth to increase resilience and ensure stability. There are growing calls for the public sector to provide society with transition pathways that bolster economic and social resilience against the many challenges we face in the 21st century, chief among which is climate change.

This policy brief aims to synthesise international central bank experiences in response to the economic recession resulting from COVID-19 and identify opportunities to embed environmental sustainability into stimulus and recovery efforts. Our objective is to provide suggestions on how central banking tools can tackle and be informed by the financial stability risks associated with climate change.

ASEAN Central Banks have responded quickly to manage the economic fallout of COVID-19, utilising their experience of the Asian Financial Crisis and the Global Financial Crisis (GFC) to help their economies withstand the economic impacts of the pandemic. Banks had built up capital and liquidity buffers, improved risk management practices and internalised the social cost of risk-taking, allowing them to weather the COVID-19 financial crisis better than those crises which came before them.

While this paper commends the effectiveness of these responses, it notes that while ASEAN Member States (AMS) have avoided and recovered more quickly from the severe domestic impacts experienced in many other countries, they are still vulnerable to the global ramifications of lockdowns and border closures. ASEAN nations also have the opportunity to 'build back better' ahead of other countries. With

regards to the role of central banks (CBs), this means first and foremost ensuring financial stability by limiting the potential negative impacts of future climate-related events (encompassing both the physical and transition risks from climate change). As CBs develop sustainability strategies and frameworks (such as the Bangko Sentral ng Pilipinas's *Sustainable Finance Framework* and the Monetary Authority of Singapore's *Green Finance Action Plan*), the COVID-19 recovery presents an opportunity for central banks to begin their implementation in both monetary and prudential policy.

A growing body of research is revealing how climate change can affect financial stability. As shown recently, AMS face considerable macro-financial risks stemming from the physical and transition impacts of climate change, risks that should be addressed by monetary and financial authorities.¹ As ASEAN Central Banks seek to stimulate recovery efforts from the economic recession caused by the COVID-19 pandemic, they may, anticipating the risks that climate change presents to the financial system, also incorporate sustainability considerations. Central banks have an opportunity to consider how their recovery programmes will:

- a) impede or improve national and international climate change mitigation and adaptation efforts, and
- b) incorporate transitional and physical climate risk exposures into their recovery programmes.

Central banks have played a major role in the wider public sector's effort to combat the economic fallout from the pandemic since March 2020. Their focus has been to ensure financial stability despite (temporary) double-digit falls in economic activity and to finance governments' expenditure programmes. The economic disruption from COVID-19 has led to unprecedented innovation in how central banks use their policy toolkits to supply liquidity and ensure

stressed businesses continue to access bank credit.

2020's average global temperature was the joint highest recorded in modern times (tied with 2016).² Climate change has remained high on global agendas with several countries setting net-zero targets. Positive developments have included the Network for Greening the Financial System's (NGFS) continued efforts to publish a range of supervisory guidance, as well as detailed climate risk scenarios to aid climate risk-based stress testing.

There are opportunities for synergies in responding to the two threats. However, there are situations where there could be conflicts between the two ambitions, for instance, if emergency or stimulus funding is provided in an untargeted fashion. This could be mitigated by better targeting of emergency funding. Strategic interventions to 'build back better' when making large-scale stimulus and recovery measures could maximise their longevity and ensure they do not increase portfolio exposure to climate-related risks. Additionally, innovative policies developed in response to the pandemic could be reworked for climate risk management.

This paper is arranged as follows. The first section synthesises how COVID-19 impacts the responsibilities of central banks. The following section summarises how COVID-19 relates to sustainability, outlining the impacts of climate change on financial stability. The paper then explores the tools available to central banks, examining those used in the pandemic response and how these might be used to foster a sustainable recovery. This section also considers whether any of the innovations recently used by central banks could be applied to climate risks. The conclusion draws upon this analysis to give suggestions for short- and medium-term action that can be taken by ASEAN Central Banks to 'build back better'.

The Economic Impacts of COVID-19

Though ASEAN countries have experienced lower per capita mortality rates than most other regions (except North-East Asia), the region has still experienced a heavy economic toll as a result of containment measures, which disproportionately impact countries reliant on sectors like tourism (Thailand), and as a result of high rates of COVID-19 in Europe and North America, which indirectly dampened exports from those countries reliant on these trading partners (Viet Nam, Philippines).

In a joint meeting of ASEAN finance ministers and central banks' governors, attendees agreed to conclude that it was imperative to *"implement extraordinary measures through targeted fiscal, monetary and credit support to our real economy and financial systems, as well as reaffirming our commitment to the continued flow of goods and services."*³

During this challenging time, ASEAN Central Banks have focused on growth rates and inflation rates. Overall, the ASEAN GDP is forecast to contract by 4.4% (a downgrade from the 3.8% fall made in the September update) due to the containment measures in 2020.⁴ Growth is expected to rebound to 6.8% in 2021, but prospects diverge within the region.⁵

As they retrench in response to increased global risk, the speed and scale of capital outflows by foreign financial institutions (FIs) have revealed ASEAN countries' vulnerability to changes in market sentiments.⁶ This economic contraction has exposed the vulnerability of economic systems to large external shocks and the importance of resilience to the breakdown of international flows, hence the widespread calls to 'build back

better'. Indeed, in the November meeting of ASEAN Central Bank governors, they affirmed their support for a report on the roles central banks could play in managing climate and environment-related risks.⁷

Past crisis recovery can also provide examples of how to rebuild from the COVID-19 crisis the response has already utilised measures introduced during the 2008 global financial crisis (GFC). Both crises provide precedents for policy changes and provide evidence on specific policies' strength in aiding both recovery and future resilience. The changes to policy and strategy following both the Asian Financial Crisis and the GFC show the opportunity for change presented by the current crisis.

COVID-19: a preview of climate change's impacts

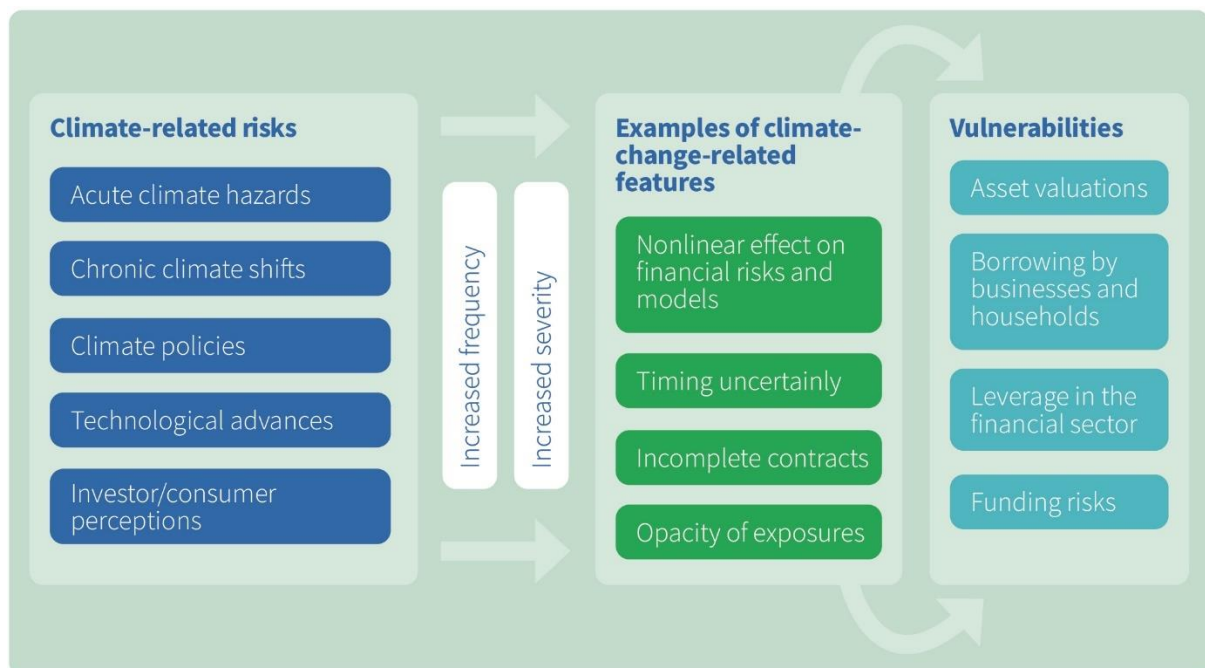
COVID-19 is not an isolated pandemic. The virus has its roots in pathogens jumping between species in degraded ecosystems and socioeconomic activities that are ill-equipped to protect lives and livelihoods from environmental shocks. Likewise, climate change will be a key driver of environmental stress and degradation. There is clear evidence that

global warming will create or amplify various risk types that can impact a country's financial and economic stability.

This section seeks to reflect on the transmission mechanisms through which climate change can impact national economic and financial stability, and

hence the roles and mandates of central banks.⁸ Such insight helps to frame *what* central banks need to consider and *why* they need to act. Applying such knowledge to the tools used by central banks to maintain financial stability will elucidate *how* they can apply these tools effectively to mitigate the financial risks posed by climate change.

Figure 1: Possible transmission of climate-related risks to financial system vulnerabilities.



Source: Adapted from Board of Governors of the Federal Reserve System (2020) Financial Stability Report⁹

There is growing evidence that climate change can present a risk to the financial system through various forms. Figure 1 outlines these climate-related risks and identifies the types of vulnerabilities within the financial sector that may be exposed to different manifestations of these risks.

Both physical climate change and transition risks have profound potential macroeconomic consequences. Some of these transmission mechanisms are slow-acting and arise over multi-year time horizons.¹⁰ These include shifts in consumer demand, technological

advances in renewable energy supplanting fossil fuels, or chronic climate impacts such as sea-level rise.

Physical Risk

Climate change results in physical risks. There has been an increase in the severity and frequency of acute hazards such as flooding, droughts and storm surges. These can affect corporations or countries directly or indirectly via impacts on value and supply chains caused by extreme weather. Longer-

term climatic changes also present chronic physical risks; sea-level rise, temperature increase, desertification and monsoon changes.

The ASEAN region is one of the most climate-vulnerable regions globally, with.¹¹

Climate-related disaster losses have a fiscal impact through damage to public sector infrastructure (including buildings), crisis response spending and tax losses. Average annual losses as a percentage of GDP have been estimated at 8.7% for Lao PDR, 8.0% for Cambodia,

6.7% for the Philippines, and 6.2% for Viet Nam. Singapore and Brunei, on the other hand, have not been so severely impacted.¹² Whilst exposure across the region differs between countries, the interconnectedness of ASEAN markets results in a high contagion risk of financial impacts. Such transmission was seen during the Asian Financial Crisis and strongly implies the need to coordinate action. The dangers of not taking action are substantial. ADB calculates that South-East Asia's GDP will be 11% lower by 2100 under a business-as-usual emissions scenario¹³.

Many **acute climate hazards** will be abrupt and physically catastrophic, posing a direct risk to human life, causing physical damage and disruption to businesses and economies. Extreme weather can also have significant impacts on sectors and households physically damaged or interrupted by bad weather.

The Dutch central bank (DNB) undertook climate physical risk stress tests subjecting bank balance sheets to severe floods events likely to occur once in 200 and 1000 years, in line with norms for shocks in financial supervisory frameworks. These lead to losses of between EUR20-60 billion; financial institutions faced several billion euros' exposures to their balance sheets.¹⁴ Many AMS have already experienced the devastating effects of extreme weather. Events such as Typhoon Haiyan (2013) and Cyclone Nargis (2008) are increasing in frequency. With large populations and economies located in low-lying or below sea-level locations, banks and insurers' risks are clear.

The longer-term, **chronic physical impacts** of climate change are equally malignant, even if their immediate manifestations can at first appear more benign. Irregular rainfall or temperature can reduce the output of economies with large agricultural sectors. This can have material financial impacts in industries such as fisheries and agriculture. An International Panel on Climate Change (IPCC) report on climate change explains the impacts on key economic sectors and services.¹⁵

The cost of chronic impacts is also manifest in the cost of protective efforts. According to a study by Ng and

Mendelsohn (2005), the annual cost of protecting Singapore's coast is estimated to range from USD0.3-5.7 million in 2050 to USD0.9-16.8 million by 2100.¹⁶ However, Singapore is an advanced economy with a relatively short coastline of only 193 kilometres. Countries such as Myanmar (with about 2,300km of coastline) and the Philippines (36,289km of coastline) are significantly more exposed and have communities more dependent on the physical integrity and functioning of coastal natural capital. There is also close interaction between chronic and acute risks; sea-level rise further increases vulnerability to cyclones, and frequent extreme weather events will reduce countries' ability to adapt to long term climatic changes.

Overall, physical climate risks can endanger the financial system through several mechanisms. Countering these requires central banks to facilitate investments (through regulation, credit enhancement and technical assistance etc.)¹⁷ to improve resilience to climate change, governments to develop climate-smart agriculture practices to reduce economies' vulnerability, and local banks to evaluate their investments to understand and manage mitigation risks. Climate vulnerability is associated with an increased cost of sovereign borrowing. Sovereign bond issuers pay a yield premium of around 275 basis points in highly exposed economies, 155 basis points in South-East Asian economies, and 113 basis points for emerging market economies overall. On the other hand, resilience to climate risk is statistically significant in reducing bond yields worldwide, although with much smaller magnitudes.¹⁸

Transition Risk

Transition risks result from the transition to a carbon-neutral economy and the possible effects on the value of financial assets and liabilities. The transition to a low-carbon economy will require substantial upfront investment, generating new commercial opportunities and redirecting capital flows away from certain previously favoured assets, locations or modes of production (such as fossil-fuel-based

electricity generation or commercial property in flood-prone areas). Similarly, **technological advances** driven by efforts to improve energy efficiency or greenhouse gas emissions intensity of existing economic processes can render some technologies and business models obsolete. Transition risk will be felt heterogeneously across economies, depending both on businesses' level of sustainability alignment and their adaptive capacity. Given the constraints on their business models, there is a need to increase SMEs' adaptive capacity to reduce their exposure to transition risks. This is particularly vital in ASEAN, where SMEs contribute 66% of employment and 42% of GVA but have limited resources to invest in climate mitigation and adaptation or obtain specialist advice to help them develop appropriate risk management strategies.¹⁹

It is often assumed that transition risks from **climate policy** unfold gradually as governments introduce them in a phased and consultative manner. However, external agents can revise their policies quickly, materially impacting upon ASEAN countries. For example, critical investors into ASEAN economies, including Japanese²⁰ and Korean banks,²¹ have signalled their disquiet at continued investment into coal, echoing European banks' actions. There is a risk that schemes relying on ongoing project finance could experience dramatic changes in financial terms, and a risk of stranded assets and counterparty risks for local ASEAN banks (a risk they are starting to address; see UOB's, DBS's and OCBC's (Singapore) and CIMB's (Malaysia) decisions to end coal financing)²² and the manifestation of acute transition risks such as large-scale write-downs of capital for stranded assets.²³

Similarly, developments such as the EU Sustainable Finance Taxonomy have provided Europe's institutional investors with clear guidelines on how to measure the alignment of their portfolios with the Paris Agreement. As Paris Agreement-aligned investing becomes normalised through internal investor policies, the risk of stranded assets in ASEAN may increase.

High dependency on oil exports will leave Indonesia and other ASEAN

countries vulnerable to changes in oil price. In their book *Central Bank Policy: Theory and Practice*, Bank Indonesia Governor Perry Warjiyo and Solikin Juhro articulate how the discovery of oil fields provided a windfall in state receipts that could be used to stimulate economic activity through fiscal spending.²⁴ However, the additional export revenue, which expanded the total money supply, also required a reflective monetary expansion to absorb excess liquidity that could otherwise have driven inflation. Reduced oil

imports may require fossil fuel exporting countries to rapidly contract fiscal spending in line with the loss of state receipts – 22.6% of Indonesian government revenue came from fossil fuels 2011-2016, and Brunei’s oil and gas industry contributes 60% of GDP.²⁵

Due to the uncertainties over transition pathways and policy choices, the financial cost of transition is challenging to calculate. Adaptation investment needs for ASEAN will be significant due to the high physical risk exposure

outlined above. Mitigation efforts in South-East Asia to meet the goals of the Paris Agreement (improving energy efficiency, halting deforestation, replacing carbon-intensive fuels) are calculated by ADB to cost the region USD2bn /year or 0.6% combined ASEAN GDP. However, these high costs should be compared to the cost of inaction – under a global business-as-usual scenario, South-East Asian GDP is predicted to contract 11% by 2100.²⁶

How Central Banks Can Build Back Better

The preceding sections laid the foundations for understanding how COVID-19 has impacted financial stability and how the ensuing crisis is also an opportunity to reconsider monetary policy from a sustainability perspective. This section outlines the tools that are being used to respond to the pandemic by central banks and proceeds to suggest a method through which sustainability can be incorporated into specific policies and tools.

This is positioned considering ASEAN Central Banks' mandates, which require them to:

- keep inflation below a target level,
- manage the exchange rate,
- ensure financial stability by monitoring systemic risks, and
- supervise individual banks (implementing BASEL III) and insurers to ensure they are operating within the prudential framework.

As the ASEAN Taskforce's *Report on the Roles of ASEAN Central Banks in*

Managing Climate and Environment-related Risks (the Taskforce Report) outlines, sustainable or socioeconomic development is often a secondary objective for ASEAN Central Banks.²⁷

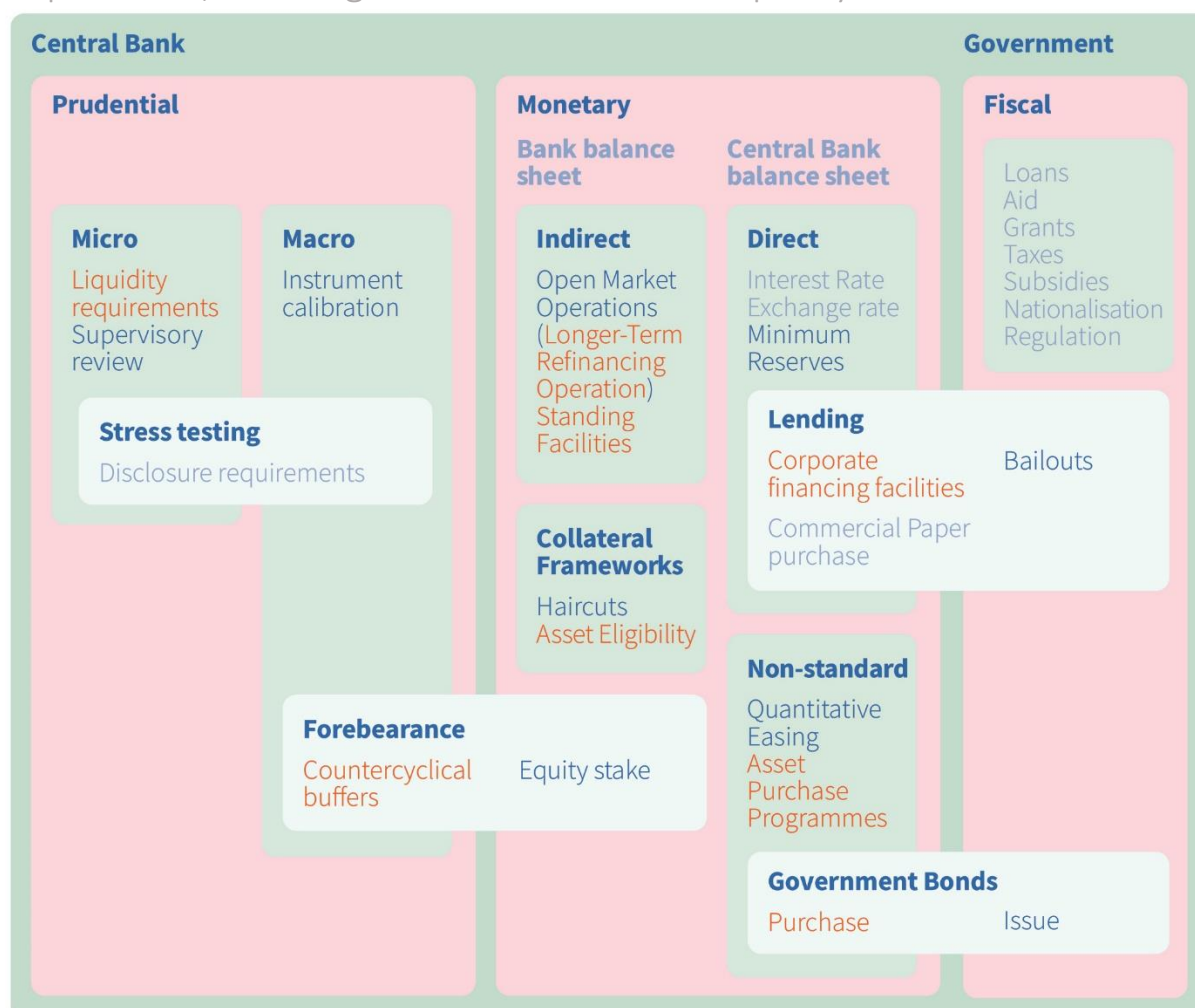
ASEAN Central Banks' broad mandates allow them to pursue development initiatives and shape broad national policy objectives, several have also developed sustainability strategies or frameworks, which enables mainstreaming of sustainability in wider operations. Furthermore, even central banks which do not have explicit or implicit sustainability objectives can still consider climate-related physical and mitigation risks when executing their roles in safeguarding the economy.²⁸

Central banks have a range of monetary and prudential policies at their disposal to help fulfil these mandates. Figure 2 below depicts the tools available to them and how these interact with the national government's fiscal policy. Figure 2 highlights the tools commonly used in the COVID-19 response; see

Figure 4 for those which can best incorporate sustainability. Individual CB's responsibilities will vary depending on the exact remit. Instruments highlighted in orange are those most relevant to the COVID-19 response. Those in grey are less relevant to this discussion paper.

In the context of the COVID-19 pandemic, central banks' main roles have been to provide monetary stimulus to safeguard the stability of the financial system, support fiscal stimulus through purchasing government debt and directly stimulate real-economy activity, for example, through corporate asset purchases. Most of the measures and instruments outlined in Figure 2 have been used in response to the pandemic to maintain liquidity and credit flows. The emphasis has been on enabling the continued functioning of the real economy. This is shown by the SME weighting of several instruments across the world.²⁹ These measures are also designed to complement or support governments' fiscal policies.

Figure 2: Conceptual illustration of the role of central banks and supervisors, showing interaction with fiscal policy.



Prudential Policy during COVID-19

Prudential regulation under the Basel Agreement ensures that banks have adequate Tier 1 capital (chiefly bank equity and retained earnings) to finance their exposure to loan losses and enough liquidity coverage (easily liquidated assets such as government bonds) to meet their borrowers' typical near-term funding needs. During the pandemic, there has been a loosening of prudential requirements by central banks to avoid the withdrawal of liquidity and sharp reduction in inter-bank lending that occurred during the GFC.

Microprudential Regulation

39% of CBs have loosened microprudential regulations in response to the pandemic, according to Dikau et al.'s *'Toolbox of Sustainable Crisis Response Measures for Central Banks and Supervisors'* (2020).³⁰ This can be enacted quickly, increasing commercial banks' liquidity allowing them to continue providing credit to their customers. The Banco Central do Brasil relaxed the capital requirements for smaller FIs; their modelling suggested this potentially releases BRL1.3bn of liquidity that may allow up to BRL16.5bn in credit provision.³¹ The Banco Central de Chile made liquidity regulations more flexible by expanding the eligible currencies for meeting foreign currency reserve requirements and relaxing the liquidity coverage requirement (LCR) on

a case-by-case basis.³² The capital conservation buffer (CCB), which stands at 2.5% of risk-weighted assets, has been reduced by nine CBs. Whilst facilitating liquidity flows and ease of lending, this can increase risk exposures – many banks have set expectations for the use of the additional capital from these buffers; to support the economy and not for capital distributions (dividends and share buybacks). This follows Basel standards which dictate that banks that do not maintain their CCB standard will face automatic constraints on income and dividend distributions.³³

Many regulators have asked banks to curtail payments of dividends and discretionary bonuses to senior bank staff until the end of 2020 and to increase the available Tier 1 capital

needed to provide for any increase in losses in the real economy.

Applicability for Build Back Better:

To direct liquidity flows to the most sustainable activities, central banks can vary capital requirements according to an FI’s climate risk exposure. Capital buffers would be set higher for those with greater exposure to unsustainable activities because these FIs would be at greater risk of default. Conversely, capital requirements could be discounted according to an FI’s green lending. In 2019 the Hungarian central bank, Magyar Nemzeti Bank (MNB), did so, announcing a preferential capital requirement against balance sheet exposure to energy-efficient housing loans.³⁴ The discount reflected the reduced risk of default on green mortgages.³⁵

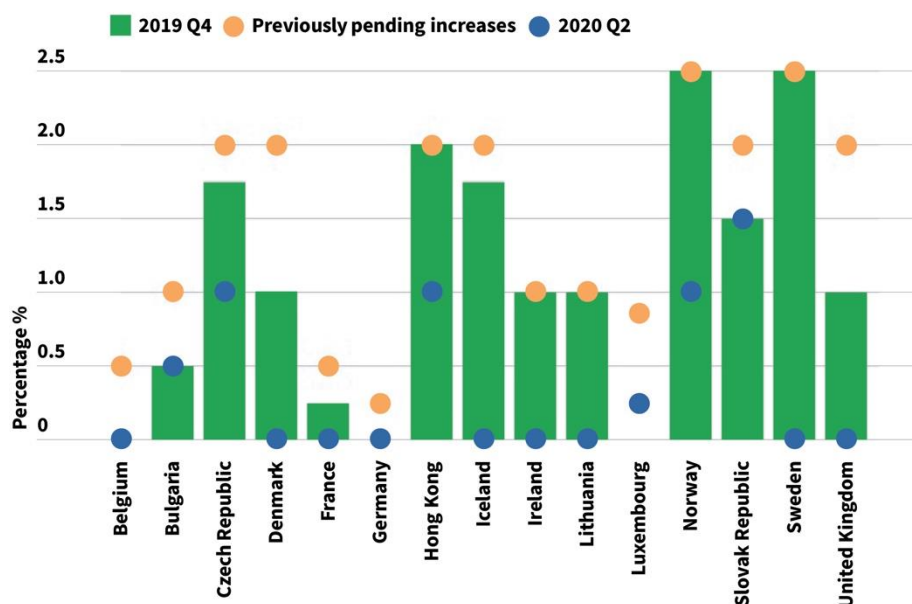
Macroprudential Regulation

Loosening macroprudential regulation has been used by 21% of CBs during the crisis, according to Dikau et al. (2020).³⁶ Commercial banks and other FIs are required to hold capital buffers directly proportional to the size and riskiness of their lending activities – the Countercyclical Capital Buffer (CCyB) aims to protect the banking sector from periods of excess aggregate credit growth that have often been associated with the build-up of system-wide risk. Its countercyclical nature makes the CCyB the easiest to deploy in a crisis; CBs can decrease the level of the CCyB immediately to maintain the flow of credit in the economy.³⁷ Figure 3 shows the widespread and coordinated efforts by many central banks to reduce the capital buffer by between 0.5% and 2% in the first two quarters of 2020 to increase capital availability. CCyBs vary

among ASEAN CBs, with some such as Bank Indonesia holding it at zero prior to the crisis, whereas others held 2.5% buffers to draw down on.³⁸

Dikau et al. (2020) warn that such countercyclical release can be potentially environmentally damaging since the new bank lending engendered by the increase in available capital is not necessarily directed at sectors most in need.³⁹ This can be countered by excluding or penalising lending to sectors with the highest transition risk. This raises the wider issue of climate risks not being adequately priced into economic risk management – an issue that is beginning to be addressed by climate disclosures and stress testing.

Figure 3: Effective CCyB rates before and after the COVID-19 Shock



Source: Adapted from Reinhardt & Hombeck (2020) *With a little help from my friends*⁴⁰

Applicability for Build Back Better

Regulators wishing to safeguard macroprudential stability should calibrate regulatory instruments to account for systemic financial risks like climate-related risks. This can be informed by using climate scenarios in improved stress testing and disclosure requirements; see below. FIs, and their counterparties, will need time to collect

information needed to measure and manage such risks. When developing these datasets, priority should be given to sectors and organisations that are most material. New macroprudential instruments can be leveraged to reduce risks identified by stress tests, such as the implementation of a countercyclical carbon capital buffer, acting similarly to the CCyB to give climate-sensitive

resilience to banks or setting exposure restrictions for certain assets or sectors.⁴¹ Risk weighting of assets can be made more sensitive to climate risk by giving higher risk weightings to exposed sectors or by reducing risk weighting of green assets, as done by the People’s Bank of China (PBOC)⁴²

Increasing prudential involvement in policy could also take the form of

ensuring that current regulation does not have unintended consequences on the financing of low-carbon transitions. For example, Basel III stipulates a higher capital requirement for long-term credit, which disproportionately impacts sustainable finance projects.⁴³

Stress Testing

Many central banks have delayed or adjusted regular microprudential stress testing to limit the immediate regulatory burden on banks and FIs. Central banks are expected to resume full macro- and microprudential stress testing this year. The delay may have allowed time for the evaluation of stress testing's coverage; in November, the Bank of England (BoE) and the UK Treasury announced mandatory climate disclosures for most financial institutions by 2025,⁴⁴ in line with the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD).⁴⁵

Several CBs (European Central Bank, BoE) carried out ad hoc, macroprudential stress testing in response to the crisis.⁴⁶ These tests were used to inform monetary and prudential policy responses.

Applicability for Build Back Better:

Central banks can take this opportunity to integrate climate into both their macro and microprudential stress testing regimes. Climate stress testing allows CBs to evaluate the system's risk exposures and increase resilience to possible acute physical and transition shocks in the future; it can also inform the CB's capital requirements and monetary policy. Climate stress tests have been announced by the European Central Bank (ECB),⁴⁷ BoE,⁴⁸ Banque de France⁴⁹ and Monetary Authority of Singapore (MAS).⁵⁰ Such stress tests could apply the NGFS's recently published scenarios to assess banks' exposure to climate mitigation and physical risks over a long (30 year) time frame.⁵¹ The ACPR asked French banks and insurers to undertake climate stress tests using the NGFS scenarios. The results from the disorderly transition scenario suggest a three-fold rise in the cost of risks for sectors like mining and

refineries, much worse than the cost increase from COVID (although French banks have relatively little exposure to such sectors).⁵² Climate stress tests would also provide supervised banks and FIs with actionable information to recalibrate their lending decisions.

ASEAN CBs are making progress on disclosure requirements. Bank Negara Malaysia (BNM) recently introduced disclosure requirements for commercial banks.⁵³ Bangko Sentral ng Pilipinas's (BSP) 2020 *Sustainable Finance Framework* introduced disclosure requirements for supervised banks – on their sustainability strategy, finance activity, environmental & social risk management system, risk exposures and impacts and sustainability initiatives.⁵⁴ However, ASEAN FIs currently show a relative lack of disclosure and progress on portfolio level climate scenario analysis; this may increase liquidity risks.⁵⁵ Following the TCFD recommendations, mandating climate risk disclosures as the BoE has done will allow supervisors to monitor climate risk exposure more comprehensively and discuss how these risks are managed.

A key difference between climate risks and many other credit risks are that the future liabilities are informed by forward-looking climatic/energy risk models rather than backwards-looking analysis of outturns from credit risk. In the long term, results from climate risk models could inform risk-weightings and capital allocation.

Monetary Policy during COVID-19

To increase the real economy's access to finance and also reduce the cost of finance, central banks have used monetary policy instruments to expand liquidity and credit supply in the economy. Central banks can implement monetary policy directly through their regulatory powers or indirectly by influencing money market conditions as the issuer of central bank money (currency in circulation and balances with the central bank). Whilst direct policy is more frequently used in emerging market economies, both types can be used concurrently.

The term “direct” refers to the one-to-one correspondence between the instrument (such as a credit ceiling to a sector) and the policy objective (such as restricting domestic credit into the sector).⁵⁶ Direct instruments set or limit either prices or quantities through regulations and may also be used to allocate credit, and can include:⁵⁷

- Direct controls on interest rates (e.g., minimum and maximum interest rates, preferential rates for certain loan categories).
- Credit ceilings (at an aggregate level or on individual banks).
- Directed lending policies (e.g., preferential central bank refinance facilities to direct credit to priority sectors).
- Window guidance/moral suasion to promote priority sectors.

On the other hand, indirect monetary policy tools such as open market operations (OMOs) and standing facilities operate through the money market and can be described as market-based instruments. These are explained in more detail below. Nonstandard policies of asset purchase and quantitative easing have also swelled central bank balance sheets across the world.

A recent NGFS report, *Adapting central bank operations to a hotter world*, sets out a framework and assesses the feasibility of how central banks could apply their monetary policy operations to manage climate risks.⁵⁸

Indirect Monetary Policy Instruments

Open market operations are an active method of liquidity supply, initiated by the central bank and offered to a wide range of counterparties but settled through open auction mechanisms. In contrast, standing facilities provide passive liquidity supply in a bilateral arrangement agreed between the central and commercial banks.⁵⁹ Dikau et al. (2020) found 48% of central banks have used indirect monetary policy instruments such as OMOs and standing facilities in their COVID-19 response.⁶⁰

Open Market Operations

During open market operations, the CB lends short-term to FIs to change the commercial banks' offered interest rates. OMO responses include PBOC injecting RMB3.33 trillion (gross) liquidity into the banking system via OMOs (reverse repos and medium-term lending facilities)⁶¹ and the Bank of Korea's (BoK) provision of unlimited OMO liquidity via a weekly repo facility at set interest rates.⁶²

Longer-term refinancing operations (LTROs) are used to support liquidity requirements and reduce sovereign debt yields. The ECB has introduced additional LTROs to meet liquidity needs and support euro market operating, followed by pandemic emergency longer-term refinancing operations (PELTROs) with an interest rate 25 basis points below the average refinancing rate, providing additional longer-term financing to banks.⁶³ These have been continued into 2021 due to the resurgence of the pandemic.⁶⁴

Standing Facilities

Standing facilities have been widely used to target financial support to specific sectors, specifying how money from the facility should be lent on. BoK established a Corporate Bond-Backed Lending Facility, a standing lending facility that allows ready access to credit using eligible corporate bonds as collateral.⁶⁵ The Bank of Japan's (BoJ) Special Funds-Supplying Operation facilitates SME financing.⁶⁶ Further incentivisation was provided by expanding eligible collateral to include 'private debt' and applying a favourable interest rate to FIs' current account balances corresponding to loans provided. The BoE introduced the "Term Funding Scheme with additional incentives for SMEs" (TFSME) in which lending to SMEs generated greater borrowing allowances, reinforcing transmission of low-interest rates to the real economy.⁶⁷ The increasing numbers of CBs introducing term funding schemes show they are widening their toolkits and turning their attention to the longer term.⁶⁸

As the pandemic has progressed and horizons have shifted to the long term,

CBs have established innovative standing facilities to facilitate recovery. This is shown by the increased funding-for-lending outlined above. In November, the BoJ introduced the special deposit facility to tackle the declining profitability of regional banks. Those that announce mergers or acquisitions are rewarded with higher interest rates of 0.1% (rather than -0.1%) in the special deposit facility. This measure is likely to spark long term restructuring of the sector.⁶⁹

Applicability for Build Back Better:

If these instruments for stimulating the real economy are calibrated without sustainability considerations, they could potentially lead to a build-up of more assets with high carbon bias, further increasing FI's exposure to transition risks on their balance sheets. Indirect monetary policies could support the reduction of climate-related risks through the exclusion or tilt against climate/transition risk exposed assets from the schemes. For OMOs, which are used in many AMS, climate consideration could be integrated into the benchmark allotment that FIs can access through these operations. This approach could also be used in refinancing and liquidity operations by other monetary bodies.

Both standing facilities and open market operations can also be made more sustainable through changes to collateral frameworks. Collateral frameworks determine the weights and eligibility of different assets for use as collateral for short-term lending by CBs to FIs. Short term-lending supplies liquidity to the financial system and transmits changes in the policy interest rate. Haircuts are applied to the face value of the asset to adjust the amount the CB will lend the FI, reflecting the liquidity and riskiness of the asset. Entire classes of assets can be added or withdrawn from the list of eligible assets.

Collateral Frameworks

Changes to the collateral frameworks were used in 29% of responses analysed by Dikau et al. (2020).⁷⁰ This entails reducing the haircut so that more can be borrowed for the same collateral or expanding the range of assets that are eligible to be used as collateral. For example, the Banco Central de Chile expanded its framework to include corporate securities as collateral for its liquidity operations and high-rated commercial loans as collateral for funding facility operations. The ECB temporarily reduced its haircut by 20% in its LTRO facility, increasing its risk tolerance to aid the Eurozone economy.⁷¹ Other CBs have made similar adjustments – the Bank of Korea's collateral ratio has been lowered from 70% to 50%, alongside a broadening of eligibility.

Applicability for Build Back Better:

Expansion of collateral frameworks to include green assets can be used to incentivise sustainable investment. MAS's new Term Facility accepts residential property loans⁷² as collateral from certain banks. This facilitates increased lending to households and corporates,⁷³ demonstrating how targeted action on collateral frameworks can change finance markets. The ECB recently expanded its framework to accept sustainability-linked bonds as collateral for Eurosystem credit operations and asset purchases.⁷⁴

Furthermore, the exclusion of assets with high climate risks as acceptable collateral can also help to reduce the risk to a central bank's balance sheet.⁷⁵ Negative screening is one of the most common sustainable portfolio management tools used by central banks and is used chiefly in CB's equity holdings.⁷⁶ In addition to positive and negative screening, haircut adjustments can be made to better account for climate-related risk. The NGFS (2021) *Hotter World* report suggests the most impactful haircut adjustment to be one that uses a sliding scale to penalise and reward issuers according to their climate-related riskiness, with minimal consequences for monetary policy effectiveness.⁷⁷

Direct Monetary Policy Instruments

Direct instruments have seen widespread expansion during the pandemic as CBs maintain liquidity flows to the real economy.

Reserve requirements

Reserve requirements can be reduced, thereby increasing the funds available to banks for lending. Normally these are set in a market-neutral approach with a percentage of all customer deposits being placed with the central bank. But lower reserve requirements could be applied to the desired form of lending.⁷⁸ To increase MSME's access to credit during the pandemic, the Banco Central do Brasil allowed FIs to deduct up to 30% of their reserve requirements on deposits used to provide credit to MSMEs, which they project expands lending to MSMEs by BRL 55.8 billion.⁷⁹

Applicability for Build Back Better:

Differentiated reserve requirements, as applied to MSMEs in the initial response, could be used to direct recovery spending towards more sustainable lending. For example, Lebanon's CB, Banque du Liban, differentiates reserve requirement ratios according to the amount of bank lending flowing to renewable energy and energy efficiency projects.⁸⁰

Corporate financing facilities

Corporate financing facilities provide businesses with money on a short-term basis without any need for collateral. These provide liquidity directly to the real economy and can be targeted to specific industries, making them well suited to a crisis that has disproportionately impacted SMEs and industries such as the hospitality and transport sectors.

Corporate financing facilities and commercial paper (CP) purchase increase the debt holdings of the central bank. As commercial paper markets froze across the world, many CBs established emergency commercial paper purchase programmes (or revived

GFC programmes⁸¹) to supply short term funding. BoJ doubled its CP and corporate bonds purchases relative to the GFC, while BoE established a purchase programme ten times larger than that of the GFC.⁸² They have also been used in a targeted fashion to assist priority sectors. The Central Bank of Nigeria provided N150bn of targeted credit facilities for households and SMEs; priority was given to lend to businesses in the health sector.⁸³

There is an interesting example of one (albeit government rather than central bank operated) instrument used to reduce climate mitigation risks. Canada's Large Employer Emergency Financing Facility (LEEFF) provides 5-year bridge loans of CAD60m and above.⁸⁴ Access to the LEEFF requires companies to submit TCFD-related disclosures of their climate-risk strategies, limits executive pay rises, and the loans are subject to a high interest rate. Uptake has so far been limited (two loans approved in 2020 and three in 2021⁸⁵) since finance is also available to firms through the Bank of Canada's asset purchasing programme on less onerous terms.⁸⁶ This demonstrates the need for more thought and consistency across measures if CBs want to take the opportunity of the current upheaval to embed environmental considerations into operations.

Applicability for Build Back Better:

The targeting of corporate financing facilities to certain industries demonstrates their suitability for targeting sustainable sectors in the recovery effort. The Reserve Bank of Fiji has, to date, been the only CB to explicitly calibrate a monetary response to sustainability in expanding the Import Substitution and Export Finance Facility, which provides credit at concessional rates to certain businesses, including renewable energy businesses.⁸⁷

Despite the low uptake of the LEEFF, attaching disclosure requirements to facilities should not be discounted as a way to stimulate sustainable investment. If such requirements are attached consistently to all financing facilities (rather than lenders of last resort) offered by the CB and government with

enough flexibility to ease the burden of reporting, there is potential for the CB to influence risk awareness and management in the real economy.

Non-Standard Instruments

During the pandemic, central banks (and other investors) have been asked to greatly expand purchases of government and corporate bond issuances into their **quantitative easing (QE)** or **asset purchase programmes (APPs)**. At least 18 central banks have carried out asset purchases in their responses.⁸⁸ Such action provides immediate liquidity, indirectly funds fiscal policy and restores investor confidence.⁸⁹ These non-standard instruments expand the central bank's balance sheet by increasing the money supply to buy up high-quality financial assets (government and some commercial bonds) from the secondary market. QE is used to boost the economy through credit creation when the bank rate cannot be further reduced. Because of the near-zero interest rates in many OECD countries, QE programmes have been expanded. The BoE holds GBP895bn⁹⁰ under its Asset Purchase Facility. The ECB's Pandemic Emergency Purchase Programme holds EUR1,034bn (as of 7th May 2021).⁹¹ Other central banks have established APPs in response to the pandemic. BSP has directly purchased PHP300bn of government securities (about 1.5% of GDP) through a repurchase agreement and purchased PHP500bn on the secondary market, totalling 45% of the country's domestic borrowing.⁹² Similarly, in April, Bank Indonesia made its first primary market purchases of government securities at IDR4.65trn (USD302m).⁹³ The Bank of Papua New Guinea also has a programme.⁹⁴ Primary market purchasing (monetary financing) is not permitted in many central banks as it increases the risk of heightened inflation – secondary market purchase is more widely used.

Applicability for Build Back Better:

There is the potential for a sustainability focus in the types of bonds purchased in QE programmes. As part of its COVID-19

response, Sweden's Riksbank expanded its SEK700bn (USD82bn) QE programme to include sovereign and municipal green bonds. Separately, it made inclusion in its corporate bond QE programme conditional on issuers complying with sustainability standards.⁹⁵ In 2019, Sweden's Riksbank also applied climate risk-weightings to a portion of its SEK500bn forex reserves. This resulted in it excluding bonds from

the highly fossil fuel-exposed provinces of Alberta in Canada and Queensland and Western Australia.⁹⁶ QE is a less common CB practice in ASEAN. But these considerations could be used by Indonesia and the Philippines that engage in QE or Singapore that holds foreign corporate bonds.⁹⁷

Ultimately, recovery efforts must align with longer-term CB and government

policies. CBs must recognise and reflect the growing understanding of climate risk in their innovative crisis intervention and recovery efforts. All aspects of CB monetary and prudential policymaking could be tilted to mitigating climate risks, and we would argue that there are substantial long-term societal benefits to considering these opportunities.

Conclusion

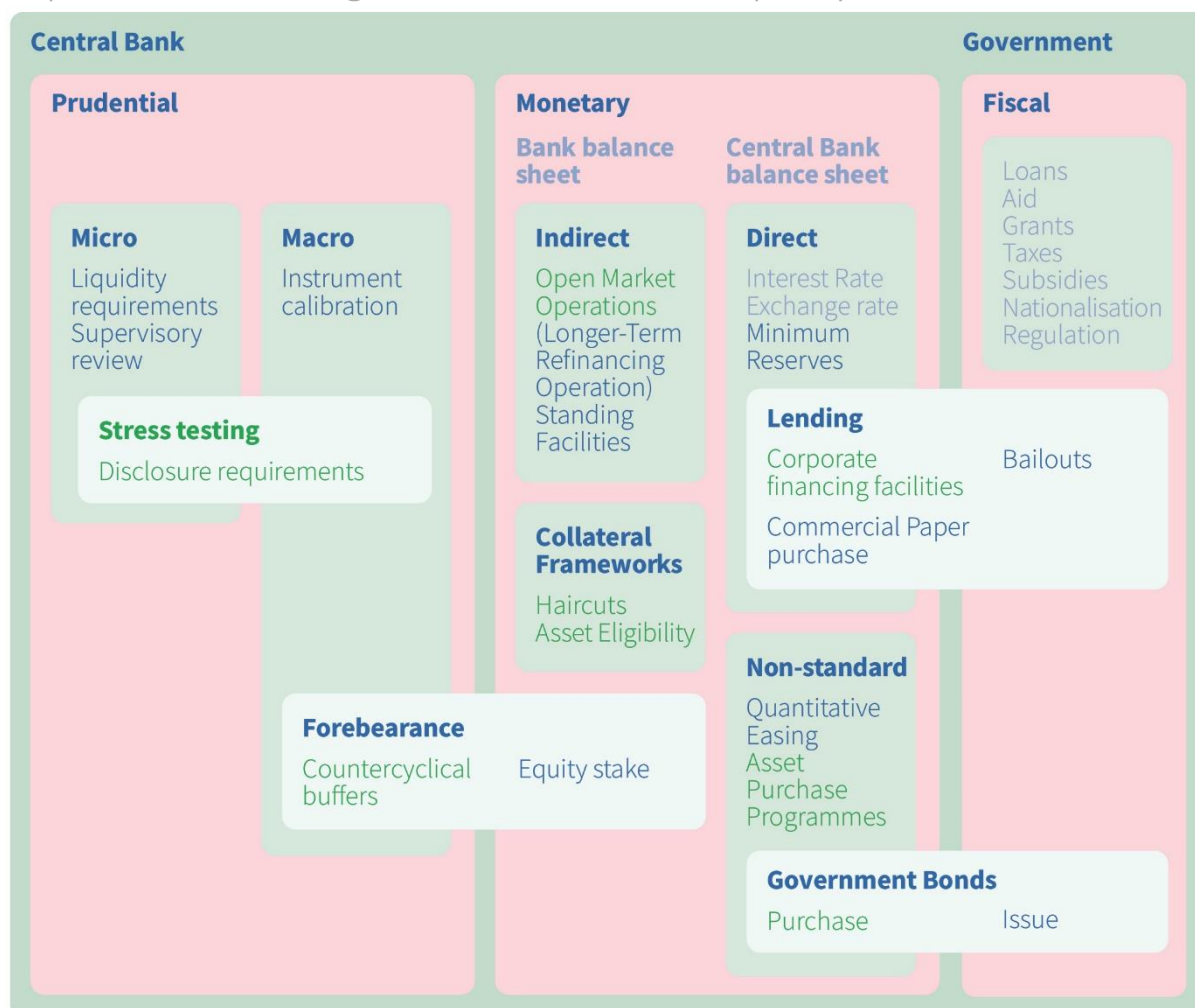
This paper aims to identify the tools used during the COVID-19 pandemic, which are the most suitable for climate-risk mitigation and can be most easily repurposed. CBs' response to COVID-19 has showcased their capacity for fast, innovative action. Policies used by CBs during the pandemic - to protect businesses, maintain economic stability and stimulate recovery - could protect AMS from future systemic risks – particularly climate risks.

We very much agree with the findings of the ASEAN Taskforce Report, which called for the banks, under the behest of central banks, to supply actionable information regarding their exposure to climate-related financial risk so they may better manage it. But even whilst gathering this information, central banks can still take 'no regrets' actions to enhance sustainability through their policy toolkit.

Whilst sustainability considerations can be applied to almost all of a central

bank's toolkit, certain policies are likely to be more impactful and easier to implement over the next few years. Figure 4 below identifies our assessment of the policies and tools used by central banks which could be repurposed to mitigate climate risks over the near term. Individual CB's responsibilities will vary depending on the exact remit. Instruments in green have a high potential for incorporating sustainability factors.

Figure 4: Conceptual illustration of the role of central banks and supervisors, showing interaction with fiscal policy.



Short-term

As referred to above, introducing disclosure requirements is an immediate priority for central banks looking to develop their understanding of climate-related risks. These can be developed in collaboration with governments to ensure alignment with corporate disclosure requirements. Other ASEAN CBs could follow the example of BNM,⁹⁸ MAS⁹⁹ and BSP¹⁰⁰ for their introduction.

The ASEAN Taskforce Report indicates that prudential action is more palatable to central banks than the 'greening' of monetary policy due to the lack of evidence and precedent for such actions.¹⁰¹ However, monetary policy tools played an important role in CBs' response to the pandemic crisis both globally and within ASEAN¹⁰² and could play a vital role in tackling the climate crisis. One important matter is ensuring that liquidity provision through asset purchases and collateral frameworks do not increase climate-related risk exposure. Better still, they should encourage investment in sustainable alternatives – the NGFS (2021) has suggested positive collateral screening and tilting asset purchases to be among the most impactful measures in climate mitigation.¹⁰³

There is also a risk that fiscal stimulus packages introduced by the government and supported by central banks (through their purchase of government debt) to rescue businesses could worsen physical climate or transition risks. **CBs should examine the climate-related risk of the assets they buy for policy purposes like exchange rate management or accept as**

collateral and ensure these assets, and the currency/economic system they support, are resilient to and not worsening future climate and transition risks. Some countries (like France) have tied rescue package in high emissions sectors, like aviation, to help long-distance domestic transport make modal shift from aviation to rail to help transition to a lower emissions economy.¹⁰⁴ This *Just transition* policy balances the socioeconomic need to retain employment in important sectors to their reform.

For this reason, in Figure 4, we suggest ASEAN Central Banks investigate whether:

- *open market operations* are tailored to support bank lending (both short and medium-term) targeted specifically to businesses that reduce climate risk exposure;
- *haircuts* and *asset eligibility* for collateral could be reviewed through a climate-related risk lens;
- *corporate financing facilities*, where the CB buys equity or bonds directly from issuers, could also be tilted to encourage green investment.

Adjustments to collateral frameworks may reduce the volume of central bank lending to banks, and so must be individually assessed. However, the NGFS suggests the implications for monetary policy effectiveness of the options suggested above may be negligible compared to more stringent exclusionary policies¹⁰⁵ and therefore easier to implement.

Medium-term

In the medium-term (the next 2-5 years), many central banks and regulators plan to require greater disclosure of climate risks in their countries' financial systems. This will be both for individual banks and the entire financial system's exposure using forward-looking risk assessments.

Climate-risk scenarios and climate-related stress tests (already being taken forward in Singapore) are an important medium-term policy in the prudential regulation toolkit. They are a departure from risk managers' usual analysis based on historical data and instead model future risks using a range of plausible climate-risk scenarios *in anticipation* of these events. The data and models are still being developed. Still, the stress tests can be iterated and improved over time as the evidence base and tools become more available and more sophisticated. The results will provide central banks with quantitative insights into the comparative risks faced by different financial institutions within an economy and can be used to set prudential guidelines. Where possible, results from these risk assessments should be published – perhaps based on TCFD recommendations.

Beyond disclosure, research needs to be done in testing the efficacy of using prudential regulation concepts such as climatic-systemic risk buffers. These capital requirements could be calibrated according to the climate risks on banks' balance sheets and so provide a sophisticated approach to climate-related risk mitigation.

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