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## Assessing the effectiveness and impact of central bank and supervisory policies in greening the financial system across the Asia-Pacific<sup>1</sup>

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<sup>1</sup> This presentation was prepared for the conference. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the event.

# Assessing the Effectiveness and Impact of Central Bank and Supervisory Policies in Greening the Financial System across the Asia-Pacific

## Findings from the Second APAC Central Bank Sustainability Survey 2021

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### Abstract

This article presents the findings from the second Asia-Pacific (APAC) Central Bank Sustainability Survey, shedding light on (i) details of sustainable finance measures that have been implemented by central banks and financial supervisors (CBFS) in the region; (ii) the rationales and processes underpinning their adoption; (iii) whether and how CBFS assess the effectiveness, efficiency, and equity of adopted measures; and (iv) the capacity building needs of CBFS in APAC. A growing number of CBFS across APAC are paying due attention to climate change and other environmental risks. Many have already started to develop or implement various sustainable finance measures, or are planning to do so going forward. For the time being, most activities pertain to their own governance and strategy as well as micro-prudential supervision. Most CBFS plan to scale up their sustainable finance activities across a range of areas. While the majority of CBFS have started to assess the effectiveness of the implemented measures, a more systematic assessment is held back by a self-perceived lack of expertise and data availability constraints. CBFS cited a number of training needs with respect to achieving climate and environmental objectives with respect to their institutional mandates.

Keywords: sustainable finance, central banks, financial regulators, financial supervision, Asia and the Pacific, climate change, nature loss

JEL classification: G1, G2, G3, Q01, Q5

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## 1. Introduction

The macroeconomic and financial impacts and risks associated with climate change and nature loss have been widely recognised. A consensus has emerged among central banks and financial supervisors (henceforth “CBFS”) that they need to address climate and other sustainability risks and support the scaling up of sustainable finance (e.g., NGFS, 2019, 2021a). It is also acknowledged that doing so is part of their mandate (Dikau and Volz, 2021). CBFS have a potentially large number of monetary, prudential and other tools at their disposal to affect sustainability outcomes (Dikau et al., 2020a, 2020b).

A broader contour of a new framework for mitigating climate-related and environmental risks and governing sustainable finance is emerging. This includes the addressing of data gaps; enhancing market practices and transparency through standards, taxonomies and disclosure; integrating climate-related and environmental risks into financial stability monitoring and micro- and macroprudential supervision; the analysis of climate-related risks through scenario analysis and stress testing; adjusting monetary operations to account for sustainability impacts; and integrating sustainability factors into own-portfolio management. Nevertheless, there is still considerable discussion around the specific sustainable finance policies and instruments that should be used and how exactly they should be implemented. Moreover, given that most CBFS have only very recently started to actually implement sustainable finance policies and instruments, there is a lack of understanding of their effectiveness and impact.

Against this backdrop, this article seeks to shed light on the factors that have led CBFS across the Asia-Pacific (APAC) region to adopt (or consider adopting) specific sustainable finance measures; if and how they assess the impact of the adopted measures; and what the potential training needs of CBFS are. The article presents the main findings from the second APAC Central Bank Sustainability Survey.<sup>5</sup> The survey was jointly carried out by the South-East Asian Central Banks (SEACEN) Research and Training Centre; the Centre for Sustainable Finance at SOAS, University of London; and WWF-Singapore between June and August 2021 with financial support from the International Network for Sustainable Financial Policy Insights, Research, and Exchange (INSPIRE), a research partner of the Network of Central Banks and Financial Supervisors for Greening the Financial System (NGFS). The survey was sent to the 35 central banks and monetary authorities that are members, associate members or observers of the SEACEN Centre and two other monetary and financial authorities in APAC.<sup>6</sup> The survey had a response rate of 70%. The aim of this second survey was to better understand (i) details of sustainable finance measures that have been implemented; (ii) the rationales and processes underpinning their adoption; (iii) whether and how CBFS assess the effectiveness, efficiency, and equity of adopted measures; and (iv) the capacity building needs of CBFS in the region.

The survey data indicates that most CBFS across the APAC region have implemented or are starting to implement sustainable finance measures to achieve climate and environmental objectives associated with their institutional mandates.

<sup>5</sup> A first sustainable finance survey among was conducted among APAC CBFS in 2019. See Durrani et al. (2020).

<sup>6</sup> The SEACEN Centre was established in 1982 with a membership of eight central banks/monetary authorities. It has since grown to 19 members, eight associate members and eight observers.

The data also indicates the number of measures that will be implemented will grow in the future. It highlights that more than a third of the 26 CBFS participating in the survey are to some extent measuring the efficacy of implemented sustainable finance measures. This progress is notable considering the difficult context within which many CBFS in the APAC region operate. Many suffer from capacity and resource constraints and are attempting to address the impacts of climate and environmental risks on financial stability while also implementing Basel III recommendations. Despite the progress, however, the advances being made are insufficient considering escalating climate risks within APAC countries from both a physical and transition risk perspective, as well as other accelerating nature-related risks such as biodiversity and natural capital loss. Progress needs to be expedited, notably to prevent or limit a build-up of these risks that would have severe consequences on economic and financial stability.

The remainder of the article is structured as follows. Section 2 will present the main survey findings. Section 3 will discuss the survey results and make recommendations for policy makers to improve the design and implementation of existing and new sustainable finance measures as well as on data gathering aspects to allow for a systematic evaluation of the effectiveness of sustainable finance measures that will enhance the capacity of CBFS to manage climate- and sustainability-related financial risks and promote sustainable finance. Section 4 concludes.

## 2. Survey results

The survey was sent to the 35 central banks and monetary authorities across APAC that are members, associate members and observers of the SEACEN Centre and two other monetary and financial authorities. Of SEACEN's 19 full members, 16 responded, an 84% members response rate. Another 10 associate members and observers and other CBFS responded, making a total of 26 responses among central banks, regulatory agencies and monetary authorities. The overall response rate was therefore 70%. This is a significant response rate and hence allows us to draw conclusions across the region. In some cases, certain respondents skipped a particular question and did not submit a response, in which case we considered this as a nil response for that question. In such cases, and where relevant, percentages were therefore still calculated based on the total of 26 respondents.

### 2.1. Measures implemented

According to the survey data, CBFS across APAC demonstrate a range of efforts to address climate and environmental objectives, utilising the full breadth of their institutional mandates (see Table 1). The survey asked respondents to report which sustainable finance measures they are currently employing, and which measures they are planning to implement in the future. The measures were organised by 'intervention areas', corresponding to the nature and main objectives of these measures (e.g. monetary policy, micro-prudential supervision).

Number measures implemented, by intervention area

Table 1

Type of intervention area	Total # of measures currently implemented	Number of associated CBFS	Total # of measures to be implemented in the future	Number of associated CBFS	Total # of measures implemented either currently or in the future	Number of associated CBFS
Macro-prudential instruments	15	11	20	14	25	16
Micro-prudential instruments	52	17	51	15	72	19
Portfolio management	16	10	17	11	26	14
Credit allocation instruments	18	10	19	9	24	11
Own governance and strategy	117	24	107	23	135	24
Dev. / eval. of gov. policies and measures <sup>1</sup>	23	12	19	10	23	12
Monetary policy	25	14	22	11	29	14
Standard setting for sustainable finance	27	17	34	18	41	18

<sup>1</sup> Involvement in the development / evaluation of government-led policies and measures

**How to interpret Table 1:** *In total, 11 central banks and/or financial supervisors are currently implementing macro-prudential measures, for a total of 15 distinct measures. In addition, 14 central banks and/or financial supervisors are planning to implement such measures in the future, for a total of 20 distinct measures. The total number of macro-prudential measures either currently implemented or planned is 25, involving 16 central banks and/or financial supervisors.*

The intervention area in which the highest number of sustainable finance measures are currently being implemented and planned to be implemented in the future is 'own governance and strategy'. This is not surprising because many measures within this group, such as developing a climate change strategy, participating in international initiatives, or supporting capacity building among financial institutions, would naturally be implemented in the early phases of addressing climate and environmental objectives. It also contains a greater variety of measures relative to most other intervention areas.

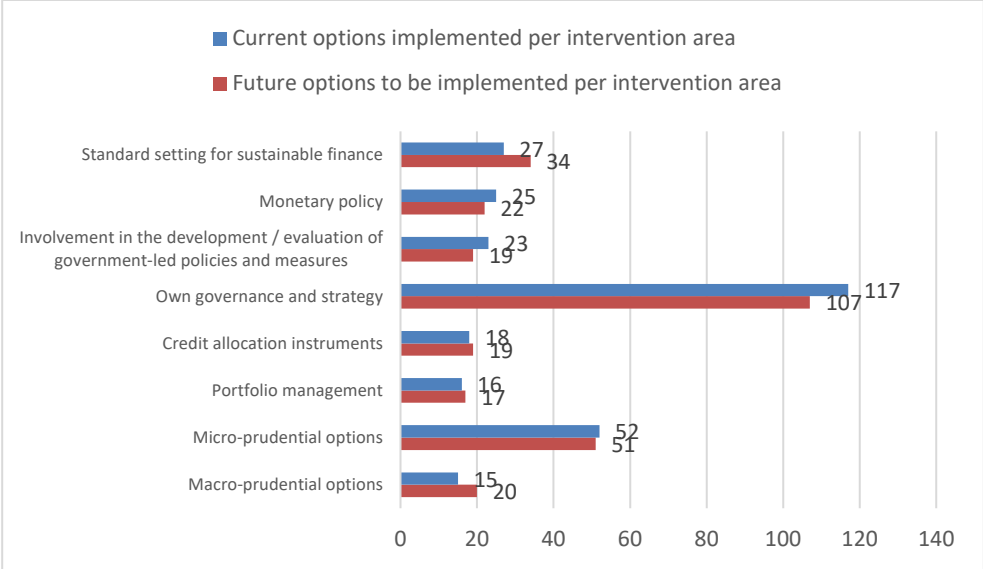
Fewer CBFS have or are currently implementing measures from intervention areas such as macro-prudential policy or credit allocation. Depending on the perspective adopted, this is either problematic given how climate and environmental risks are rising and the resulting imperative to urgently address these risks; or it is understandable given the complexities involved in implementing measures from these and related intervention areas and the need for these measures to be based on high-quality data and analysis which requires expertise.

Micro-prudential measures have been or are currently being implemented to a higher degree than macro-prudential measures. This could indicate a greater focus of CBFS on microprudential tools; however, it may also reflect that CBFS are not yet

ready to apply macroprudential instruments to address climate and other sustainability risks. Understanding why specific intervention areas have been utilised more than others could be a future research topic.

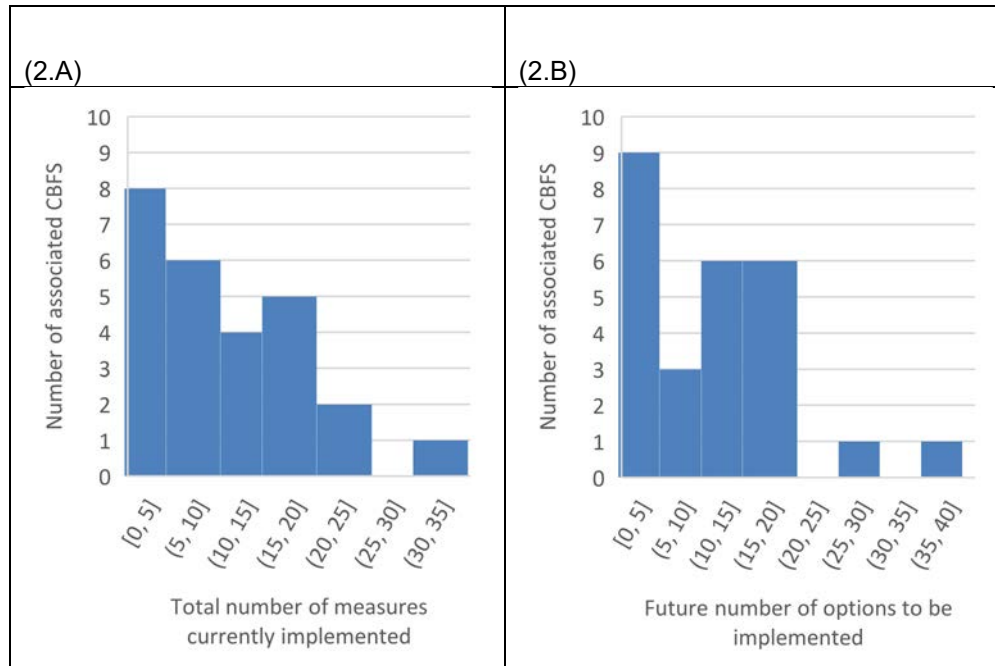
Figure 1 shows the total number of measures currently implemented as well as expected to be implemented in the future by all CBFS across each intervention area. For instance, while 'own governance and strategy' remains the most popular intervention area, it becomes relatively more popular, with over twice as many implemented measures compared to the next intervention type.

**Figure 1:** Total number of current and future measures to be implemented by all CBFS intervention area



The distribution of sustainable finance measures currently implemented or to be implemented in the future by a CBFS with respect to achieving climate and environmental objectives is positively skewed with almost half of CBFS implementing only between 1 and 10 measures (see Figure 2). The spread of measures implemented differ between CBFS: the lowest number of measures currently being implemented by an individual institution is 1 and the largest is 33. Looking at measures to be implemented in the future, this range is expected to increase slightly, with the lowest number of measures being 1 and the largest being 37. This clearly shows a split emerging between more active and less active CBFS. Figure 2 shows a bi-modal distribution emerging with respect to future total measures that are to be implemented.

**Figure 2:** Histogram of total measures implemented by CBFS with respect to climate and environmental objectives



The most commonly cited action to achieve climate and environmental objectives is participation in international initiatives, cited by 21 of 26 CBFS (Table 2). This alludes to the important role these initiatives – most importantly the NGFS but also the Sustainable Banking Network – have in driving important debates and in sharing good practices and finding solutions. The top three actions undertaken are from the category of CBFS’s own governance and strategy: participation in international initiatives, supporting capacity building for the financial industry, and developing an official strategy. The issuance of regulations or supervisory expectations for financial institutions also features prominently, with 12 CBFS currently have such a measure in place.



Top 12 measures implemented by CBFS to achieve climate and environmental objectives

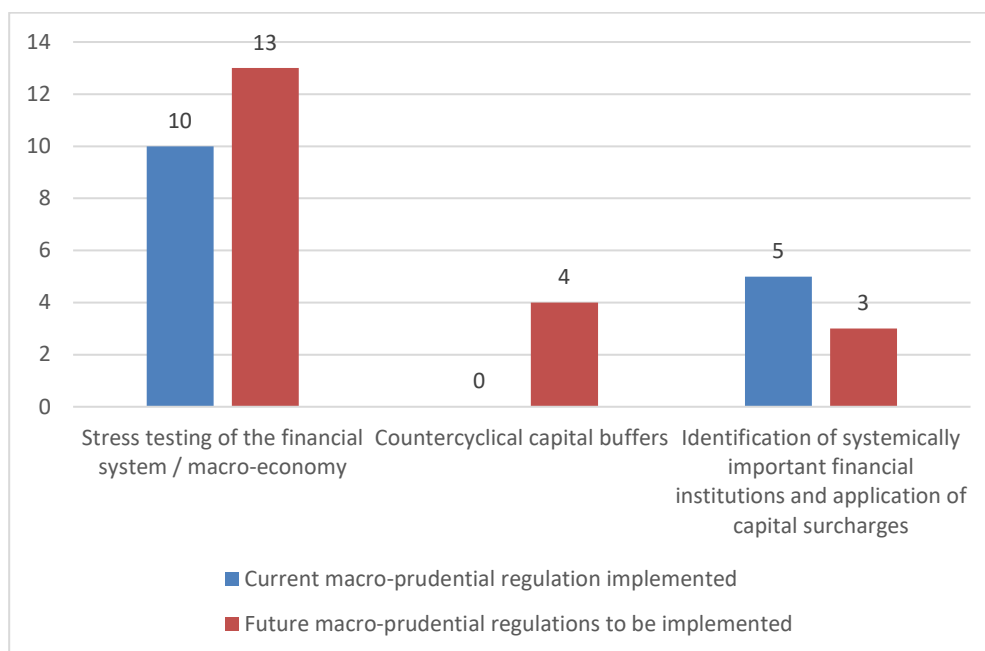
Table 2

Intervention area	Specific measure	Number of times it is implemented
<b>Own governance and strategy</b>	Participation in international initiatives (e.g. NGFS, IFC SBN, other)	21
<b>Own governance and strategy</b>	Support of capacity building efforts for the financial industry	17
<b>Own governance and strategy</b>	Development of an official strategy for your own institution, in line with existing mandates	13
<b>Micro-prudential measures</b>	Sustainable finance regulations (principle-based, covering governance, policies and risk management practices of financial institutions)	12
<b>Own governance and strategy</b>	Creation of multi-stakeholder initiatives (involving financial regulators, financial institutions, industry associations and other relevant stakeholders)	12
<b>Own governance and strategy</b>	Conduct and publication of research relevant to the financial sector and on potential policy response	12
<b>Dev. / eval. of gov. policies and measures<sup>1</sup></b>	Ex ante policy evaluation and design	12
<b>Monetary policy</b>	Management of foreign exchange reserves	12
<b>Dev. / eval. of gov. policies and measures<sup>1</sup></b>	Ex post policy monitoring and evaluation	11
<b>Standard setting for sustainable finance</b>	Development of taxonomies for (un)sustainable economic activities	11
<b>Macro-prudential measures</b>	Stress testing of the financial system / macro-economy	10
<b>Own governance and strategy</b>	Coordination with national climate planning processes	10

<sup>1</sup> Involvement in the development / evaluation of government-led policies and measures

For those CBFS with a mandate for macro-prudential regulation, macro-level stress-testing is currently implemented or starting to be implemented by 40% of CBFS (10 of 25 relevant CBFS). Going forward, this is bound to increase to 52% of CBFS (13 of 25 relevant CBFS). No CBFS is currently utilising countercyclical capital buffers and only 3 of 25 relevant CBFS are currently identifying systemically important financial institutions and capital surcharges. In the future, more CBFS are expected to look towards countercyclical capital buffers (4 of 25 relevant CBFS) (see Figure 3).

**Figure 3:** Current and future macro-prudential measures to be utilised by relevant CBFS



These figures will be considered by some as too low given the continued escalation of physical climate risks and growing political momentum to address it through policy and climate-emergency declarations (i.e. escalation of transition risks). However, climate risk-based stress-testing is still a relatively new and technically demanding process requiring expertise and data which need to be developed. An important question is how CBFS intend to use the results of macro-level stress-testing, such as whether it will be used as the basis for implementing further sustainable finance measures, such as credit allocation instruments or micro-prudential tools.

For those CBFS with a mandate for micro-prudential regulation or supervision, the preferred measure is the issuance of sustainable finance regulations or supervisory expectations,<sup>7</sup> with 52% (12 out of 23 relevant CBFS) of the relevant institutions currently implementing or starting to implement them (Figure 4). Other relatively common measures are setting out disclosure requirements or guidelines (35% or 8 of 23 relevant CBFS), expecting financial institutions to conduct stress-testing (30% or 7 of 23 relevant CBFS), and utilising capital requirements or add-ons (26%, 6 of 23 relevant CBFS). Some CBFS do not associate climate and environmental objectives with their micro-prudential mandate (8 of 23 relevant CBFS). Once these are removed from the calculations, the figures increase: sustainable finance regulations (80%), setting out disclosure requirements (53%), expecting financial institutions to conduct stress-testing (47%), and utilising capital requirements or add-ons (40%).

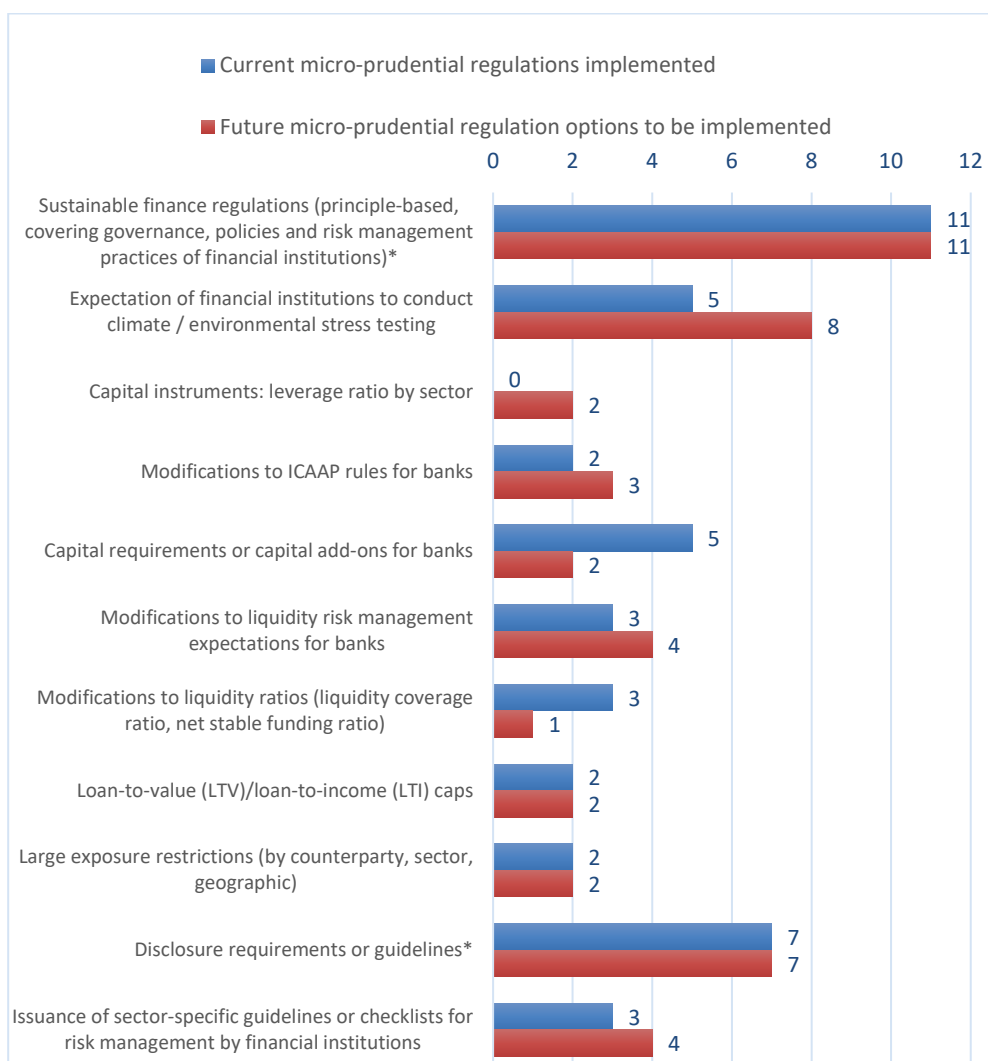
The relatively large number of CBFS which do not associate climate and environmental objectives with their micro-prudential mandate complicates the interpretation of results. Why CBFS are less likely to associate climate and

<sup>7</sup> Principle-based, covering governance, policies and risk management practices of financial institutions.

environmental objectives with their micro-prudential mandate than with their macro-prudential mandate should be a focus for future research.

Overall, there is little difference between the measures CBFS currently implement and those which they plan to implement in the future. The measure most commonly expected to be implemented in the future remains sustainable finance regulations. However, expectations for financial institutions to conduct stress-testing increase from 7 to 9 CBFS, and capital requirements or add-ons for banks reduces from 6 to 3 CBFS. The reasons behind and the implications of a potentially reduced use of capital requirements and add-ons could be a focus for future research.

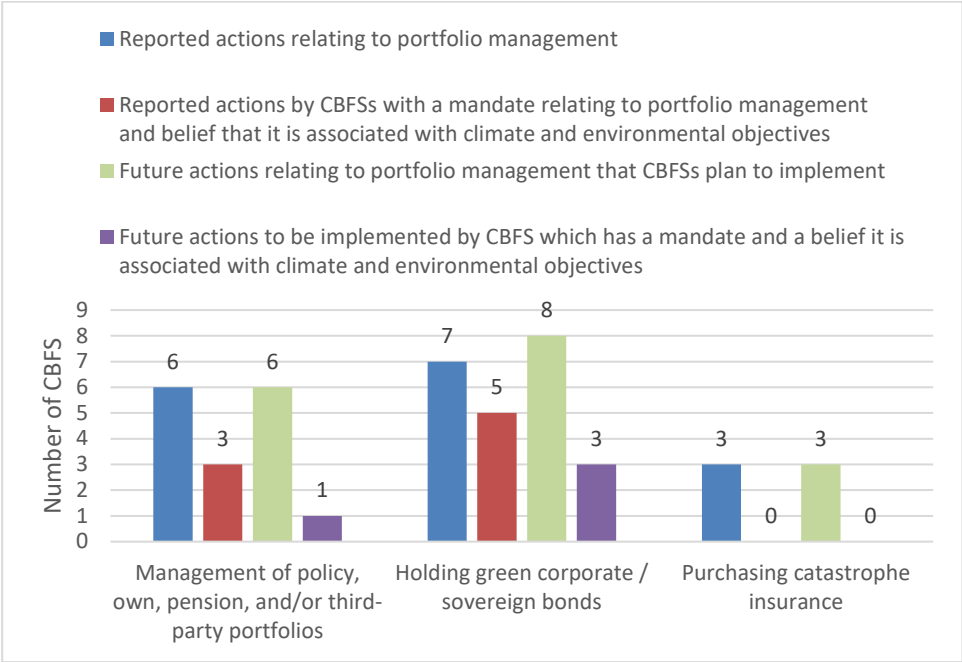
**Figure 4:** Current and future micro-prudential regulation measures implemented/to be implemented by relevant CBFS



The results related to portfolio management are complex to understand. A number of respondents indicated they are implementing actions despite stating that they do not believe climate and environmental objectives are relevant to their portfolio management mandate (Figure 5). Specifically, many CBFS report that they hold green corporate / sovereign bonds and alter the management of policy, own, pension, and/or third-party portfolios.

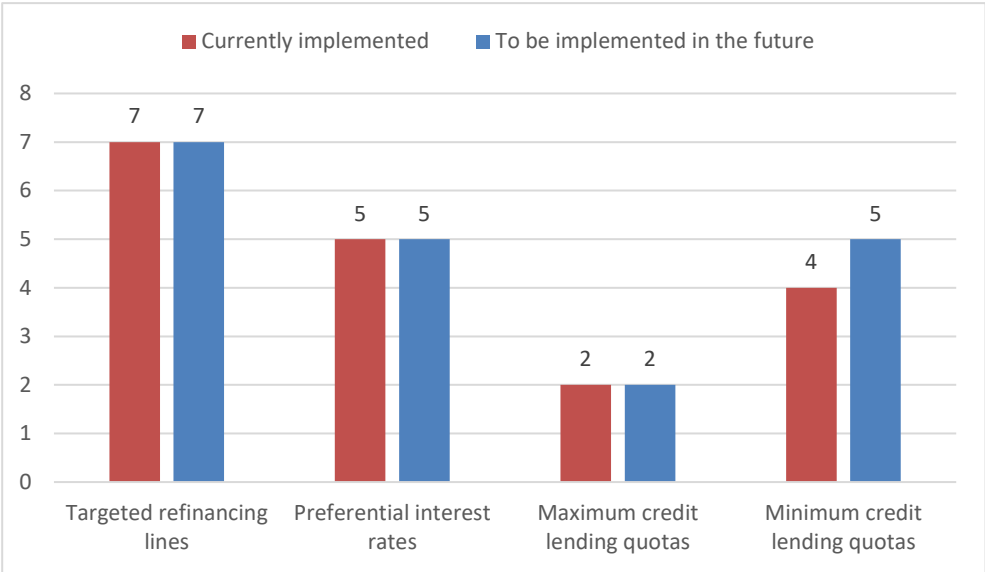


**Figure 5:** Current and future actions relating to portfolio management to be implemented by CBFS



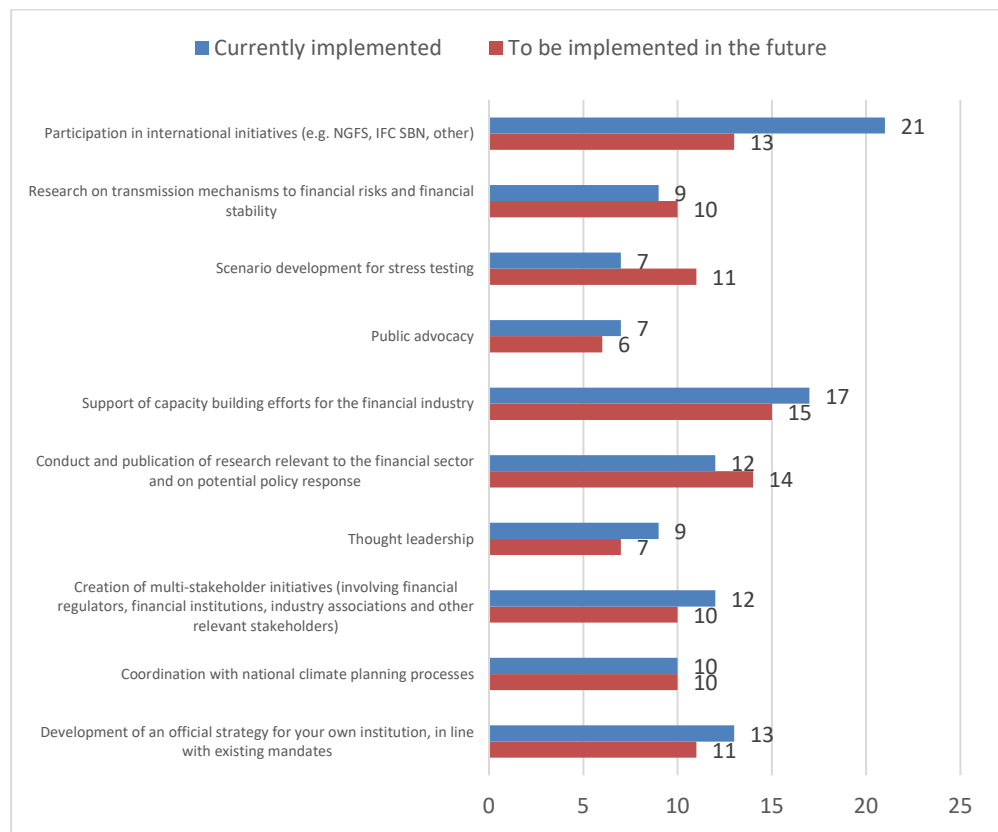
Several CBFS reported the use of some credit allocation instruments (see Figure 6). The most commonly reported tool was targeted refinancing lines, reported by 7 out of 26 CBFS. The utilisation of credit allocation instruments appears unlikely to change in the future. For instance, the same CBFS which currently offer targeted refinancing lines reported that they will continue to do so in the future. This perhaps indicates a cultural element to choosing what actions to implement or whether credit allocation tools might suit some contexts better than others.

**Figure 6:** Number of CBFS currently implementing or planning to implement specific credit allocation instruments



'Own governance and strategy' is the most common intervention area from which CBFS adopt sustainable finance measures. Within it, 'participation in international initiatives' and 'support for capacity building for financial institutions' are the most popular measures (see Figure 7). The least implemented is public advocacy, and it is expected to remain this way in the future, which seems like a missed opportunity for central banks to use the influential role granted by their role and statutory independence to call for more robust and ambitious government policies. The measure which is expected to see the highest growth is scenario development for stress-testing (increasing from 7 to 11 of 26 CBFS). This indicates that stress-testing is likely to become more important for APAC CBFS when looking to achieve climate and environmental objectives in the future.

**Figure 7:** Number of CBFS currently implementing or planning to implement specific measures in the "Own governance and strategy" intervention area



A particularly important measure appears to be the development of an official climate change strategy, which 13 out of 26 CBFS reportedly have or are currently developing. Where a CBFS has an official climate change strategy, on average it is associated with implementing or planning to implement more sustainable finance measures across every intervention area (see Table 3). The intervention area where the proportional difference is the largest is credit allocation instruments. The

intervention area with the largest absolute difference in the number of measures implemented is micro-prudential tools.<sup>8</sup>

The influence of participating in international initiatives appears less relevant. It is however worth noting that CBFS that are participating in an international initiative have a significantly higher number of measures in place within the “internal governance and strategy” category. This might show the influence of initiatives such as the NGFS in supporting CBFS to define and start implementing a strategy. As these initiatives are relatively recent, it is likely that a clearer distinction will materialise between CBFS that participate in these and those that do not.

Average number of relevant sustainable finance measures per CBFS currently being implemented, depending on having a climate change strategy (or not), and participating in international initiatives (or not), by intervention area

Table 3

	Macro-prudential tools	Micro-prudential tools	Portfolio management	Credit allocation instruments	Internal governance and strategy	Dev. / eval. of gov. policies and measures <sup>1</sup>	Monetary policy	Standard setting for sustainable finance
CBFS has a climate change strategy	1.4	4.5	1.5	1.5	7.4	1.5	1.5	2.5
CBFS does not have a climate change strategy	0.5	1.1	0.5	0.3	3.0	0.3	0.8	0.7
CBFS is participating in international initiatives	0.9	3.0	1.1	1.0	6.1	0.9	1.0	1.7
CBFS is not participating in international initiatives	1.2	1.8	0.6	0.8	1.6	0.8	1.6	1.0

<sup>1</sup> Involvement in the development / evaluation of government-led policies and measures

When CBFS have an official climate change strategy they are more likely to have implemented or be implementing key measures frequently considered as critical to climate-related and broader sustainability objectives (Table 4). Similarly, when CBFS participate in international initiatives they are also more likely to be implementing such measures. The influence of participating in international initiatives is actually stronger than that of having an official climate change strategy. It is perhaps unsurprising as these initiatives are often focusing on sharing experience and building capacity on such measures. Furthermore, the wider adoption of these key sustainable finance measures by CBFS participating in international initiatives also indicates that these are not only important in terms of providing a platform for peer learning and the adoption of best practices, but also because they create peer pressure.

<sup>8</sup> Internal governance and strategy would be artificially higher due to the variable ‘official climate change strategy’ being part of this intervention area.

Number of CBFS implementing key sustainable finance measures depending on having a climate change strategy (or not), and participating in international initiatives (or not) Table 4

	<b>Stress testing of the financial system / macro-economy</b>	<b>Expectation of financial institutions to conduct climate / environmental stress testing</b>	<b>Development of taxonomies for (un)sustainable economic activities</b>
Number of CBFS with a climate change strategy implementing the measure	11	9	12
Number of CBFS without a climate change strategy implementing the measure	4	2	4
Number of CBFS participating in international initiatives implementing the measure	12	10	14
Number of CBFS not participating in international initiatives implementing the measure	3	1	2

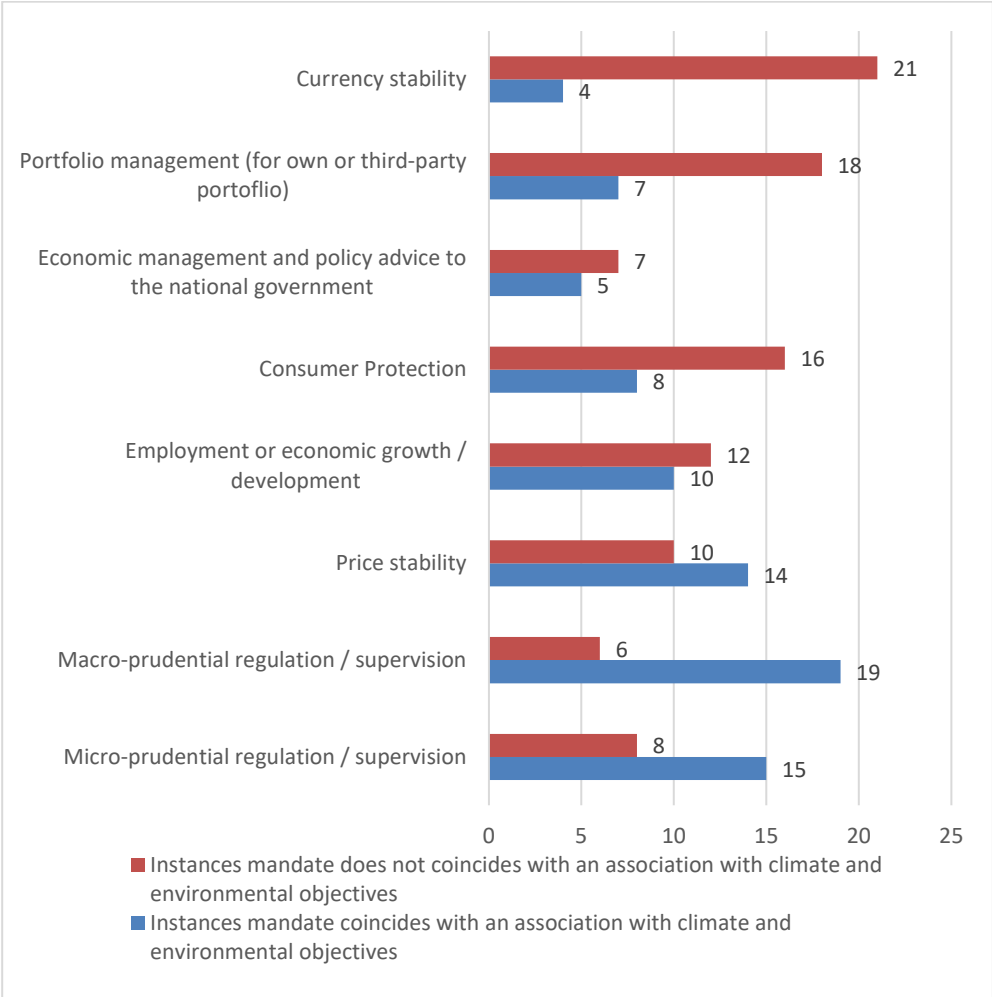
## 2.2. Factors considered

CBFS reported a variety of decision-making factors for implementing measures to achieve climate and environmental objectives. The most cited reason behind choosing such measures is the institutional mandate, which would be expected from CBFS as public institutions.

The survey results demonstrate that CBFS often associate climate and environmental objectives with their respective institutional mandates. The frequency with which these linkages are recognised differs across mandates (Figure 8). Relatively fewer CBFS recognise linkages with currency stability, portfolio management, and consumer protection mandates. Instead, more CBFS associate climate and environmental objectives with macro-prudential regulation, micro-prudential regulation, and price stability. There are only two instances whereby a CBFS associated climate and environmental objectives with neither of these mandates.



**Figure 8:** Number of CBFS associating climate and environmental objectives with their mandates



The association with climate and environmental objectives frequently does not hold between mandates which have conceptual linkages. For instance, the scientific reasoning behind why climate and environmental objectives are associated with macro-prudential regulation is likely to mean these objectives should be also associated with the mandate of providing economic policy advice to national governments. Other instances are listed in Table 5. Understanding why CBFS recognise climate and environmental objectives as being associated with some but not others should be a focus of future research, especially if efforts to address climate and environmental risks require measures to be implemented in these intervention areas, which is likely the case.

Related mandates and their association with climate and environmental objectives

Table 5

Mandate #1	Mandate #2	% of relevant CBFS which associate climate and environmental objectives to both mandates	% of relevant CBFS which only associate climate and environmental objectives with one mandate	% of relevant CBFS which associate climate and environmental objectives to neither mandate
Macro-prudential regulation	Currency stability	12% (3 of 25)	68% (17 of 25)	20% (5 of 25)
Macro-prudential regulation	Economic advice to national government	33.33% (4 of 12)	50% (6 of 12)	16.67% (2 of 12)
Macro-prudential regulation	Employment or economic growth / development	36.36% (8 of 22)	45.45% (10 of 22)	18.18% (4 of 22)
Macro-prudential regulation	Micro-prudential regulation	61.9% (13 of 21)	23.8% (5 of 20)	14.3% (3 of 20)
Micro-prudential regulation	Portfolio management	18.18% (4 of 22)	54.55% (12 of 22)	27.27% (6 of 22)

\*Results only shown for central banks and financial supervisors which have mandate over both areas.

Other relatively commonly cited reasons for choosing measures to achieve climate and environmental objectives are measures being implemented in other countries, an internal assessment determining the need for such measures, and the assessed capacity of financial institutions. The reasons least mentioned are the opinions from other stakeholders, recommendations stemming from academic research, and national government requests (see Figure 9).

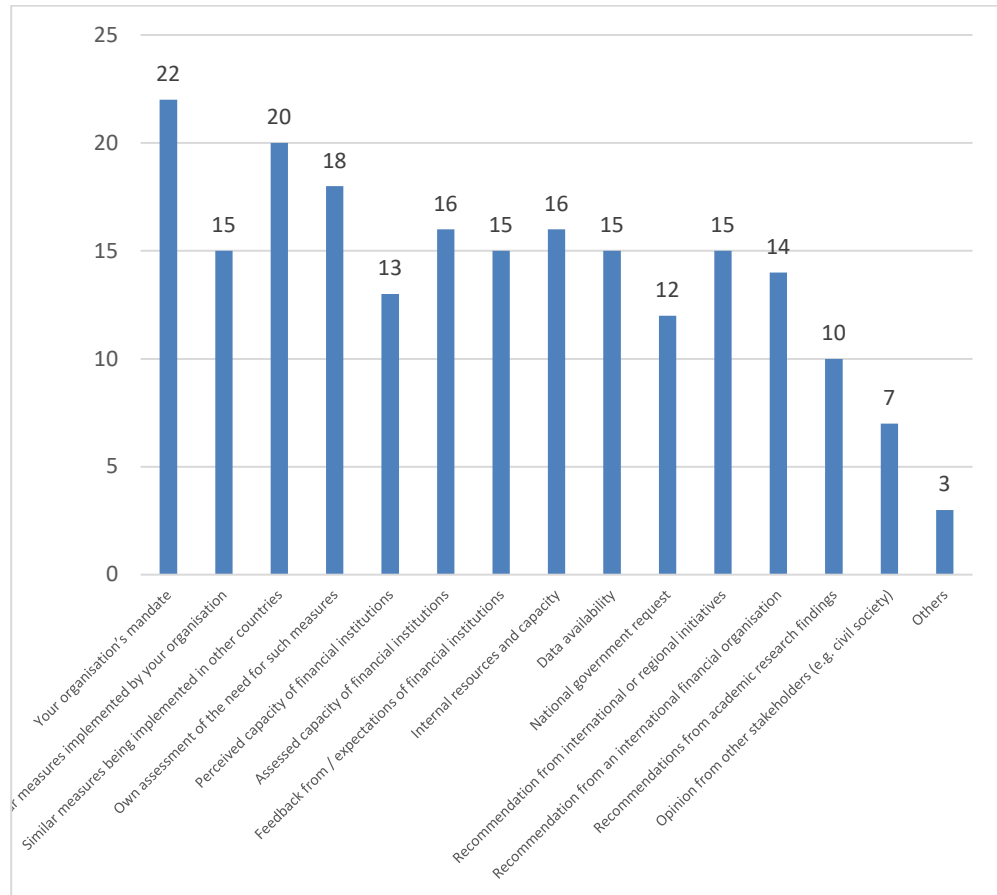
The influence of measures being implemented in CBFS in other countries indicates that CBFS might see an ability to justify or determine their behaviour based on their peer group. In contrast, CBFS seem not to place much importance on the views of other external stakeholders, notably civil society and academia, but also international financial organisations. Why this is the case should be a focus for subsequent research. A significant amount of data and knowledge on climate and environmental risks as they relate to the financial system is being created by these stakeholders. Many would consider effective collaboration between these stakeholders and CBFS as being fundamental to expedite efforts to address climate and environmental risks and achieve key international targets.

Basing decisions on the capacity of financial institutions might be problematic, particularly if financial institutions only develop capacity based on their perceived needs, which are driven by signals sent by CBFS. To avoid creating a vicious circle that would run counter to sustainability objectives, CBFS may need to pre-emptively communicate with financial institutions about forthcoming sustainable finance measures for them to develop capacity, ahead of changing regulatory/supervisory conditions. It should be noted that assessed capacity was cited more often than perceived capacity in terms of choosing which measures to implement in order to achieve climate and environmental objectives, potentially highlighting the importance of established frameworks for supporting capacity assessment.

16 CBFS highlighted internal resources and capacity as a factor behind the adoption of specific measures. As will be discussed later, CBFS cited a number of training needs with respect to achieving climate and environmental objectives. This is important as it highlights where CBFS are experiencing difficulties with respect to

achieving their climate and environmental objectives. It also gives indications as to their future intentions.

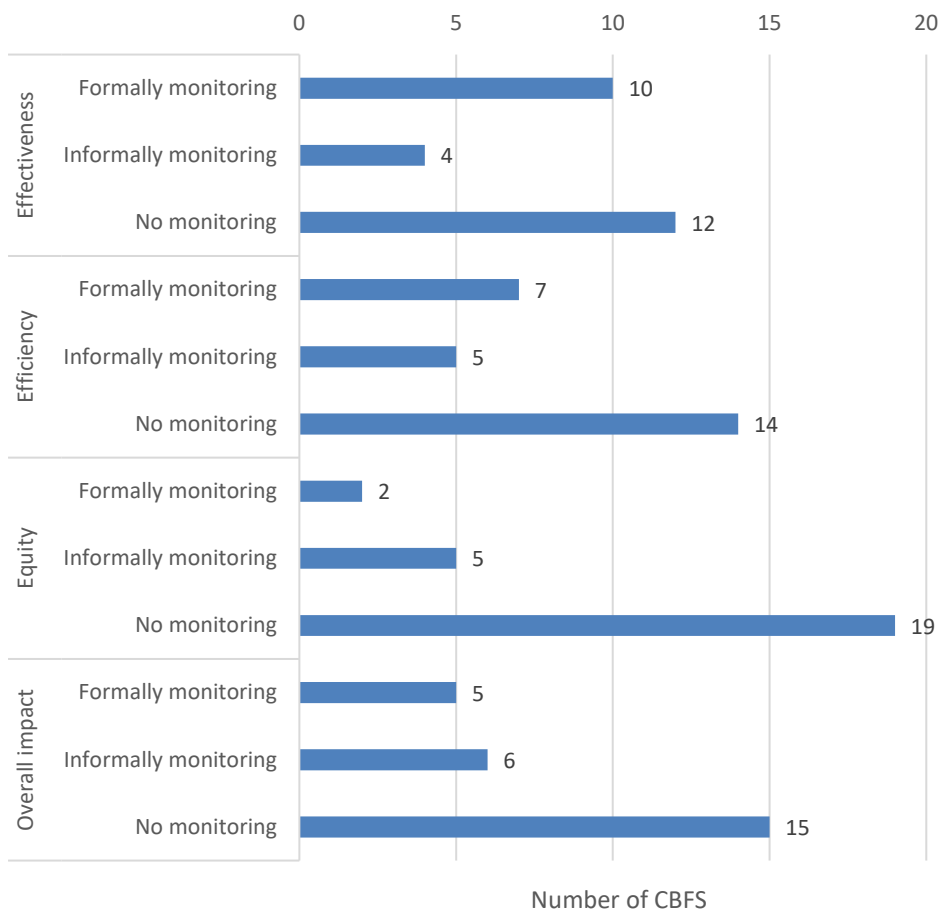
**Figure 9:** Number of CBFS citing specific reasons behind the adoption of measures to achieve climate and environmental objectives



### 2.3. Assessing performance of implemented measures

Currently, a non-negligible number of CBFS are monitoring the results of their sustainable finance measures in some manner (see Figure 10). The most common way sustainable finance measures are monitored is in terms of 'effectiveness', with 10 (38%) and 4 (15%) of 26 CBFS either formally or informally tracking this aspect of performance respectively. The least common way sustainable finance measures are monitored is in term of 'equity' with only 2 (8%) and 5 (19%) of 26 CBFS either formally or informally tracking this aspect of performance respectively.

**Figure 10:** Number of CBFS that are measuring the performance of their sustainable finance measures, and nature of monitoring performed

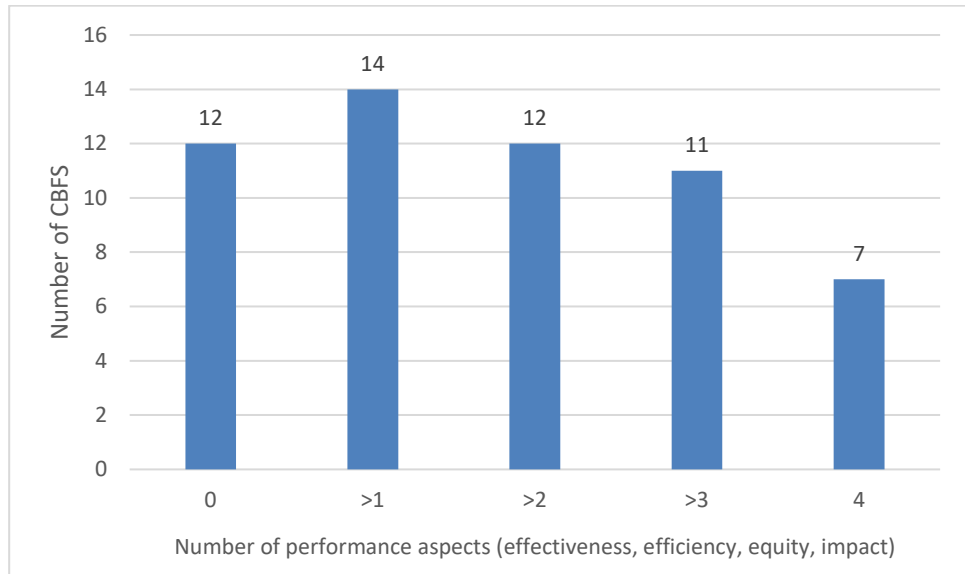


Note: Effectiveness is about whether a specific measure achieves its intended goals. Efficiency is about whether a specific measure achieves its intended goals at reasonable cost. Equity is about whether the benefits and costs of a specific measure is distributed in a just and fair manner. Impact is when a specific measure leads to changes in the practices of targeted financial institutions that result in positive climate and environmental outcomes, such as contributing towards the transition to a low-carbon, climate-resilient and more sustainable economy.

While several CBFS are monitoring multiple aspects of performance (Figure 11), only 7 (27%) of 26 CBFS indicated that they are monitoring the effectiveness, efficiency, equity, and impact of implemented sustainable finance measures. However, considering the contemporary and fast evolving nature of sustainable finance many would consider this to be good progress. Yet, 12 (46%) of 26 CBFS indicated that they are yet to monitor any aspect of performance. The appropriateness of these measuring systems should be a focus of future research, especially regarding the capacity and data availability issues raised by respondents.

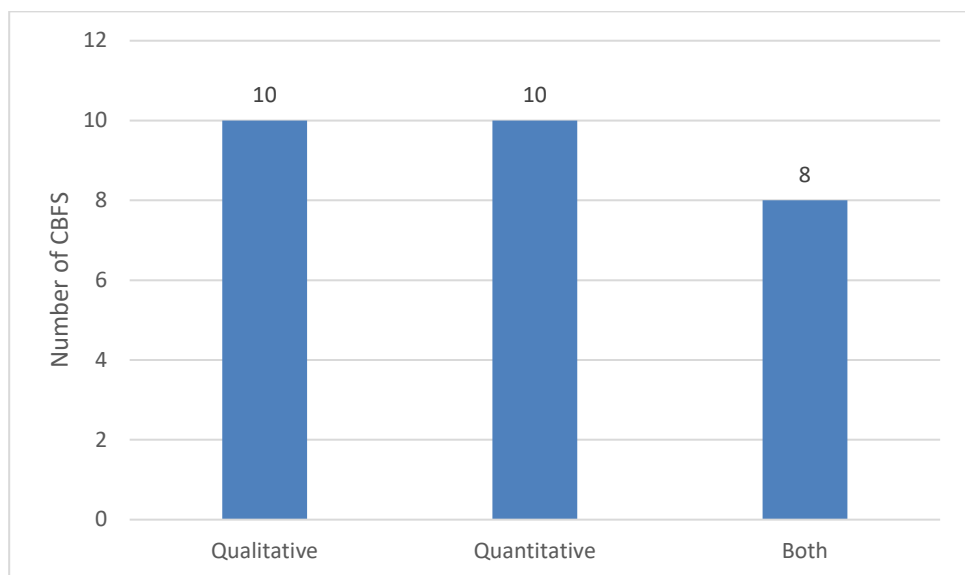
Interestingly, there does appear to be a pattern to the way CBFS monitor the performance of implemented sustainable finance measures. If CBFS are to monitor only one aspect of performance, it is effectiveness rather than any other. Efficiency comes second, followed by impact. The component of performance which CBFS monitor the least is equity. It should be noted that the concept of equity is important for sustainability debates and even enshrined within international climate and environmental negotiations under the concept of ‘just transition’.

**Figure 11:** Extent to which CBFS monitor the performance of sustainable finance measures implemented, across several components



Data collection to monitor the performance of implemented sustainable finance measures comprises both qualitative and quantitative data (see Figure 12). Most efforts at monitoring performance involve data collection. Interestingly, frequently both are collected (8 of 14 relevant CBFS) with only 2 instances where only qualitative or quantitative data is collected respectively. Regarding types of data that CBFS are using to assess the effectiveness, efficiency, equity or overall impact of implemented sustainable finance measures, 19% said that they were using new data and collection systems specific to the enacted measure(s), 8% relied on pre-existing data and collection systems, and 27% relied on both. 46% did not respond to the question.

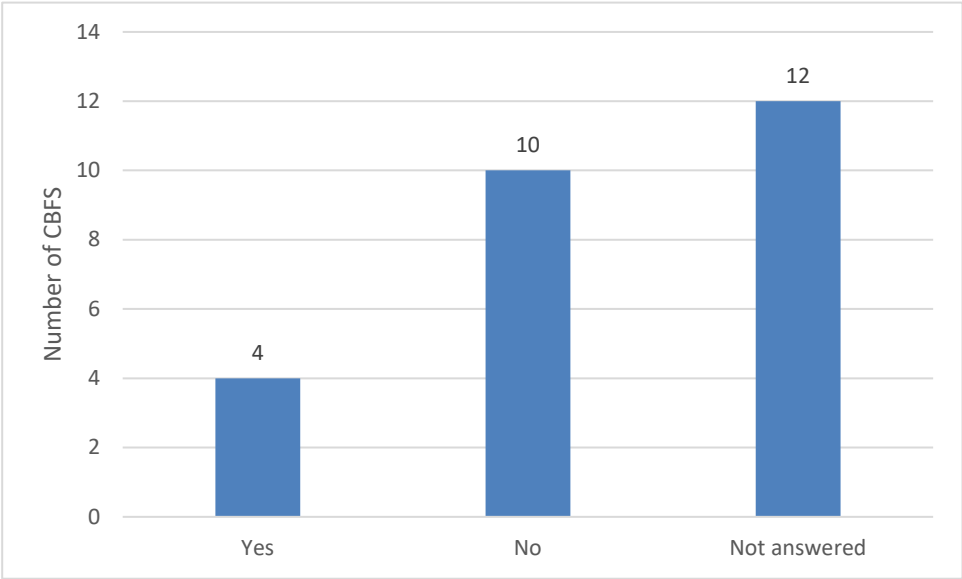
**Figure 12:** Number of CBFS that collect data to monitor performance of implemented sustainable finance measures



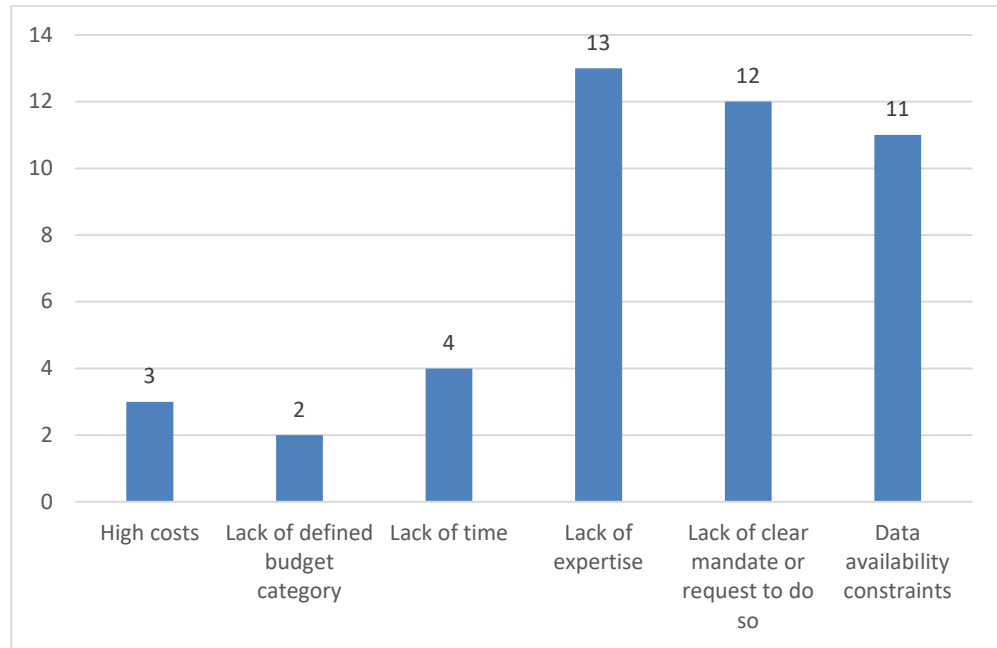
Few CBFS reported that they have a system in place to integrate the learnings into the design and implementation of future sustainable finance measures (Figure 13). Various reasons were cited why this was the case (Figure 14). The most frequently cited factors are 'lack of expertise' (13 of 25 relevant CBFS), 'lack of clear mandate or request to do so' (12 of 25 relevant CBFS), and 'data availability constraints' (11 of 25 relevant CBFS). It is interesting to note that these reasons would technically also inhibit current efforts to monitor the performance of implemented sustainable finance measures, opening up questions regarding the suitability or quality of current monitoring efforts. Other factors cited were raised with much less frequency, despite the possibility of linkages with the most cited reasons. For instance, 'high costs' are associated with expertise and data availability, as obtaining required expertise and ensuring adequate data collection will involve costs. Additionally, the lack of a clear mandate to monitor performance would be associated with a lack of defined budget category. Among the CBFS that do not yet have a system in place to integrate learnings from the efficacy of existing measures into the design and implementation of future ones, 13 intend to develop such a system in the future, while 2 stated that they had no such intentions.

It is interesting that CBFS appear to believe there is a disconnect between having a mandate to achieve climate and environmental objectives with respect to institutional mandates and having a mandate or request to monitor the performance of such efforts. The establishment of monitoring and evaluation systems should be a critical component of ensuring mandates are being realised. Greater understanding of this disconnect should be a focus of further research, including whether CBFS need an explicit mandate or request to monitor the performance of their sustainable finance measures to achieve their climate and environmental objectives.

**Figure 13:** Responses to the question “Do you have a system to integrate the learnings into the design and implementation of future sustainable finance measures?”



**Figure 14:** Reasons cited for not developing a monitoring and evaluation system (number of CBFS)



Asked about the kind of data that CBFS would like to be able to collect in order to evaluate the performance of their sustainable finance measures, a broad range of responses were recorded, ranging from data on the amount of green lending and green bond issuance, data on lending to unsustainable businesses, the carbon footprint of credit, corporate governance data on sustainability, data on climate and other ESG risk, and the climate alignment of lending and investment portfolios.

Understanding who receives the findings of performance monitoring systems is problematic as many respondents did not answer this question (13 of 26 CBFS). Those which did respond indicated the results are mostly kept for internal purposes, with relatively fewer communicating the results to the national government, other monetary or financial authorities, the financial industry, or the general public (Table 6).

Communication of performance monitoring results

Table 6

Number of CBFS reporting that they communicate results					
Internal	National government	Other monetary or financial authority	Financial industry	Public	Other stakeholders
10	5	4	4	3	0

The relatively low number of CBFS communicating results to other monetary or financial authorities is likely due to respondents often being integrated financial regulators. However, the lack of communication on results would be a concern for those who see transparency as a fundamental driver of behavioural change and good governance. Though a counter argument can be made that until performance



monitoring and communication plans are fully developed, there is a risk of miscommunication and interpretation of the results.

However, many will consider the low number of CBFS communicating results to national government as especially problematic, even in the short term. The results of macro-level climate risk stress-testing would have utility for many national ministries as well as sub-national governments, whether they relate to transition or physical risk,<sup>9</sup> and many of the CBFS reported they have a mandate to support government policy making. Understanding how the results of monitoring systems for sustainable finance measures can support government policy could be a future research topic.

Asked whether there were any climate, environmental or sustainability-related policies and measures that the CBFS has enacted that it would recommend others in the region to also enact, 10 CBFS responded positively. Recommendations included to first develop a sustainable finance taxonomy that can be synergised to economic activities in the national account; developing a sustainable finance roadmap/framework or green/sustainable banking guidelines/principles; and issuing guidelines for environmental and social risk management. Setting clear supervisory expectations for financial institutions on managing climate-related and environmental risk was highlighted by several CBFS as an important first step to get financial institutions to integrate considerations of these risks in their decision making and risk management processes.<sup>10</sup> Some CBFS also mentioned the development of a disaster rehabilitation and disaster containment facility and related initiatives to complement government disaster management efforts.

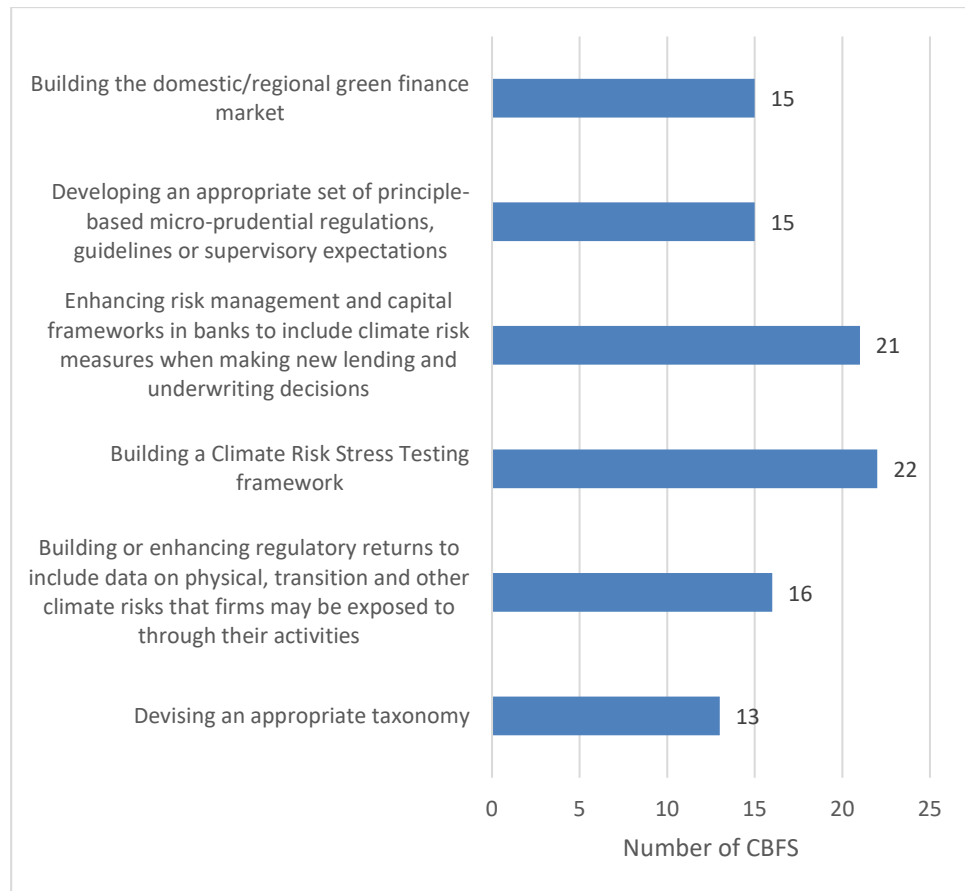
## 2.4. Capacity building needs

The final question asked in which key areas CBFS would require additional technical assistance and training (Figure 15). 85% said they would require additional assistance on building a climate risk stress-testing framework, whilst 81% said they also wanted assistance in enhancing the risk and capital management frameworks of banks to better reflect climate-related risks. Help was also requested on developing an appropriate regulatory or supervisory framework on climate risks; enhancing reporting to include climate risk data; and on developing domestic/regional green finance markets. These are encouraging signs that CBFS in APAC are keen to start requiring more stringent climate-related risk management measures from banks, while also stimulating financial markets to better capture the opportunities commonly associated with the low-carbon transition.

<sup>9</sup> These would support the development of Nationally Determined Contributions, a Low-Emissions Development Strategy, and a National Adaptation Plan, widely considered as the three main components of climate change planning at national-level

<sup>10</sup> One CBFS referred to the NGFS (2020) publication “Guide for Supervisors – Integrating climate-related and environmental risks into prudential supervision” as a useful and comprehensive guide for supervisors to kick-start the process to do so.

**Figure 15:** Answers to the question “Which of these key areas would you like more detailed training or technical assistance on, in relation to the design and implementation of sustainable finance measures?”



The fact that 22 CBFS highlighted the need for support to develop a climate risk stress-testing framework is interesting, as only 10 (13) CBFS reported that they are currently implementing (planning to) implement macro-level climate risk stress-testing, and only 7 (8) CBFS reported that they currently (intend to) expect financial institutions to conduct stress-testing. Overall, a total of 7 CBFS highlighted a need for technical support or training for building a climate risk stress-testing framework, even though they reported no current or future intention to implement macro-level climate risk stress-testing themselves or require financial institutions to conduct climate risk stress-testing. This indicates that they recognise the importance of climate risk stress testing but consider their current and near future ability as inadequate for implementing such measures. This would then support the argument that actually a much larger number of CBFS would be wanting to implement or mandate climate risk stress-testing than what has been indicated here – but they are just waiting until they have the proper capacity and resources to be able to do so.

The lowest reported training need was on ‘support to devise an appropriate taxonomy’ (13 of 26 CBFS). This figure is also interesting as many would consider an appropriate taxonomy to be fundamental to efforts to make financial flows more sustainable due to its importance in defining what can be and cannot be classified as sustainable, yet few taxonomies have been developed in the countries covered by the survey. This could be because CBFS feel sufficient support is already available. This

might be the support offered by other CBFS, due to the relative lack of influence of external stakeholders mentioned previously.<sup>11</sup> There are also a number of projects to develop taxonomies within various countries in Asia, and CBFS may also take the view that it is for other institutions to develop the taxonomies that they, and the firms they regulate, will be the end users of.

There were a range of additional comments and requests from the respondents on which areas and types of assistance they required in building out their sustainable finance related capabilities. Areas most frequently highlighted included technical training on developing sustainable finance strategies and roadmaps; climate risk analysis including scenario analysis and stress-testing; developing and implementing prudential frameworks and instruments; taxonomy development; and developing disclosure frameworks.

### 3. Discussion and recommendations

The survey results show that CBFS across the APAC region are starting to address climate change and other pressing sustainability challenges, but that most of them are in the early stages of doing so. They also illustrate the benefits of international co-operation and exchange, which can help develop a better understanding of what measures to adopt and also support efforts to implement key measures such as climate risk stress-testing and developing taxonomies. Issues such as a lack of capacity and resources (including perceived) clearly inhibit efforts to address climate and environmental risks. Specific strategies need to be developed to address these issues to ensure that progress in achieving climate and environmental objectives is not frustrated.

The survey data indicates that CBFS have implemented or are starting to implement a wide range of sustainable finance measures to achieve climate and environmental objectives associated with their institutional mandates. The data also indicates that the number of measures implemented should grow in the future. It highlights that many CBFS are to some extent measuring the performance of implemented sustainable finance measures. Monitoring and evaluation systems are vital to understanding whether implemented sustainable finance measures are achieving climate and environmental objectives. Specialised data collection and analysis systems are likely to be required, along with communication strategies so that relevant stakeholders receive clear guidance.

The progress made to date is welcomed considering the difficult context within which many CBFS within APAC operate. Indeed, many suffer from capacity and resource constraints and are attempting to address the impacts of climate and environmental risks on financial stability while also implementing Basel II and III recommendations. It is arguable, however, that the progress being made is insufficient considering escalating climate risks within these countries from both a physical and transition risk perspective, as well as other escalating nature-related risks such as biodiversity and natural capital loss.

Progress needs to be expedited and CBFS need to take much more comprehensive action in line with their mandates given the potentially severe

<sup>11</sup> E.g. civil society, academia, and international financial institutions.

implications of these mounting risks to economic and financial stability. The Intergovernmental Panel on Climate Change and the United Nations Framework Convention on Climate Change were created and signed almost thirty years ago. Under the Paris Agreement signed in 2015, countries not only agreed to expedite efforts to address the causes and impacts of climate change but also under Article 2.1c to align financial flows with these efforts. Nevertheless, very few CBFS in APAC can be said to have made substantive progress.

CBFS need to strengthen their effort given the crucial role they ought to play in ensuring that financial flows are channelled towards more sustainable outcomes. CBFS need to implement sustainable finance measures faster and ensure monitoring and evaluation efforts are increased to ensure they are achieving the intended climate and environmental objectives. Steps have been undertaken in that direction, but many are either informal or data is insufficient to comprehensively assess progress. Efforts need to be more systematic and communication plans made so that the information is received by the various stakeholders to address climate and environmental risks within their jurisdictional mandates.

To this end, CBFS will need to increase capacity and develop a strategy to deal with factors which inhibit progress, such as lack of data. If CBFS are to meet the urgency required to address climate and environmental risks, collaborative efforts will be needed whereby the work of civil society, academia, development financial institutions, and domestic financial institutions supports the efforts by CBFS, as is the case with other financial stakeholders addressing climate and environmental risks. Building on the survey responses, in the following we highlight four areas in which APAC CBFS should strengthen their efforts: climate risk stress-testing, climate risk reporting and governance, developing a regulatory framework on climate risk management, and capacity building and training.

### 3.1. Climate risk stress-testing

As shown in the survey, climate risk stress-testing is clearly a key consideration for CBFS across APAC, with 10 CBFS in the region having already introduced it or having made formal announcements. One of the clearest ways to signal to financial institutions that they need to take climate risk seriously is for climate risk-based stress-testing to become a part of CBFS's regular oversight activities. The objective would be to test the resilience of the major banks, insurers, asset managers and the overall financial system to different possible climate pathways. Such an exercise would provide a comprehensive assessment of risks facing individual institutions as well as the financial system's exposure to climate-related risks and highlight the macrofinancial vulnerabilities of the economy. It will also allow comparability of climate exposures and results across firms and assess system-wide feedback loops. Importantly, it will provide key insights allowing regulators and supervisors to adapt capital charges and liquidity risk management requirements, among other supervisory measures. The existence of such an exercise will force financial institutions to start to collect the relevant data from their own counterparties, factor climate risk in lending and underwriting decisions and build the necessary systems and frameworks to assess and mitigate their exposures to climate risk.

A comprehensive climate risk stress-testing programme is also a good way for CBFS to build internal capacity and create synergies between various relevant

departments. The NGFS has published useful guidance including a set of climate scenarios that can serve as a template (NGFS, 2021b), albeit they will need to be adapted to suit the specificities of the individual economies.

Whilst a few financial supervisors in APAC such as the Monetary Authority of Singapore and the Hong Kong Monetary Authority are already relatively advanced in planning for such exercises, the majority of CBFS in the region still need to develop such frameworks. The implementation of such stress-tests has also been somewhat delayed due to the Covid-19 crisis. In Europe, the Bank of England has incorporated climate scenarios in its 2021 biennial exploratory scenario and has previously run a high-level climate risk stress-test for the insurance sector. The European Banking Authority is also developing a climate risk stress-test which will be implemented by the European Central Bank, whilst the Dutch central bank was one of the earliest to run a climate stress-test in 2018, and also conducted an assessment of their financial system's exposure to biodiversity loss in 2020.

### 3.2. Climate risk reporting and governance

In the survey, 11 CBFS stated that they have already implemented or started working on the development of taxonomies for (un)sustainable economic activities, and a further two envisage doing so in the future. Overall, taxonomies are seen as a key component of regulatory frameworks on sustainable finance. Under the recently issued Taxonomy Regulation, EU financial institutions and non-financial corporates have to report on their alignment with activities considered as sustainable by the Taxonomy. This taxonomy also underpins new and proposed regulations on financial instruments and products, notably limiting greenwashing risks. Such taxonomies, when extended from only sustainable activities to also cover unsustainable activities, can provide a more complete picture of the risk profile of companies (financial or non-financial). There are already efforts to develop taxonomies across Asia Pacific. The recent report on the Roles of ASEAN Central Banks in Managing Climate and Environment-related Risks, published in November 2020 (Anwar et al., 2020), sets out the intention to adopt a principles-based ASEAN-wide taxonomy for green and transitional activities, as well as to develop ASEAN green lending principles and guidelines. For instance, Bank Negara Malaysia has published its Climate Change and Principles-based Taxonomy in April 2021.

The ASEAN report also lays out a number of key priorities, which the findings from this survey support. Chief amongst these is to build up the capacity of supervisors to monitor climate risk and integrate it into prudential supervisory frameworks, as well as for central banks to embed ESG standards into their own operations and strategies and to take the lead in working with other domestic government agencies to grow the supply of green / sustainable finance. Looking more globally, Europe is leading in this area, with the European Central Bank having set out an ambitious supervisory programme laying out expectations relating to climate risk disclosure and risk management (ECB, 2020). This clearly states out how the supervisory assessment process should evolve to include climate risk assessments, looking at business models, governance, risk appetite setting and climate risk disclosures as well as risk management assessments incorporating credit, market and liquidity risk and climate risk-based stress testing. Our strong recommendation is that similar frameworks should be rolled out across Asian CBFS.

We recommend that CBFS in the APAC region set clear guidelines and requirements for the firms they regulate to have clear transition plans, with targets set to align their portfolios with global agreements, supported by concrete action plans with short- and medium-term milestones. The board and senior management of these institutions need to be overseeing and monitoring progress, and there should be a clear link to executive compensation based on reaching sustainability targets. Asset managers and banks should have similar expectations for the companies they invest in / lend to. Public disclosure of these plans and of the progress made against them will allow market participants to allocate capital towards activities that are more sustainable and to those that meaningfully support the transition.

In order to properly analyse the extent of the climate risk issues facing each country, and to be able to carry out climate risk stress-tests, firms should coherently and accurately report their climate risk related exposures, calling for more widespread and harmonised mandatory disclosure requirements. The Task Force on Climate-related Financial Disclosures (TCFD) recommendations provide a good basis for such disclosure frameworks. However, it will be important that CBFS make the disclosure of climate-related financial risks mandatory and that they provide firm guidance on their expectations to financial firms. Also, prospectively, disclosure needs to go beyond climate-related financial risks and also cover other environment-related financial risks. A Task Force on Nature-related Financial Disclosures has been launched in 2021 to make recommendations to this effect.

An additional recommendation is that once CBFS begin collecting such climate risk-based information, they should use it to develop climate transition loss and physical risk data maps showing the extent and type of physical and transition risks that their countries are exposed to. This could include, for example, how much lending and collateral is associated with 'dirty' assets or what is the share of mortgage books that are backed by energy-inefficient housing. Monitoring tools can then be set up to measure these risks for the economy based on what domestic lending institutions are exposed to, and to take steps to address these risks. In addition, climate related loss history can be collected and the insurance protection gap can be monitored. This will then greatly help the various policy initiatives geared towards mitigating climate risks and developing sustainable finance measures.

### 3.3. Climate risk regulatory framework

81% of survey respondents stated that they would like more training and capacity building support on enhancing risk management and capital frameworks for the banks they regulate, to ensure that those banks include climate risk measures when making lending and underwriting decisions. A key issue for central banks and regulators is that the current risk management framework that is used to calculate capital requirements (the latest iteration of which is Basel III), typically considers short time horizons and relies on historical loss data to estimate the severity and frequency of potential future risks and losses. Given the non-linearity of climate change, current backward-looking models are not able to adequately assess climate risks and so cannot quantify them appropriately. Our current economic system is also inherently biased towards high carbon industries since many externalities are either not priced in or insufficiently so. An area of discussion by regulators is therefore the potential for a requirement to add-in a forward-looking climate-based factor when making lending, investing or insurance decisions. This would either increase or decrease the

risk rating (and pricing) for these transactions. Similarly, there is also significant debate around whether green-supporting and dirty-penalising factors should be implemented in banks' capital calculations. This could boost green lending, reducing the cost of borrowing for those sectors relative to loans granted to carbon intensive activities. Such a framework is already being applied by the People's Bank of China, in conjunction with a number of additional measures taken to establish a national taxonomy and framework for climate risk disclosures as well as expanding the domestic green finance market (Yi, 2020).

In order to support the development of such a regulatory framework as well as climate risk stress-testing, CBFS should set up an internal governance structure and build internal capacity to better manage and mitigate climate-related financial risk. Over time, CBFS should aspire to undertake bottom-up deep dive reviews into the major financial institutions within the country, to assess their whole climate risk framework, governance, risks, gaps and feasibility of the actions they are taking. Such reviews should extend to banks, insurance firms and asset managers. The findings should feed into climate risk stress-testing assumptions and judgements, and, in due course, capital requirements and add-ons.

### 3.4. Capacity building and training

As can be seen from various responses to the survey, and in particular the final question asking about training needs of the respondents, there is a substantial need for capacity building and training to enable CBFS in APAC to adequately respond to the climate and environmental crises we are collectively facing. 92% of 26 survey respondents answered the question on the various areas of training and capacity building support they required for the design and implementation of sustainable finance measures.

Training needs have been expressed across areas such as climate risk stress-testing (85% of respondents); enhancing risk management and capital framework (81%); enhancing climate risk data returns (62%); developing climate risk principle-based micro-prudential regulations or guidelines (58%); developing the sustainable finance and green bond market (58%); and developing appropriate taxonomies (50%). Other comments also included the need to help develop an internal governance structure and building capacity to ensure the proper design and implementation of the above measures.

Building the appropriate in-house capacities is critical. Only when CBFS have sufficient expertise will they be able to develop and implement targeted policies that will help to effectively mitigate climate- and other environment-related financial risks and scale up sustainable finance. Capacity building should therefore be a key priority in order to make sure that CBFS can play the critical role they need to assume in aligning the financial system with sustainability.

## 4. Conclusions

The APAC region is significantly exposed to climate change and environmental degradation. CBFS across the region face significant challenges in mitigating the



associated risks posed to macroeconomic and financial stability, and in supporting the scaling up of sustainable finance. The results of the second APAC Central Bank Sustainability Survey presented in this article show that most CBFS in the region are paying considerably more attention to sustainability challenges compared to 2019, when the first survey was conducted. Most CBFS have now either implemented or are starting to implement various sustainable finance measures to achieve climate and environmental objectives associated with their institutional mandates. The survey responses also reveal that the number of measures that will be implemented should grow in the future. The roll-out of sustainable finance measures is notable and reflects growing concern among policymakers regarding the climate and environmental crises.

Interestingly, more than a third of the 26 CBFS participating in the survey are already measuring the performance of implemented sustainable finance measures to some extent. This is relevant, as an appropriate monitoring and evaluation of these measures is crucial for making sure that CBFS achieve the desired outcome through their chosen measures without creating unintended distortions. However, few CBFS stated that they have a system in place to integrate the learnings into the design and implementation of future sustainable finance measures, citing a lack of expertise and data availability constraints as some of the main bottlenecks. Going forward, it will be critical that assessment of sustainable finance measures is routinely integrated into policy frameworks.

Perhaps not surprisingly, the survey reveals major needs for capacity building and training to enable CBFS in APAC to adequately respond to the sustainability challenge. Developing the appropriate expertise among CBFS staff will be key to ensuring that the right measures will be implemented and that CBFS can play their crucial role in safeguarding macroeconomic and financial stability and support the transition to a low-carbon, resilient and more sustainable economy.

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