

**Thematic Review on Business Continuity Plans
with respect to
Trading Venues and Intermediaries**

Final Report



IOSCO

**THE BOARD
OF THE
INTERNATIONAL ORGANIZATION OF SECURITIES
COMMISSIONS**

FR03/21

MAY 2021

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1. EXECUTIVE SUMMARY

In 2015 the International Organization of Securities Commissions (**IOSCO**) published two reports highlighting the importance of business continuity plans for trading venues and market intermediaries. These reports, *Mechanisms for Trading Venues to Effectively Manage Electronic Trading and Plans for Business Continuity* (**Trading Venues Report**)¹ and *Market Intermediary Business Continuity and Recovery Planning* (**BCP Report**)² set out, respectively, two Recommendations and two Standards (**Recommendations and Standards**) for securities regulators.

IOSCO has completed a Thematic Review (**Review**) on the extent to which participating IOSCO member jurisdictions have implemented regulatory measures consistent with the Recommendations and Standards set out in the [Trading Venues Report](#) and the [BCP Report](#).

33 IOSCO member jurisdictions (**Participating Jurisdictions**), encompassing 36 authorities, participated in the Review, which covered both developed (16) and growth and emerging market (17) jurisdictions (see **Annex A**).

The Review assessed the consistency of regulatory frameworks with the Recommendations and Standards. As such, it examined the legislative, regulatory and policy measures reported as being in place by Participating Jurisdictions as of September 2019 (cut-off date of the assessment). The exercise did not assess the effectiveness of implementation and market practices in the Participating Jurisdictions. This means that the actual implementation of BCP measures for trading venues and intermediaries in Participating Jurisdictions may be more or less effective than indicated by this Review.

The Recommendations state that regulators should require trading venues to:

- 1) have in place mechanisms to help ensure the resiliency, reliability and integrity (including security) of critical systems, and
- 2) establish, maintain and implement as appropriate a Business Continuity Plan (**BCP**).

The Standards state that regulators should require market intermediaries to:

- 1) create and maintain a written BCP identifying procedures relating to an emergency or significant business disruption, and
- 2) update their BCP in the event of any material change to operations, structure, business, or location and conduct an annual review of it to determine whether any modifications are necessary in light of changes to the market intermediary's operations, structure, business, or location.

Key findings and observations from the Review include, among others, the following:

- Thirteen Participating Jurisdictions have been found to be “Fully Consistent” with the two Recommendations and the two Standards. Some gaps or shortcomings of different degrees of materiality have been found in the other Participating Jurisdictions for one or more of the Recommendations or Standards.

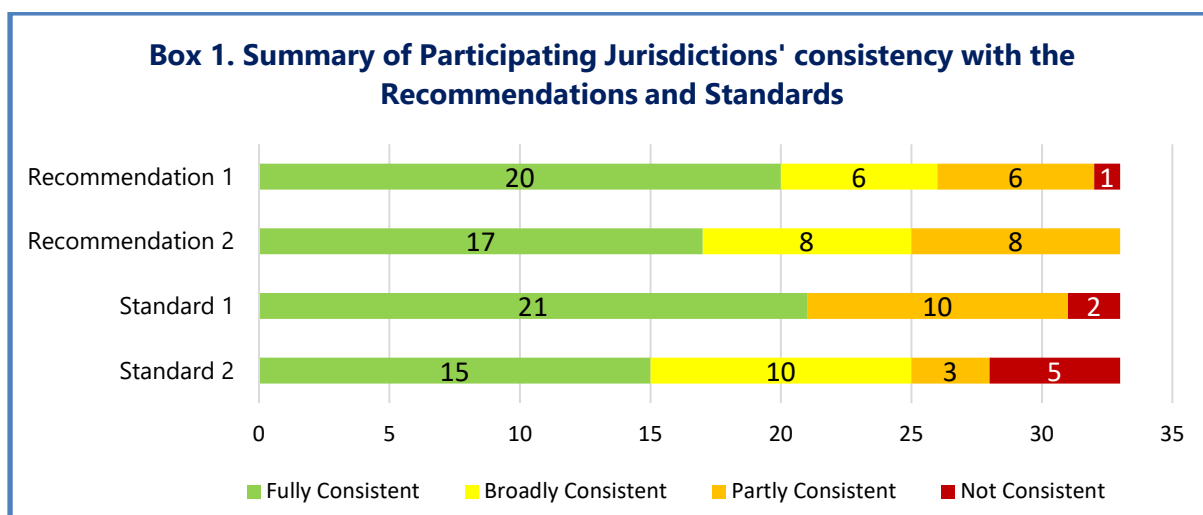
¹ <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD522.pdf>

² <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD523.pdf>

- **(Recommendation 1).** 20 Participating Jurisdictions are Fully Consistent with Recommendation 1. The Review found that:
 - The regulatory framework of Participating Jurisdictions that are Fully Consistent also ensures that the relevant provisions for critical systems of trading venues extend to any outsourced functions. Several Participating Jurisdictions that were assessed as less than Fully Consistent could not demonstrate that their regulatory framework included measures that would ensure that any provider of outsourced critical system functions could be held to the same standard as the licensed trading venue. A few Participating Jurisdictions do not permit outsourcing of functions relevant to critical systems.
 - The great majority of Participating Jurisdictions have regulatory recognition of some sort of critical systems for trading venues, via a range of means, most commonly focusing on trading systems or information systems relevant to trading and market operation, although most did not use or define the term “critical systems”.
 - Although most Participating Jurisdictions have measures aimed at resiliency, reliability, and integrity (including security) of critical systems, there are cases in which the regulatory framework does not address one or more aspects of the Recommendation. A few jurisdictions lacked statutory authority to require trading venues to meet the Recommendation, and instead rely on non-binding MoUs with trading venues, or accepted regulatory practice, without legislative support.
 - Participating Jurisdictions that were rated Fully Consistent had requirements relating to governance, accountability for process, systems monitoring (by trading venues), and stress testing. Shortcomings observed in Participating Jurisdictions that were assessed as less than Fully Consistent include:
 - i. a lack of clarity regarding accountability (of Boards or senior management) for critical systems (or a lack of explicit mechanisms to address governance);
 - ii. no mechanisms for ensuring outsourced critical systems are required to meet the same standards as those of licensed trading venues;
 - iii. no requirement for formal periodic reviews of critical systems; and
 - iv. no requirements for periodic capacity testing or for stress testing of critical systems.
- **(Recommendation 2).** 17 Participating Jurisdictions are Fully Consistent with Recommendation 2. Key findings in relation to Recommendation 2 include the following:
 - While few Participating Jurisdictions define the term “Business Continuity Plan”, many either set out the minimum elements that must be covered by a trading venue’s BCP (e.g., trading systems, information systems more generally, physical premises, communications, etc.) or provide guidance on the circumstances to which a BCP should be responsive (e.g., cyber threats, natural disaster, pandemic, etc.). The degree of instruction or guidance offered by differing Participating Jurisdictions varied widely. In one case, there is no statutory requirement for a trading venue to have a BCP.

- In some Participating Jurisdictions the requirements for trading venues regarding BCPs are not extended to the providers of any outsourced functions.
- Participating Jurisdictions that were rated Fully Consistent had requirements relating to governance, periodic review, and regular testing. In some Participating Jurisdictions, the regulatory framework requires trading venues to have a BCP, but it does not include a requirement for formal periodic review of the BCP or is not clear in relation to governance responsibilities for the BCP. Some Participating Jurisdictions that regulate different trading venues under more than one piece of legislation have more comprehensive regulatory requirements for one type of trading venue than for others (for instance, in terms of requiring the periodic review and testing of the BCP).
- **(Standard 1).** 21 Participating Jurisdictions are Fully Consistent with Standard 1. Some of the findings in relation to Standard 1 include the following:
 - In general, the regulatory frameworks for intermediaries set out the minimum elements that must be covered by an intermediary’s BCP, although again it was not common to find a formal definition of “business continuity plan”. Some Participating Jurisdictions simply require intermediaries to have a BCP without setting out in regulation or guidance what should be covered by the BCP. A few Participating Jurisdictions have issued extensive guidance for intermediaries on the range of eventualities that should be covered by BCPs, including different scenarios for natural disasters and health emergencies or pandemics.
 - Conversely, some Participating Jurisdictions’ regulations include specific requirements for disaster recovery plans or business interruption plans for technology systems, but they do not require intermediaries to have broader BCPs.
 - In some cases, although the regulatory framework requires intermediaries to have a BCP, there are no clear requirements relating to the governance or the periodic review or testing of the BCP.
- **(Standard 2).** 15 Participating Jurisdictions are Fully Consistent with Standard 2. The following are some of the findings in relation to Standard 2:
 - A number of Participating Jurisdictions have an explicit obligation on intermediaries to carry out “regular” or “periodic” reviews of BCP arrangements, but do not stipulate that this must occur on an annual basis. In some cases there is no set frequency for these reviews.
 - In a few cases there are no obligations on intermediaries for regular review of BCP arrangements or for updating of BCPs in response to material changes.

The findings are discussed with more detail in section 4 of this report (**Box 1** below summarizes the jurisdictional ratings of the Thematic Review).



COVID-19

While this Review was underway all IOSCO members have been affected by the COVID-19 pandemic. This situation resulted in some delays in completing the Review. However, all Participating Jurisdictions have continued to contribute to this Review despite the challenges posed for many.

Public health measures in many countries have required businesses and governments to activate BCP arrangements during the pandemic. This has provided an opportunity for the Review Team to collect information from the Participating Jurisdictions regarding responses to the global pandemic from a BCP perspective. This information is presented at the end of this Report (Section 6). However, this is not part of the Thematic Review and therefore it has had no impact on the jurisdictional ratings, given that the Assessment Methodology and the related Questionnaire were designed prior to the global pandemic.

Structure of this Report

Section 2 of this report presents some background information on the Recommendations and Standards and the reasons for the Review. Section 3 describes the Review process and the Assessment Methodology that was used for the Review. Section 4 presents a Recommendation-by-Recommendation and Standard-by-Standard analysis of the Participating Jurisdictions, focusing on the main gaps that the Review Team has identified in the Review. Section 5 concludes with some recommendations for regulators to consider to improve consistency of regulatory frameworks with the Recommendations and Standards. Section 6 sets out some measures taken by Participating Jurisdictions in response to the COVID-19 pandemic and offers some preliminary reflections on lessons learnt from this current situation.

2. BACKGROUND

2.1. The Recommendations and Standards

In 2006, the Joint Forum³ issued a report on *High-Level Principles for Business Continuity*,⁴ aimed at promoting the resilience of the global financial system to major operational disruptions. In the following years there were a number of market disruptions, which included cases related to the use of technology. Therefore, in 2013, the IOSCO Board asked its *Committee 2 – Regulation of Secondary Markets (C2)* and its *Committee 3 – Regulation of Market Intermediaries (C3)* to review the *High-Level Principles for Business Continuity*, particularly with regard to potential disruptions at trading venues and intermediaries. The review resulted in the publication, in December 2015, of the *Trading Venues Report* and the *BCP Report*.

The *Trading Venues Report* reviewed the measures and arrangements in place at trading venues to protect their critical functions and to restore them should a disruption occur. It also discussed the role of the regulator in the event of a disruption impacting a trading venue. Furthermore, it noted the critical role that trading venues play in the global financial system and the related importance of having effective BCPs. The *Trading Venues Report* sets out two Recommendations for regulators:

Recommendation 1: Regulators should require Trading Venues to have in place mechanisms to help ensure the resiliency, reliability and integrity (including security) of critical systems.

Recommendation 2: Regulators should require Trading Venues to establish, maintain and implement as appropriate a BCP.

Similarly, the *BCP Report* provided an overview of the regulatory frameworks and approaches taken by regulators in relation to business continuity and disaster recovery for intermediaries, and provided a range of tools to address potential disruptions and possible weaknesses in intermediaries' BCPs and recovery strategies. The *BCP Report* sets out two Standards for regulators:

Standard 1: Regulators should require market intermediaries to create and maintain a written business continuity plan identifying procedures relating to an emergency or significant business disruption.

Standard 2: Regulators should require market intermediaries to update their business continuity plan in the event of any material change to operations, structure, business, or location and to conduct an annual review of it to determine whether any modifications are necessary in light of changes to the market intermediary's operations, structure, business, or location.

³ The Joint Forum was established in 1996 under the aegis of IOSCO, the Basel Committee on Banking Supervision (BCBS), and the International Association of Insurance Supervisors (IAIS) to deal with issues common to the banking, securities and insurance sectors, including the regulation of financial conglomerates. <https://www.bis.org/bcbs/jointforum.htm>

⁴ <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD224.pdf>

The *Trading Venues Report* and the *BCP Report* also set out examples of “sound practices” that should be considered by trading venues in developing and implementing risk mitigation mechanisms that ensure the integrity, resiliency and reliability of their critical systems as well as their BCPs (*Trading Venues Report*), and “sound practices” that regulators could consider as part of their oversight of market intermediaries and that the intermediaries may find useful in the development and implementation of their BCPs (*BCP Report*). However, the “sound practices” are not part of the Recommendations and Standards and therefore they have not been assessed in this Thematic Review.

2.2. Reasons for the Review

The use of technology in the securities markets has continued to grow rapidly. This has brought numerous benefits in terms of market operation. It has also brought a need to manage the risks associated with an increasing reliance on technology. These risks include an inherent systemic vulnerability if electronic trading systems do not function properly. In addition to the key risk of potentially being unable to trade, technological problems can adversely impact overall confidence in markets. Potential disruptions at trading venues and intermediaries (either from IT and/or other operational sources) and possible weaknesses in their BCPs and recovery strategies can all undermine the proper or sound functioning of the markets and thus the objective of maintaining fair, efficient and transparent markets.

Financial supervisory authorities and financial industry participants have a shared interest in promoting the resilience of market infrastructures, intermediaries, and the broader financial system to major operational disruptions. In this vein, the purpose of business continuity management is to minimize the operational, financial, legal, reputational, and other material consequences arising from a disruption. Effective business continuity management concentrates on the impact, as opposed to the source, of the disruption. This permits financial industry participants and supervisors/regulators to concentrate on how to manage and recover from a disruptive event.

In this context, IOSCO decided to conduct a Thematic Review on the extent to which participating IOSCO member jurisdictions have implemented the two Recommendations and the two Standards set out in the *Trading Venues Report* and the *BCP Report*, as further explained in the next section. Moreover, this work meets the objectives of investor protection, fair and efficient markets and reduction of systemic risk.

2.3. Participating Jurisdictions

IOSCO Board members and Assessment Committee members were invited to participate in the Review. All other IOSCO member jurisdictions were also invited to participate. 33 jurisdictions (through 36 IOSCO member authorities) participated in the Thematic Review: Australia, Bahamas, Brazil, Canada, China, Dubai IFC, Germany, Hong Kong, India, Indonesia, Ireland, Israel, Italy, Japan, Kazakhstan (AIFC), Kuwait, Mauritius, Mexico, Morocco, Netherlands, New Zealand, Portugal, Serbia, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Tunisia, Turkey, United Kingdom, and United States of America.⁵

⁵ The Ontario Securities Commission (OSC) and the *Autorité des marchés financiers* (AMF, Québec) provided a joint response. The US Securities and Exchange Commission (SEC) and the Financial Industry Regulatory Authority (FINRA) also provided a joint response (in addition to the response provided by the Commodity Futures Trading Commission – CFTC).

The Assessment Committee (AC) and the Review Team (RT) thank the Participating Jurisdictions for supporting and facilitating the assessment work throughout the Review process, including during the different stages of the global pandemic.

3. METHODOLOGY

3.1. Nature of the Review and Objectives

On 14 November 2018, the IOSCO Board approved the Project Specifications for the Review, with the objective of assessing the consistency of implementation of the Recommendations and Standards, based on the legislative, regulatory and policy measures that have been taken by Participating Jurisdictions.

It is important to note that the focus of the Thematic Review is on the regulatory framework rather than on the market practices or the effectiveness of implementation by Participating Jurisdictions. This means it is possible that some Participating Jurisdictions that have been assessed as not Fully Consistent or Broadly Consistent with the Recommendations and Standards might have market practices that are effective in achieving the objectives of the Recommendations and Standards, even if such practices are not required by or not derive from the regulatory framework. This can be the case, for instance, where a Participating Jurisdiction's trading venue(s) or intermediaries have adopted (on a voluntary basis or not necessarily in response to a regulatory requirement) internal rules and policies or follow some practices in the area of business continuity. Equally, Participating Jurisdictions that have Consistent regulatory requirements might fall short in effectiveness through inadequate implementation, monitoring or enforcement, leading to poor adherence to such regulatory requirements.

This reflects that while the regulatory framework is a vital element for the sound operation of trading venues' and market intermediaries' critical systems and BCPs it is not, in itself, sufficient to ensure effective implementation.

3.2. Review Process

The AC set up an RT to conduct the assessment. The RT was led by New Zealand FMA (Liam Mason – Review Team lead) and was composed of staff from the following regulatory authorities: Quebec AMF (Martin Picard, Dominique Martin, and Frédéric Pérodeau), South Africa FSCA (Michael Kabai), Spain CNMV (Juan Munguira González), Turkey CMB (Asli Küçükgüngör), and UAE Dubai FSA (Wael El-Nagar), with the assistance of the IOSCO General Secretariat (Raluca Tircoci-Craciun, Rinasha Appavoo, and Josafat De Luna Martínez).

In line with the Project Specifications, the RT developed an *Assessment Methodology and Questionnaire* (see **Annex B**), which was approved by the AC in June 2019. The Assessment Methodology was developed to facilitate the assessment of the consistency of implementation of the Recommendations and Standards by Participating Jurisdictions.

The Assessment Methodology included a Rating Scale (*Fully Consistent, Broadly Consistent, Partly Consistent, Not Consistent, and Not Applicable* – see subsection 3.2.2 and Table 1), which the Participating Jurisdictions were asked to use to self-assess the consistency of their regulatory framework with the Recommendations and Standards.

The main part of the Assessment Methodology is the Questionnaire, which Participating Jurisdictions were asked to complete. The Questionnaire comprised two main sections: 1) preliminary questions, and 2) questions under each Recommendation and each Standard.

The Assessment Methodology also included some definitions as a reference for the responses to the Questionnaire:

“Trading Venue”⁶ encompasses exchanges or other multi-lateral trading facilities, including, for example, alternative trading systems and multi-lateral trading facilities (MTFs). It also refers to the operator of a particular exchange or trading facility. A “Trading Venue” does not, however, include a single dealer system or a broker crossing facility.⁷

“Intermediary” (or **“Market Intermediaries”**)⁸ generally include those who are in the business of managing individual portfolios, executing orders, dealing in or distributing securities.⁹

“Critical systems”¹⁰ refers to all computer, network, electronic, and technological systems that directly support trading operated by or on behalf of the applicable Trading Venue, including order routing, market data, market regulation, or market surveillance.¹¹

“Business Continuity Plan”¹² is a comprehensive written plan of action that sets out the procedures and systems necessary to continue or restore the operation of an organization in the event of a disruption.¹³

⁶ See definition in *Trading Venues Report*, footnote 5.

⁷ IOSCO recognizes, however, that the concept of a “Trading Venue” is evolving in a number of IOSCO member jurisdictions. For example, the concept may, at the discretion of individual members for their jurisdictions only, also include swap execution facilities or the proposed European organized trading facilities.

⁸ See *IOSCO Methodology for Assessing Implementation of the IOSCO Objectives and Principles of Securities Regulation* (May 2017), page 192. According to the methodology, a jurisdiction may also choose to regulate as a market intermediary an entity that engages in any one or more of the following activities: receiving and transmitting orders; proprietary trading/dealing on own account; providing advice regarding the value of securities or the advisability of investing in, purchasing, or selling securities; securities underwriting; placing of financial instruments without a firm commitment basis.

⁹ The definition includes firms such as product providers who are also intermediaries, and which directly distribute complex financial products they produce. The term does not include issuers who are not intermediaries.

¹⁰ *Trading Venues Report*, p. 6.

¹¹ Many regulators themselves do not use a specific definition of “critical system” when regulating Trading Venue systems or reviewing BCPs. Some regulators have identified critical systems or are proposing to do so. In addition, certain jurisdictions may identify in their regulations specific critical systems that merit a higher level of oversight and attention.

¹² *Trading Venues Report*, footnote 15.

¹³ A BCP is a component of business continuity management (BCM), i.e., a whole-of-business approach that includes policies, standards, and procedures for ensuring that specified operations can be maintained or recovered in a timely fashion in the event of a disruption. The purpose of BCM is to minimize the operational, financial, legal, reputational and other material consequences arising from a disruption.

The Assessment Methodology and Questionnaire were circulated to the Participating Jurisdictions on 1st July 2019, with responses due on 6 September 2019. Late responses were accepted until 4 October 2019.

The RT also invited Participating Jurisdictions to provide, on a voluntary basis, a brief description of how trading venues and intermediaries were applying the “Sound Practices” that are referred to in the *Trading Venues Report* and the *BCP Report*. However, the information on the “Sound Practices” is not part of the assessment and has not been used for rating purposes. Rather, such information will be provided to the relevant policy committees to assist in any future work on the Recommendations and Standards.

The Review was a desk-based exercise and involved an active dialogue with the Participating Jurisdictions. Following the analysis of the responses to the Questionnaire the RT engaged with each Participating Jurisdiction to challenge its self-assessed ratings and obtain any additional clarifications on the responses received. Participating Jurisdictions were able to comment on the draft notes or summaries that the Review Team prepared to assist its work. Participating Jurisdictions were also given the opportunity to confirm the way their responses have been reflected in this report.¹⁴

In this context, as the COVID-19 pandemic unfolded, the IOSCO Board agreed to pause or delay some of its work in 2020 in order to relieve untoward pressure on IOSCO members who were addressing core crisis challenges.¹⁵ This slowdown also applied to the Thematic Review, but it provided an opportunity for the Review Team to collect some information on the measures taken by Participating Jurisdictions in relation to the pandemic from a BCP point of view. However, this additional information is not part of the assessment and has no impact on the ratings (see section 6).

3.3. Rating Methodology

The Assessment Methodology included a Rating Scale (see **Table 1**) to assess the consistency of the implementation of the Recommendations and Standards by Participating Jurisdictions. The highest rating is Fully Consistent. The Rating Scale also considers the possibility of a Non-Applicable rating.

¹⁴ Participating Jurisdiction reviewed the draft report and provided comments to it. This fact-checking period concluded on 18 February 2021.

¹⁵ See IOSCO press release “*IOSCO reprioritizes its work program to address impact of COVID-19*” (8 April 2020), at <https://www.iosco.org/news/pdf/IOSCONEWS562.pdf>

Table 1 – Rating Scale

Fully Consistent	The jurisdiction’s regulatory framework is fully consistent with the Recommendation or Standard. The assessment has identified no gaps or shortcomings , or only a few gaps/shortcomings that have no material impact on the intended outcomes of the Recommendation or Standard.
Broadly Consistent	The jurisdiction’s regulatory framework is broadly consistent with the Recommendation or Standard. The assessment has identified gaps/shortcomings that only have a minor impact on the intended outcomes of the Recommendation or Standard.
Partly Consistent	The jurisdiction’s regulatory framework is partly consistent with the Recommendation or Standard. The assessment has identified gaps/shortcomings that have a significant impact on the intended outcomes of the Recommendation or Standard.
Not Consistent	The jurisdiction’s regulatory framework is not consistent with the Recommendation or Standard. The assessment has identified that the jurisdiction’s regulatory framework does not achieve the intended outcomes of the Recommendation or Standard.
Not Applicable	No implementation measures needed given the nature of the securities market and/or relevant structural, legal and institutional considerations. This status corresponds to the case where there is no market or activity in the jurisdiction that falls within the scope of the Recommendation or Standard.

Participating Jurisdictions were asked to respond to the Questionnaire and provide a self-assessed rating for each Recommendation and for each Standard, using the Rating Scale. The Review Team used the Participating Jurisdiction’s self-assessment as the starting point for its own assessment of each Participating Jurisdiction’s consistency of implementation against the Recommendations and Standards.

The Review Team agreed that it would challenge the self-assessed ratings in the following situations:

- a) Where the Rating Scale had been misapplied and/or the basis to support the implementation was not clear (including where insufficient evidence had been provided);
- b) Where purported implementation clearly was not related to the Recommendations and Standards;
- c) Where the scope of the implementation measures did not cover the full scope intended by the Recommendations and Standards.

3.4. Principles of assessment

The *Trading Venues Report* and the *BCP Report* contain detailed discussion of the issues and options relevant to the Recommendations and Standards. However, the two Recommendations and the two Standards are expressed in a broad, high-level manner. Therefore, the Review Team determined that it would need to identify the key elements of consistent implementation, by reference to the text and purpose of the two reports. At the same time, the Review Team was aware that assessment should be only of the head principles (the Recommendations and Standards), not on matters of detail in either of the reports that was not reflected in the head principles.

The Review Team was also conscious that the approach taken to implementation in any Participating Jurisdiction rested on a more general approach to legislation and regulation preferred by the legal system of the Participating Jurisdiction (i.e., some Participating Jurisdictions implement regulatory standards via detailed obligations in their enabling laws, while others express broad principles in legislation). As with all IOSCO Principles, the Recommendations and Standards can be implemented by either approach.

Against this background, the RT agreed critical elements contributing to each of the Recommendations and Standards, based on the text of the *Trading Venues Report* and the *BCP Report*. The Review Team agreed that in all cases there should be:

- Clear regulatory authority (certainty of obligation and regulatory authority to influence behaviour, including through application of sanctions).
- Clear application of the regulation to trading venues and intermediaries (as the case required).
- Adequate coverage of the specific requirements of the Recommendations or Standards. In the case of principles-based jurisdictions that sought to rely on broad regulatory obligations to satisfy specific aspects of the Recommendations or Standards, the Review Team sought evidence that the regulator had communicated that compliance with the broad obligation required the specific aspects to be met.

This approach was discussed and agreed by the AC in December 2019.

4. FINDINGS AND OBSERVATIONS

This section is made up of two parts. Section 4.1 provides an overview of the regulatory regimes and approaches taken by the Participating Jurisdictions to meet or implement the Recommendations and Standards. This is based on the responses to the “Preliminary Questions” of the Questionnaire, which were mostly focused on how the regulatory framework of each Participating Jurisdiction addresses Trading Venues, Intermediaries, Critical Systems (in this case for trading venues), and Business Continuity Plan.

Section 4.2 presents a summary of the ratings for each Participating Jurisdiction in respect of their consistency with the Recommendations and Standards (Table 2). This is followed by a Recommendation-by-Recommendation and Standard-by-Standard analysis of the Participating Jurisdictions, focusing on the main gaps that the Review Team has identified in the Review.

Section 4.2 also refers to some examples that the RT considers worthy to highlight on the measures or regulations taken in some of the Participating Jurisdictions. Such examples do not set a benchmark nor provide an indication on the best way to meet the respective. Instead, these examples are only used to provide additional context or possible interesting references that the RT found during the Review process.

It should also be mentioned that as of the cut-off date of the Review (September 2019) some Participating Jurisdictions were in the process of reviewing or making changes to the applicable laws and regulations on the subject matter of the Review (i.e. Australia ASIC, Brazil CVM).

4.1. Jurisdictions’ approach to terms used in the Reports

The RT observed a range of approaches taken by Participating Jurisdictions to characterising the terms used in the Recommendations and Standards, such as trading venue, critical systems, business continuity plans, or intermediaries.

Trading Venues

- Participating Jurisdictions refer to trading venues in a variety of ways, and, in some cases, the regulatory framework differentiates among different classes of trading venues in terms of regulatory requirements. No Participating Jurisdiction reported having unregulated trading venues.
- Most regulatory regimes of the Participating Jurisdictions do not use or define the term “critical systems”. In some cases, the regulations refer to critical systems using a different term. Nevertheless, the majority of Participating Jurisdictions have regulatory recognition of some sort of critical systems for trading venues, via a range of means, most commonly focusing on trading systems or information systems relevant to trading and market operation. The small number of Participating Jurisdictions that expressly use the term “critical systems” have adopted definitions that are consistent with or broader than that in the *Trading Venues Report*.
- Commonly the regulatory framework for trading venues does not formally define the term “business continuity plan”, but often sets out the minimum elements that must be covered by a trading venue’s BCP.

Intermediaries

- The regulatory framework of the Participating Jurisdictions covers a wide range of intermediaries (although “market intermediary” or “intermediary” is associated with this or other terminology). In all cases, the concept as applied locally appeared consistent with, or broader than, the definition used by the Review.
- As in the case of trading venues, the regulatory framework for intermediaries most commonly does not formally define the term “business continuity plan”, but it sets out the minimum elements that must be covered by an intermediary’s BCP.

4.2. Recommendations and Standards

The Review Team asked the Participating Jurisdictions to respond to the Questionnaire and provide a self-assessed rating for each Recommendation and each Standard. Based on this information, as well as on the additional responses and clarifications provided by the Participating Jurisdictions through follow-up questions, subsequent dialogue, and fact-checking of the draft report, the Review Team came up with the final ratings, which are indicated in **Table 2**.

Thirteen of the 33 Participating Jurisdictions have been found to be “**Fully Consistent**” with the two **Recommendations** and the two **Standards** (Canada, Germany, Ireland, Italy, Japan, Netherlands, Portugal, Singapore, Spain, Sweden, Turkey, United Kingdom, United States). Eight Participating Jurisdictions have not achieved a rating of “Fully Consistent” for any of the Recommendations and Standards, while the other twelve Participating Jurisdictions achieved one, two or three “Fully Consistent” ratings.

Broken down by the Recommendations and Standards, 20 Participating Jurisdictions are Fully Consistent with **Recommendation 1** and 17 are Fully Consistent with **Recommendation 2**, while 21 Participating Jurisdictions are Fully Consistent with **Standard 1** and 15 with **Standard 2** (see **Box 2**).

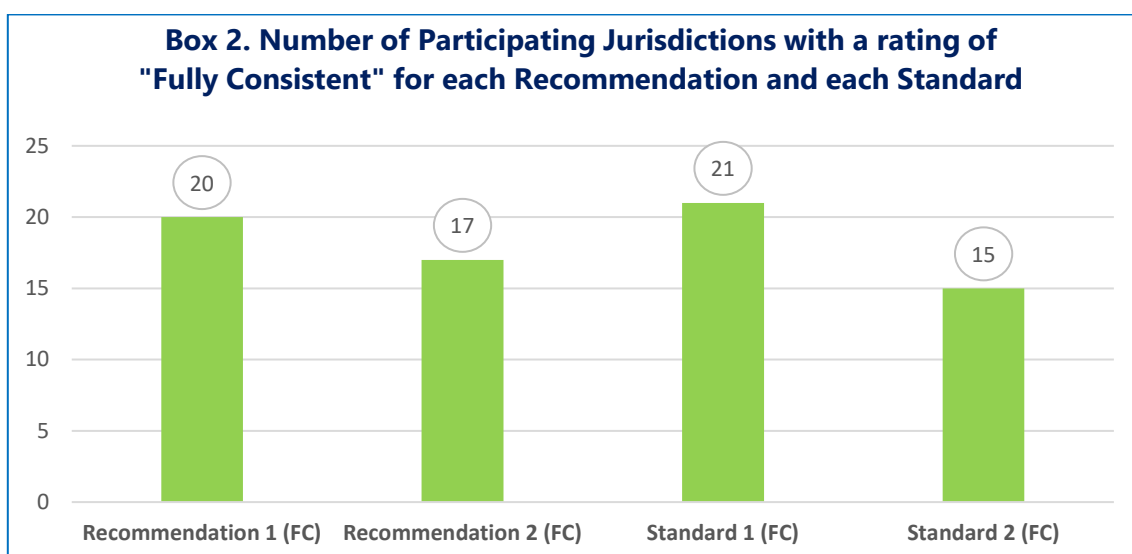


Table 2 – Participating Jurisdictions’ Consistency of Implementation

Rating Scale: Fully Consistent Broadly Consistent Partly Consistent Not Consistent Not Applicable

Jurisdiction	Trading Venues		Intermediaries	
	Recommendation 1	Recommendation 2	Standard 1	Standard 2
Australia	Fully Consistent	Fully Consistent	Partly Consistent	Broadly Consistent
Bahamas	Not Consistent	Partly Consistent	Not Consistent	Not Consistent
Brazil	Partly Consistent	Partly Consistent	Fully Consistent	Partly Consistent
Canada ¹⁶	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
China	Fully Consistent	Fully Consistent	Fully Consistent	Broadly Consistent
Dubai IFC	Fully Consistent	Broadly Consistent	Partly Consistent	Broadly Consistent
Germany	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
Hong Kong	Partly Consistent	Partly Consistent	Fully Consistent	Broadly Consistent
India	Fully Consistent	Fully Consistent	Fully Consistent	Broadly Consistent
Indonesia	Fully Consistent	Partly Consistent	Partly Consistent	Partly Consistent
Ireland	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
Israel	Fully Consistent	Fully Consistent	Partly Consistent	Broadly Consistent
Italy	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
Japan	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
Kazakhstan (AIFC)	Broadly Consistent	Fully Consistent	Partly Consistent	Broadly Consistent
Kuwait	Partly Consistent	Broadly Consistent	Partly Consistent	Not Consistent
Mauritius	Partly Consistent	Broadly Consistent	Partly Consistent	Broadly Consistent
Mexico	Broadly Consistent	Partly Consistent	Fully Consistent	Fully Consistent
Morocco	Broadly Consistent	Broadly Consistent	Partly Consistent	Not Consistent
Netherlands	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
New Zealand	Broadly Consistent	Broadly Consistent	Fully Consistent	Broadly Consistent
Portugal	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
Serbia, Republic of	Broadly Consistent	Partly Consistent	Partly Consistent	Partly Consistent
Singapore	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
South Africa	Broadly Consistent	Broadly Consistent	Not Consistent	Not Consistent
Spain	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
Sweden	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
Switzerland	Fully Consistent	Broadly Consistent	Fully Consistent	Broadly Consistent
Thailand	Partly Consistent	Partly Consistent	Fully Consistent	Fully Consistent
Tunisia	Partly Consistent	Partly Consistent	Partly Consistent	Not Consistent
Turkey	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
United Kingdom	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent
United States of America ¹⁷	Fully Consistent	Fully Consistent	Fully Consistent	Fully Consistent

The following subsections present more details on the jurisdictional ratings.

¹⁶ Joint response by OSC/QAMF.

¹⁷ Joint response by SEC and FINRA, and a separate response by CFTC.

4.2.1. *Trading Venues Report (Recommendation 1)*

Recommendation 1:

Regulators should require Trading Venues to have in place mechanisms to help ensure the resiliency, reliability and integrity (including security) of critical systems.

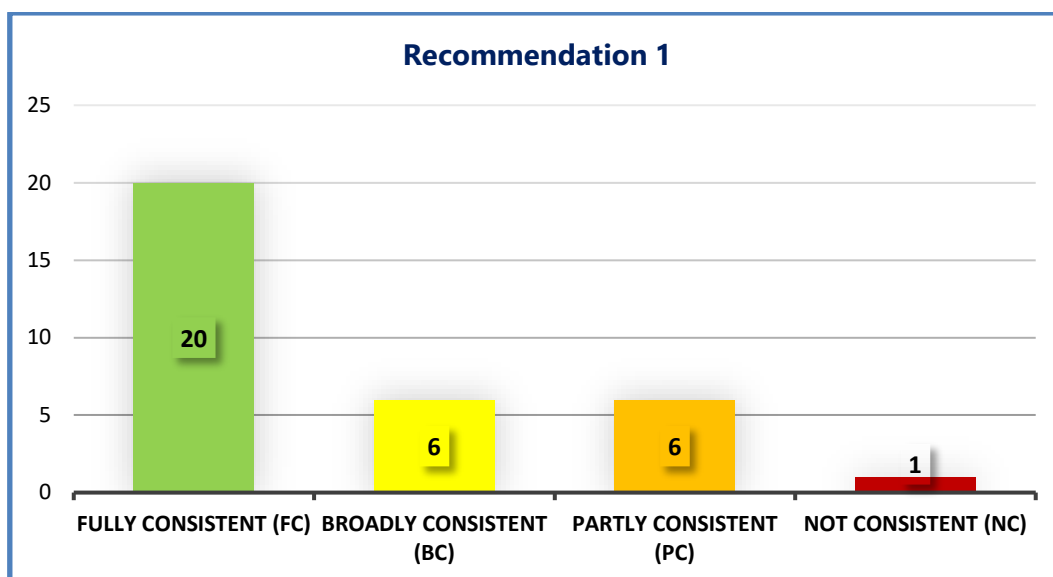
Most of the Participating Jurisdictions' regulatory regimes for Trading Venues do not define or use the term "critical system" or the terms "resiliency", "reliability", "integrity" or "security" (these terms are also not defined in the *Trading Venues Report*).¹⁸ In other cases, some Participating Jurisdictions use a different terminology in their regulations to cover the areas or elements behind such terms, with different levels of detail.

Given this, the RT, with the AC's agreement, identified specific elements that would be accepted as reflecting the purpose of the Recommendation's reference to "resiliency, reliability and integrity (including security) of critical systems".

- In terms of "resiliency" the RT looked for elements in the regulatory framework that addressed capacity and performance of trading systems. The RT agreed that requirements for BCPs could be a relevant part of this, but would not, on their own, be sufficient (in light of the separate reference to BCPs in Recommendation 2).
- The RT agreed that elements relevant to "reliability" would include both availability of the system (uptime) and recovery time.
- An assessment of whether the regulatory framework addresses "integrity (including security)" required elements or measures concerning data integrity and physical and cyber-security.

In order to be rated "Fully Consistent" the Review Team required elements in the regulatory framework that clearly addressed all three elements of Recommendation 1 (resiliency, reliability, and integrity/security), even if the terminology of the Participating Jurisdictions differed. Further, in terms of the regulatory "mechanisms" required to be in place in a Participating Jurisdiction in order to be rated "Fully Consistent", the Review Team looked for requirements relating to governance, accountability for process, systems monitoring (by trading venues), and stress testing. Also, to be rated "Fully Consistent" the Participating Jurisdiction's measures clearly need to reflect how it applies to any critical functions that were outsourced by a trading venue, where permitted.

¹⁸ Instead, the *Trading Venues Report* defines "Market Integrity" and "Market Efficiency" (see p.1, footnote 6). "Market Integrity" is defined as the extent to which a market operates in a manner that is, and is perceived to be, fair and orderly and where effective rules are in place and enforced by regulators so that confidence and participation in their market is fostered. "Market Efficiency" is defined as the ability of market participants to transact business easily and at a price that reflects all available market information. Factors considered to determine whether a market is efficient include liquidity, price discovery and transparency. In other parts, the *Trading Venues Report* refers, without including a definition, to "integrity of critical systems" (p. 9), "systems integrity" (p. 11), "integrity of the [trading] venue" (p. 17), "data integrity" (p. 31), or "integrity of the outsourced systems" (p. 17); as well as "information security policies" (p. 11), "cyber-security" (p. 20), or "electronic security of critical systems" (p. 24).



In this vein, 20 Participating Jurisdictions were rated as “**Fully Consistent**” with **Recommendation 1** (Australia, Canada, China, Dubai, Germany, India, Indonesia, Ireland, Israel, Italy, Japan, Netherlands, Portugal, Singapore, Spain, Sweden, Switzerland, Turkey, UK, US).

One of the few Participating Jurisdictions expressly to use the term “Critical Systems” in its legislation is **Singapore**. The Monetary Authority of Singapore (MAS) defines “critical system” as a system the failure of which will cause significant disruption to the operations of the financial institution (which includes trading venues) or materially impact the financial institution’s service to its customers, such as a system which (a) processes transactions that are time critical; or (b) provides essential services to customers. Singapore’s regulatory requirements explicitly cover aspects related to resiliency, reliability, and integrity (including security) of critical systems.

Regarding *resiliency*, MAS has set out guidance for trading venues to establish a technology risk management framework, including the maintenance of a risk register to facilitate the monitoring and reporting of risks. There is an expectation for trading venues to have policies and procedures to manage system changes, capacity and incidents, as well as ensuring the stability of the production IT environment. To ensure system *reliability*, trading venues are also expected to maintain high system availability and recoverability – this includes developing built-in redundancies to reduce single points of failure which can bring down an entire network, as well as maintaining standby hardware, software and network components necessary for swift system recovery. For *integrity (including security)*, MAS has set out guidance on appropriate measures to protect sensitive or confidential information, as well as good cyber hygiene practices. The guidance also includes provisions relating to the physical security of data centres, where critical systems are concentrated and maintained in. For example, entities should ensure that the perimeter of the data centre and relevant facilities are physically secured and monitored. The guidance sets out how MAS will legally enforce its regulatory requirements.

A distinguishing feature of Participating Jurisdictions that were rated as “Fully Consistent” was that their regulatory framework ensures that the relevant provisions for critical systems extend to any outsourced functions (or prohibit outsourcing of critical functions). One example is **Australia**, where trading venues (referred to as market operators) are required by legislation to do all things necessary to ensure their market is fair, orderly, and transparent and to have

sufficient resources (financial, technological, and human) to operate the market. Detailed expectations for Australian licensees are set out in regulatory guides issued by the Australian Securities and Investments Commission (ASIC). These guides explain ASIC’s interpretation of legislative requirements and expectations of licensees to comply with their regulatory obligations. ASIC sets out its principal expectations for market operators in three regulatory guides: RG 172 *Financial Markets: Domestic and overseas operators* (RG 172), RG 265 *Guidance on ASIC Market Integrity Rules for participants of securities markets* (RG 265), and RG 266 *Guidance on ASIC Market Integrity Rules for participants of futures markets* (RG 266). RG 172 outlines ASIC’s “Principles of Good Governance” for market operators. It also contains guidance on ASIC’s requirements in relation to governance in order for an operator to demonstrate it has “sufficient” financial, technological, and human resources to operate its market properly. While there are no restrictions on outsourcing under the law, RG 172 sets out controls that ASIC expects market operators to have in place when outsourcing critical systems. It requires that all risks arising from outsourcing material business activities must be appropriately managed to ensure that market operators are able to meet their obligations. Factors for consideration as part of outsourcing arrangements include business continuity measures, the capacity of the service provider, the security and confidentiality of information, and termination procedures.

Eight jurisdictions that participated in the Review were members of the European Union (EU) at the time of the assessment.¹⁹ All of the **EU Participating Jurisdictions** were assessed as “Fully Consistent” with Recommendation 1. EU law relevant to the Recommendations and Standards is set out both in Directives which must be transposed by member states into domestic legislation, and also in Regulations which have direct effect as part of the law of member states without the need for any transposition.

Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU (“MiFID II”) is an EU Directive that each EU Participating Jurisdiction should transpose into its national/local laws or regulations. Article 48 of *MiFID II* directly addresses both of the Recommendations for trading venues. It provides that Member States shall require a regulated market to have in place effective systems, procedures and arrangements to ensure its trading systems are resilient, have sufficient capacity to deal with peak order and message volumes, are able to ensure orderly trading under conditions of severe market stress, are fully tested to ensure such conditions are met and are subject to effective business continuity arrangements to ensure continuity of its services if there is any failure of its trading systems.

MiFID II is reinforced by an EU Regulation, which has direct binding effect on member states, namely *Commission Delegated Regulation (EU) 2017/584 of 14 July 2016 supplementing Directive 2014/65/EU of the European Parliament and of the Council with regard to regulatory technical standards specifying organisational requirements of trading venues (“CDR 2017/584”)*. Among other things this EU Regulation requires all trading venues to carry out self-assessments against the requirements of *MiFID II*, and to carry out periodic reviews of the performance and capacity of algorithmic trading systems and associated processes for governance, accountability, approval and business continuity arrangements. Trading Venues must also perform stress tests to verify the performance of systems and identify the scenarios

¹⁹ Germany, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom. As in the case of the other Participating Jurisdictions, the EU participants were assessed based on their regulatory arrangements in place as of September 2019. The United Kingdom was a member of the European Union until 31 January 2020, so the assessment reflects its situation as of the cut-off date.

under which the trading system or parts of the trading system perform their functions with systems failures, outages or errors in matching transactions.

Spain, as an example, has transposed *MiFID II* via the *Spanish Royal Decree-Law 21/2017 of 29 December of 2017 on urgent measures for the adaptation of Spanish law in accordance with European Union regulations in relation to the securities markets*. This law, along with *CDR 2017/584*, constitutes the main regulatory framework governing supervision and oversight of trading venues in Spain. It requires trading systems to have a capacity of at least two times the maximum peak of messages per second recorded in that system for the last two years. Trading venues must periodically evaluate the performance of trading systems and associated processes for governance, accountability and business continuity arrangements. As part of the evaluation process, trading venues must perform stress tests.

The Review Team rated six jurisdictions as “**Broadly Consistent**” with **Recommendation 1** (Kazakhstan, Mexico, Morocco, New Zealand, Serbia, South Africa). Given the relatively high-level nature of Recommendation 1, it was agreed that a “Broadly Consistent” rating should be available only where the shortcomings from full consistency were very minor. Each of these six jurisdictions demonstrated measures aimed at resiliency, reliability, and integrity (including security) of critical systems (again, whether or not adopting the same terminology). However, these jurisdictions did not have in place a clear role of accountability (of Boards or senior management) for critical systems, or otherwise lacked explicit mechanisms to address governance or outsourced functions.

For example, **Morocco**’s regulations require the trading venue to maintain its information systems at all times in order to guarantee the reliability, availability and coverage of all the functionalities required to carry out its activity. The regulations require the trading venue’s BCP to be reviewed and approved by the highest decision-making entity of the trading venue, but the regulations do not include requirements for the identification of responsible senior management or board roles for Critical Systems and events. Morocco’s regulatory framework also does not contain restrictions or controls on the outsourcing of critical systems. The regulatory framework does include requirements for periodic capacity testing of critical systems and requires that the information system is subject every four years to an external audit. This approach appears to be Broadly Consistent with Recommendation 1.

A “Partly Consistent” rating was given where a Participating Jurisdiction has taken cogent steps that address critical systems security, but where these steps fall materially short of addressing all of the key aspects of Recommendation 1. Commonly, Participating Jurisdictions rated as “Partly Consistent” did not have provision for formal periodic reviews of critical systems and did not have requirements for stress testing. In some cases, arrangements relating to critical systems were set out in non-binding Memorandums of Understanding (MoUs) between regulators and trading venues (in keeping with the Assessment Methodology, the Review Team required further details or clarifications about the enforceability of regulatory obligations in order to consider that a Participating Jurisdiction had Fully or Broadly implemented the Recommendation). Accordingly, six jurisdictions were assessed as “**Partly Consistent**” with **Recommendation 1** (Brazil, Hong Kong, Kuwait, Mauritius, Thailand, Tunisia).

One Participating Jurisdiction rated as “Partly Consistent” was **Brazil**, which has a single trading venue. Brazilian regulation at the cut-off date of the assessment did not include specific requirements relating to the resiliency, reliability, or integrity of critical systems for a trading

venue. The *Comissão de Valores Mobiliários* (CVM) Instructions (which are legally binding) do set out requirements for governance of risk management systems and business continuity. There is an overarching obligation on trading venues to maintain regular operation and security of the trading venue's systems and to identify, manage, and mitigate risks that are considered significant to the operation of the trading venue. However, there are no requirements relating to stress testing or monitoring of critical systems, and no restrictions on or control over outsourcing.

One jurisdiction was rated as “**Not Consistent**” with **Recommendation 1** (The Bahamas). Trading venues are regulated in The Bahamas under the Securities Industry Act 2011 (SIA). This requires trading venues to be organized in a manner and to have sufficient capacity and resources to carry out their proposed functions in compliance with securities laws. There are not specific regulatory requirements that address critical systems of trading venues. The Review Team noted that the Securities Commission of The Bahamas must be advised of any material breakdown of administrative or control procedures. Additionally, in practice the Commission's monitoring as described to the Review Team does extend to reviewing critical systems of trading venues, but the Commission does not consider that the legislative framework provides the means to enforce these obligations if required.

Additional Features

Some Participating Jurisdictions require the trading venues to make a prompt notification to the regulator about incidents affecting their critical systems and report the corrective actions taken to address such situation. For example:

- **Singapore:** trading venues shall notify the regulator as soon as possible, but not later than 1 hour, upon the discovery of a major incident and shall, within 14 days or such longer period as the regulator may allow, from the discovery of the major incident, submit a root cause and impact analysis report to the regulator.
- **South Africa:** the trading venue shall notify the regulator without delay and within forty-eight (48) hours of becoming aware of the significant event, and shall provide the regulator, as soon as practicable, a post-incident report that includes a root-cause analysis and measures introduced to prevent the occurrence of a similar event in the future.

4.2.2. Trading Venues Report (Recommendation 2)

Recommendation 2:

Regulators should require Trading Venues to establish, maintain and implement as appropriate a BCP.

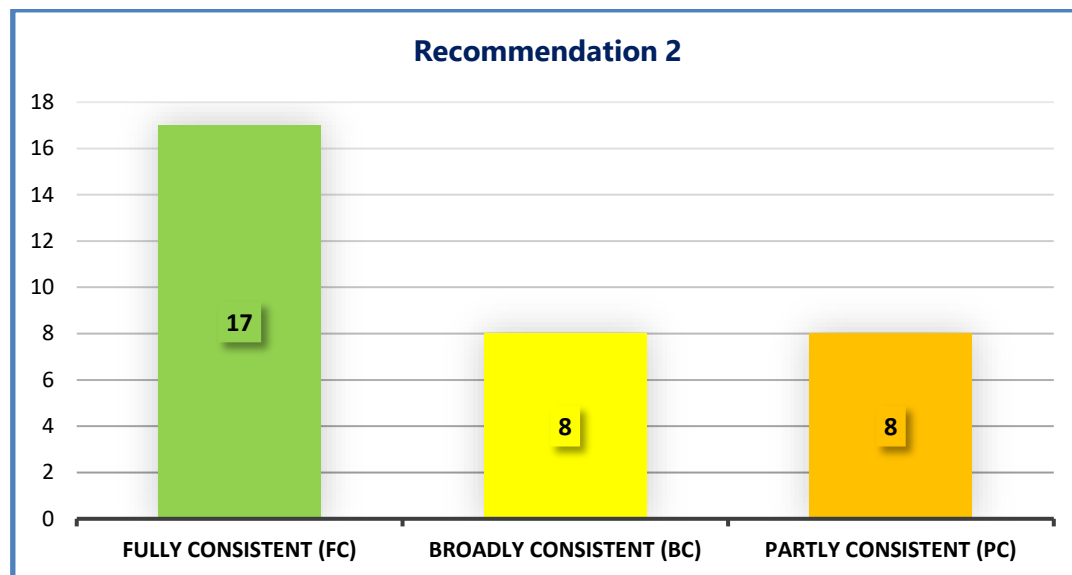
The *Trading Venues Report* defines the term “Business Continuity Plan”, as follows:

“Business Continuity Plan/BCP”²⁰ is a comprehensive written plan of action that sets out the procedures and systems necessary to continue or restore the operation of an organization in the event of a disruption.²¹

Although Recommendation 2 is more specific than Recommendation 1, it is equally expressed at a very high level. Hence, the Review Team agreed to sought elements in the regulation covering all three aspects of Recommendation 2: establishment, maintenance, and implementation of the BCP.

In order to be assessed as “Fully Consistent” with Recommendation 2, the Review Team agreed it would be necessary for a Participating Jurisdiction to have the following requirements in place:

- An obligation on trading venues to have a BCP, and ability for the regulator to obtain a copy of the BCP.
- Board or senior management responsibility for establishment and maintenance of the BCP.
- An obligation to maintain BCPs via periodic review and update.
- Requirements for regular testing of the BCP (for implementation).



²⁰ *Trading Venues Report*, footnote 15.

²¹ The *Trading Venues Report* also refers that a “BCP is a component of business continuity management (BCM), i.e., a whole-of-business approach that includes policies, standards, and procedures for ensuring that specified operations can be maintained or recovered in a timely fashion in the event of a disruption. The purpose of BCM is to minimize the operational, financial, legal, reputational and other material consequences arising from a disruption.” (footnote 15).

17 Participating Jurisdictions were rated as “**Fully Consistent**” with **Recommendation 2** (Australia, Canada, China, Germany, India, Ireland, Israel, Italy, Japan, Netherlands, Portugal, Singapore, Spain, Sweden, Turkey, UK, US).

All Participating Jurisdictions rated as “Fully Consistent” have explicit regulatory requirements relating to BCPs for Trading Venues. Few Participating Jurisdictions have a definition for the term “business continuity plan”. Those that do so have definitions consistent with the term as used in the Review. More commonly the regulatory framework sets out minimum elements that must be covered by a trading venue’s BCP. This is the case, for instance, for **EU Participating Jurisdictions**, via the *CDR 2017/584*. Other Participating Jurisdictions impose a broad obligation on trading venues to ensure that BCPs are fit for any eventuality.

In **Canada**, for example, the key obligations for trading venues (described as marketplaces) are found in National Instrument 21-101 *Marketplace Operation* (NI 21-101). This is complemented by more detailed guidance in Companion Policy to NI 21-101 (CP 21-101). Every trading venue must develop and maintain reasonable BCPs, including disaster recovery plans, under NI 21-101. The submitted BCP must include a description of responsibility for the development of the plans and their ongoing review and updating, as well as escalation procedures for activation in the event of disaster or disruption. Regulation does not prescribe the mandatory elements of the BCP, but instead requires that business continuity planning should encompass all policies and procedures to ensure uninterrupted provision of key services regardless of the cause of potential disruption. There is an express requirement for a trading venue to complete an impact analysis. In addition, there is a statutory two hour recovery objective laid out for trading venues that have a total trading volume of or greater than 10% of the total dollar value of the trading volume in any type of security on all trading venues in Canada. BCPs must be tested on a reasonably frequent basis and, in any event, at least annually. NI 21-101 includes detailed controls on outsourcing.

India has detailed requirements relating to BCPs for trading venues. In addition to requiring trading venues to have a BCP, Indian regulation also requires trading venues have in place the necessary requirements regarding the governance of their BCPs. The Securities and Exchange Board of India (SEBI) has the power to obtain and assess copies of BCPs. The regulatory framework also provides guidance on the events, scenarios, or degree of disruption required to be addressed by BCPs. The Indian regulatory framework is one of a few also to require Trading Venues to complete a business impact analysis to identify recovery time objectives and recovery point objectives, and to identify critical assets based on their sensitivity and criticality for business operations, services and data management. Detailed regulation addresses specific topics such location of backup site, recovery objectives and times, record keeping during use of a BCP, and communication protocols during BCP events, among other requirements.

The **United States** SEC has adopted Regulation Systems Compliance and Integrity (Regulation SCI) under the Securities Exchange Act of 1934. This requires each SCI entity’s policies and procedures with respect to capacity, integrity, resiliency, availability, and security to include, among other things, business continuity and disaster recovery plans that include maintaining backup and recovery capabilities sufficiently resilient and geographically diverse and that are reasonably designed to achieve next business day resumption of trading and two-hour resumption of critical SCI systems following a wide-scale disruption. Regulation SCI provides that an SCI entity’s policies and procedures relating to capacity, integrity, resiliency, availability, and security will be deemed to be reasonably designed if they are consistent with “current SCI industry standards”.

As with Recommendation 1, the Review Team looked for elements indicating that obligations regarding BCPs extended to the providers of any outsourced functions. This is covered in detail, for example, in the regulatory arrangements in **Sweden**, which requires that before contracting with external service providers, trading venues should satisfy themselves that the risk resulting from outsourcing remains within levels permitted by their operational risk management policies and does not compromise business continuity preparedness; the trading venues should ensure that their service providers have a BCP in place that is equal to, if not more robust than, their own; the trading venues should proactively seek assurances that their service providers' BCPs are regularly tested; in considering, renegotiating or renewing an outsourcing arrangement, a trading venue should subject the service provider to appropriate due diligence processes to assess the risks associated with the outsourcing arrangements and that the information to be evaluated includes the service provider's risk management framework and capabilities, including technology risk management and business continuity management in respect of the outsourcing arrangement.

EU Participating Jurisdictions were all assessed as "Fully Consistent" with Recommendation 2, on the basis of their transposition of MiFID II and by the application of Articles 15-17 of CDR 2017/584, which expressly require Trading Venues to have effective business continuity arrangements in place, to test these, and to undertake periodic formal reviews of them. The national laws or regulations of some of these Participating Jurisdictions also specify requirements in line with Recommendation 2.

Participating Jurisdictions were assessed as "Broadly Consistent" with Recommendation 2 if their regulatory framework clearly requires Trading Venues to have a BCP, but where there were minor weaknesses in terms of the regulatory coverage to influence maintenance or implementation of the BCP, such as a lack of clarity as to governance responsibilities for the BCP or for review of BCP arrangements. Eight Participating Jurisdictions were rated as "**Broadly Consistent**" with **Recommendation 2** (Dubai, Kazakhstan (AIFC), Kuwait, Mauritius, Morocco, New Zealand, South Africa, Switzerland).

For example, in **Dubai** there is a requirement on Trading Venues to have a BCP, under the Dubai Financial Services Authority's Authorised Market Institutions (AMI) Rulebook. AMIs are required to test BCP arrangements and to keep them up to date, but there is not a requirement for formal periodic review of BCPs.

The eight Participating Jurisdictions assessed as "**Partly Consistent**" with **Recommendation 2** (Bahamas, Brazil, Hong Kong, Indonesia, Mexico, Serbia, Thailand, Tunisia) also have a regulatory requirement for Trading Venues to have a BCP, although in some cases this is found only from an interpretation of more general obligations relating to market integrity. In other cases, in some Participating Jurisdictions that have more than one type of trading venues, the regulatory requirements for one type of trading venue are more comprehensive than the regulatory requirements applicable to the other type of trading venue (for instance, in terms of requiring the periodic review and testing of BCPs).

An example is **The Bahamas**, where there is no statutory requirement for a Trading Venue to have a BCP. However, trading venues must be licensed, and must submit any information that is required by the regulator in support of licence applications. In practice, the Securities Commission of The Bahamas requires applicants for a licence to submit a BCP. Also, in practice, the Commission's regulatory examination programme includes the regular review of a trading venue's BCP arrangements as well as any outsourcing arrangements, although this is not backed up by legislative requirements either for maintenance of a BCP after licensing or

for outsourcing standards. The Commission advised the Review Team that a trading venue can be required to supply a copy of any BCP to the Commission on request, but that no sanction would be available should a trading venue fail to maintain a BCP.

In **Thailand**, the regulatory requirements for securities exchanges and derivatives exchanges differ, with the latter being more robust. The regulatory framework regarding BCPs for securities exchanges is largely set out in a non-binding MoU between the Securities and Exchange Commission of Thailand and the Securities Exchange of Thailand. The Review Team was informed that the Securities and Exchange Commission of Thailand is in the process of proposing amendments to the Securities and Exchange Act B.E. 2535 (1992) to empower the SEC Board to stipulate regulations regarding conduct of business operation. It is intended that this power will enable the Securities and Exchange Commission of Thailand to set out requirements on BCPs for the Securities Exchange of Thailand and ensure their compliance.

In **Tunisia**, Trading Venues are required to do what is necessary to ensure the legal and technical security of transactions. This is applied by the regulator (*Conseil du marché financier*, CMF) to require the stock exchange to have a BCP, but no expectations have been conveyed by the regulator relating to governance, periodic review, or testing of BCPs. Outsourcing of the operation of the stock exchange systems in Tunisia is not permitted.

No Participating Jurisdiction was rated as “**Not Consistent**” for **Recommendation 2**.

Additional Features

Some Participating Jurisdictions’ regulation includes some sort of guidance or requirements on the events, scenarios, or degree of disruption to be addressed by a trading venue’s BCP, or include requirements for trading venues to complete a business impact analysis or similar to identify Critical Systems and recovery objectives or satisfy themselves about the adequacy of the BCP of the key outsource service providers. For example:

- **EU:** the regulation for trading venues covers, for instance, a range of possible adverse scenarios relating to the operation of the algorithmic trading systems, including the unavailability of systems, staff, work space, external suppliers or data centres or loss or alteration of critical data and documents; as well as the procedures to be followed in case of a disruptive event.
- **India:** the regulation requires stock exchanges to take appropriate measures to determine that its service providers/outsourcing agencies establish and maintain emergency procedures and a plan for business continuity/disaster recovery, with periodic testing of backup facilities.
- **Mexico:** stock exchanges and brokers are required to conduct a business impact analysis to identify critical systems and recovery objectives.
- **Switzerland:** the business impact analysis is the basis to define the recovery time objective (RTO) and the recovery point objective (RPO).

4.2.3. BCP Report (Standard 1)

Standard 1:

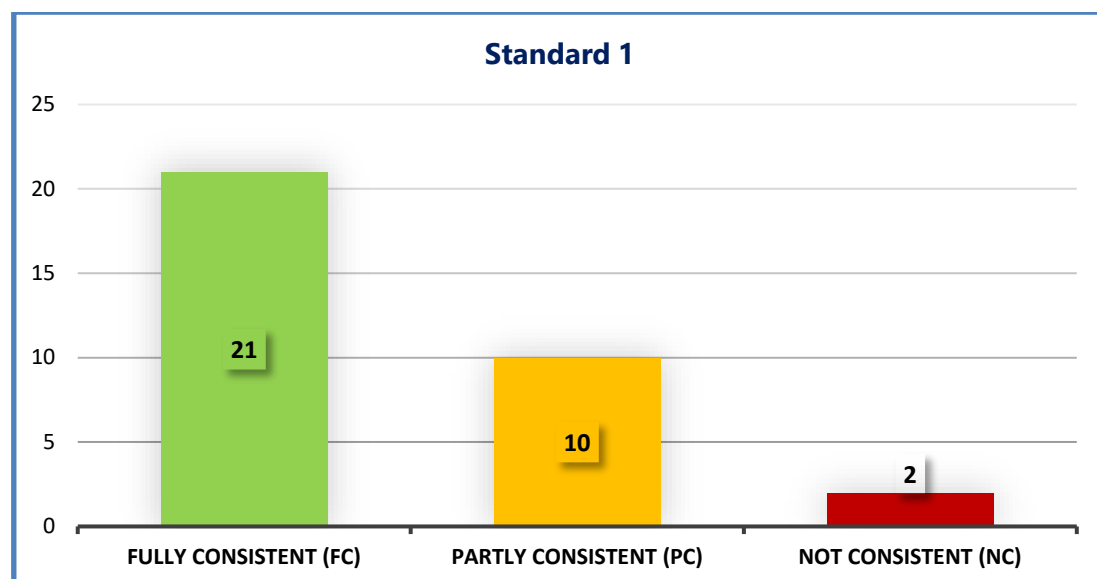
Regulators should require market intermediaries to create and maintain a written business continuity plan identifying procedures relating to an emergency or significant business disruption.

As a starting point for the assessment of the two Standards, the Review Team sought elements of clear regulatory authority over intermediaries, via licensing or authorization, either directly by the regulator or via a recognized Self-Regulatory Organization (SRO).

Relevantly, the *BCP Report* does not include a definition of “intermediaries”. Hence, the Review Team adopted the definition provided by the *IOSCO Methodology for Assessing Implementation of the IOSCO Objectives and Principles of Securities Regulation* (which is quoted in section 3.2 “Review Process” of this report).²² As a minimum, the Review Team expected rules regarding BCPs to apply to those intermediaries able to access and trade on Trading Venues. In this vein, the key elements of Standard 1 agreed by the Review Team and approved by the AC were:

- Regulatory requirements indicating that regulation is able to influence the coverage of intermediaries’ BCPs;
- Regulatory requirements indicating an enforceable obligation on intermediaries to establish a BCP;
- Regulatory requirements indicating obligations relating to the maintenance of intermediaries’ BCPs (including Board or senior management responsibility and an obligation regularly to test the BCP).

Evidence of all of these elements was required for a Participating Jurisdiction to be rated as “Fully Consistent” with Standard 1.



²² See also the footnotes 8 and 9 in section 3.2 of this report.

21 Participating Jurisdictions were found to be “**Fully Consistent**” with **Standard 1** (Brazil, Canada, China, Germany, Hong Kong, India, Ireland, Italy, Japan, Mexico, Netherlands, New Zealand, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, Turkey, United Kingdom, US).

In **Brazil**, for example, intermediaries (for the purposes of the BCP report) include broker/dealers, investment banks, and banks. All of these financial institutions are subject to National Monetary Council Resolution 4557/2017 (CMN Resolution 4557/2017). This resolution, which is binding, requires financial institutions licensed by the Central Bank of Brazil (which includes market intermediaries) to have and maintain clearly documented policies and strategies to manage their business continuity. The Board of a financial institution is given responsibility both for approval and periodic revision of the business continuity policies. These policies must include testing and periodic review of a firm’s BCP. The CVM has power to obtain copies of the BCP and receives monthly operational reports addressing the BCP (among other things). It must also be advised of any changes to the BCP and any incidents or disruptions. CMN Resolution 4557/2017 expressly requires BCPs to include communication protocols. Failure to comply with this resolution can result in sanctions ranging from warnings to revocation of licence, under Law 13,506/2017.

In many Participating Jurisdictions, frontline regulation of intermediaries is the responsibility of an SRO. In these cases, the Review Team referred to the elements of the IOSCO Principle for SROs (Principle 9).²³ “Fully Consistent” jurisdictions that relied partially or fully on SRO regulation for assessment against the Standards include the **US SEC**. All registered broker-dealers within the SEC’s jurisdiction must be a member of the Financial Industry Regulatory Authority (FINRA), an independent, non-governmental regulator for all broker-dealers doing business with the public in the United States. FINRA member firms are required to create and maintain a written BCP identifying procedures relating to an emergency or significant business disruption.

Several Participating Jurisdictions noted that testing of BCPs is carried out not only at the individual-firm level but also on an industry-wide basis. In **Canada**, for example, this is enshrined in the regulatory framework. This requires participation in industry-wide business continuity tests. Each trading venue and its participant dealers, amongst others, must participate in all industry-wide business continuity tests, as determined by a regulation services provider or the regulator (e.g., in Québec, the securities regulatory authority). The Investment Industry Regulatory Organisation of Canada (IIROC), an SRO, is the regulation services provider for equity trading venues.

As Standard 1 is expressed at a very high level, and has two key elements (“*create and maintain a written business continuity plan*”), the Review Team proposed, and the AC accepted, that there was not room for a “**Broadly Consistent**” rating.

Participating Jurisdictions were assessed as “Partly Consistent” with Standard 1 if the regulatory framework established clear authority with respect to intermediaries, such as via licensing, and if there was an obligation on intermediaries to have a BCP, but without clear

²³ Principle 9 reads as follows: “Where the regulatory system makes use of Self-Regulatory Organizations (SROs) that exercise some direct oversight responsibility for their respective areas of competence, such SROs should be subject to the oversight of the Regulator and should observe standards of fairness and confidentiality when exercising powers and delegated responsibilities.” See IOSCO *Objectives and Principles of Securities Regulation* <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD561.pdf>

requirements relating to governance, review, or testing (going to the consistency of the requirement to “maintain” the BCP). Ten Participating Jurisdictions were rated as “**Partly Consistent**” with **Standard 1** (Australia, Dubai, Indonesia, Israel, Kazakhstan, Kuwait, Mauritius, Morocco, Serbia, Tunisia).

While the *BCP Report* has a strong emphasis on technology threats, it clearly requires that a business continuity programme needs to address a broader set of business disruptions than those affecting information systems. Several Participating Jurisdictions’ regulatory frameworks had specific requirements for disaster recovery plans or business interruption plans for technology systems, but did not require intermediaries to have broader BCPs. **Indonesia** was one example of this, where the regulator’s response demonstrated a requirement for back-up and continuity arrangements relating to intermediaries’ information systems, but not for other aspects of business operation. In contrast, in some Participating Jurisdictions the Review Team saw extensive guidance issued to assist intermediaries to ensure that BCPs were prepared for a range of eventualities. In the United States, for example, FINRA has issued extensive guidance that discusses events and scenarios such as natural disasters (hurricanes, earthquakes, wildfires) or outbreaks and pandemic (H1N1, swine flu, etc.) that may result in activation of BCPs.

Two jurisdictions were rated as “**Not Consistent**” with **Standard 1** (The Bahamas, South Africa). In **The Bahamas**, intermediaries are licensed and supervised by the Securities Commission. The Review Team was advised that in practice, routine monitoring of intermediaries, including onsite monitoring, involves assessment and testing of BCPs. However, the Commission advised this is not based on an enforceable obligation on intermediaries. **South Africa** operates a strong SRO model, giving responsibility for regulation of intermediaries to Trading Venues. The rules of the Johannesburg Stock Exchange do impose broad risk management requirements on intermediaries, but do not include an obligation for intermediaries to establish and maintain a BCP.

Additional Features

Some Participating Jurisdictions’ regulation include guidance on the events, scenarios, or degree of disruption required to be addressed by the intermediaries’ BCPs. For example:

- **Indonesia:** the regulation identifies potential threats that the broker dealer needs to address in its IT system, such as internal and external threats, physical risks, natural disastrous threats, system failure, and unauthorised access.
- **United States CFTC:** the regulation includes a comprehensive list of essential components of the BCP, such as the identification documents, data, facilities, infrastructure, personnel and competencies essential to the continued operations of the swap dealer or major swap participant; supervisor personnel; communication protocols; back-up facilities, systems, staffing and other resources.

4.2.4. BCP Report (Standard 2)

Standard 2:

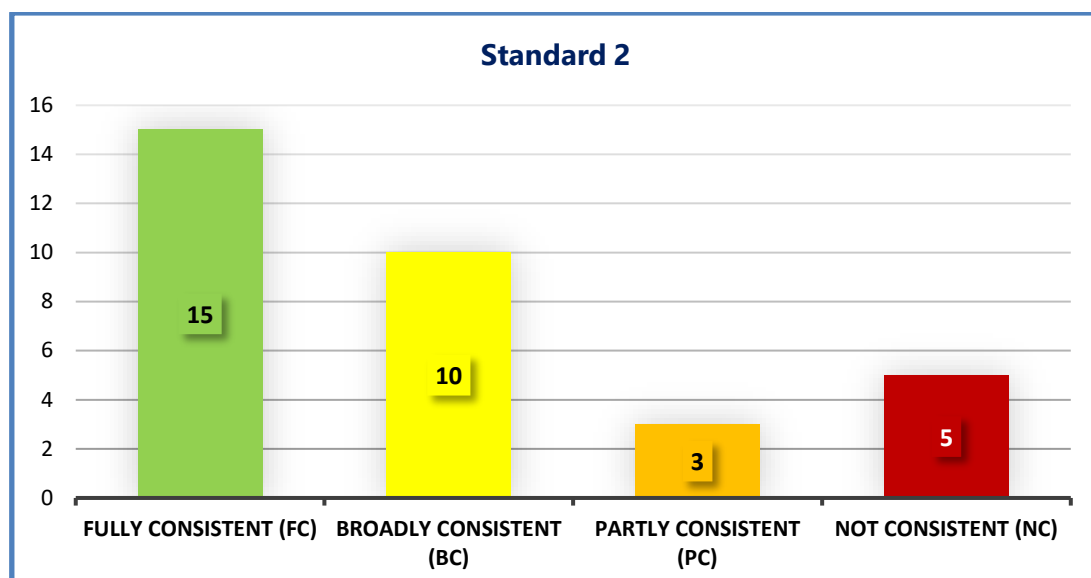
Regulators should require market intermediaries to update their business continuity plan in the event of any material change to operations, structure, business, or location and to conduct an annual review of it to determine whether any modifications are necessary in light of changes to the market intermediary's operations, structure, business, or location.

Standard 2 of the **BCP Report**, unlike the other two Recommendations and Standard 1, is very specific in its requirements and precise as to the expected triggers for review of BCPs. In this case, in order to ensure that the Review captured consistency with the objectives of Standard 2 the Review Team looked for the following elements:

- Clear regulatory authority over intermediaries (as for Standard 1), including the ability to sanction for non-compliance and an ability for the regulator to obtain evidence that a regular review has been carried out.
- A regulatory requirement for intermediaries to update BCPs in the event of a material change affecting the business of a firm (whether or not the legislation specifies changes to operations, structure, business, or location as triggers for a review)
- A regulatory requirement for intermediaries to undertake a periodic review of their BCPs, on at least an annual basis.

Given the specific requirements of Standard 2 the Review Team proposed, and the AC agreed, that a rating of “Fully Consistent” should be available only where the regulatory framework of a Participating Jurisdiction mandates a maximum period between BCP reviews of not more than a year.

For the purpose of the requirement to update a BCP in the event of a material change, the Review Team accepted that this could be achieved by reference to a requirement to keep BCP arrangements under continuous review and to make changes where needed.



15 Participating Jurisdictions were found to be “**Fully Consistent**” with **Standard 2** (Canada, Germany, Ireland, Italy, Japan, Mexico, Netherlands, Portugal, Singapore, Spain, Sweden, Thailand, Turkey, United Kingdom, US).

For **EU Participating Jurisdictions**, *CDR 2017/589*, referred to earlier in this report, includes a specific obligation on investment firms to conduct an annual review of BCP arrangements. EU law is less clear with regard to an obligation on intermediaries to update BCPs in the event of material changes to business operations. Intermediaries in EU jurisdictions are required to maintain BCPs as one of the obligations under Article 21 of *CDR 2017/565*, which is entitled “*General Organisational Requirements*”. Paragraph 1 of such Article sets out a series of organisational requirements. Paragraph 3 of Article 21 requires firms to establish, implement, and maintain an adequate business continuity policy. Paragraph 5 of Article 21 includes a requirement that investment firms monitor and, on a regular basis, evaluate the adequacy and effectiveness of their systems, internal control mechanisms, and arrangements established in accordance with paragraph 1 to 4 of the Article (i.e. BCP), and take appropriate measures to address any deficiencies. The Review Team interpreted the obligation to monitor BCP arrangements as an “at all times” obligation (given it is additional to the requirement for “regular” evaluation). The Article includes an obligation to update BCPs to address any deficiencies discovered as a result of monitoring. On this basis, EU Participating Jurisdictions were rated as “Fully Consistent” with Standard 2.

In some Participating Jurisdictions the Review Team saw differing obligations relating to review and maintenance of BCPs for different classes of intermediaries. For example, intermediaries under the direct supervision of the US CFTC (swaps dealers and major swaps participants) are required to review their BCP on an annual basis or upon any material change. Other intermediaries that are members of the National Futures Association (NFA), an SRO, must review their BCP'S annually. This annual review requires NFA members to review their BCPs using NFA's Business Continuity and Disaster Recovery Plan Questionnaire. The questionnaire is designed to aid NFA members in recognizing potential problem areas and to alert them to procedures that need to be revised or strengthened. NFA Members must update their BCP as necessary to respond to material changes in the Member's operations.

A number of Participating Jurisdictions’ regulatory frameworks include an express obligation on intermediaries to carry out “regular” or “periodic” reviews of BCP arrangements but did not specify minimum periods for these reviews. These Participating Jurisdictions were rated as “**Broadly Consistent**” where the regulatory framework met the requirements of **Standard 2** in other respects –ten Participating Jurisdictions– (Australia, China, Dubai, Hong Kong, India, Israel, Kazakhstan, Mauritius, New Zealand, Switzerland).

In **Australia**, for example, there is an expectation set by regulatory guide that BCPs should be subject to regular review, but there is no requirement that this be done annually. Australian licensees are required to regularly review their risk management arrangements, including BCPs, and update them when there are changes to their obligations, business or the environment in which they operate. ASIC has also recorded its expectation, in relation to responsible entities (a specific subset of licensees) that systems should adapt and change in relation to changes within or outside the entity. It is noted that in June 2019 ASIC published *Consultation Paper 314 “Market Integrity Rules for Technological and Operational Resilience”*. This sought feedback on proposed Market Integrity Rules for market operators and market participants to promote the resilience of their critical systems. The Review Team noted that the Proposed Rules, if enacted, will further strengthen the consistency of the

Australian regulatory framework with the Recommendations and Standards, particularly in relation to the two Standards.

In **Hong Kong**, for example, intermediaries are required to review their BCPs and evaluate their effectiveness on a “regular” basis and update it as necessary. The frequency of review should be appropriate to the nature and size of their business activities. Intermediaries are required to conduct comprehensive reviews at suitable intervals, and wherever there is significant change in business, operations or key personnel.

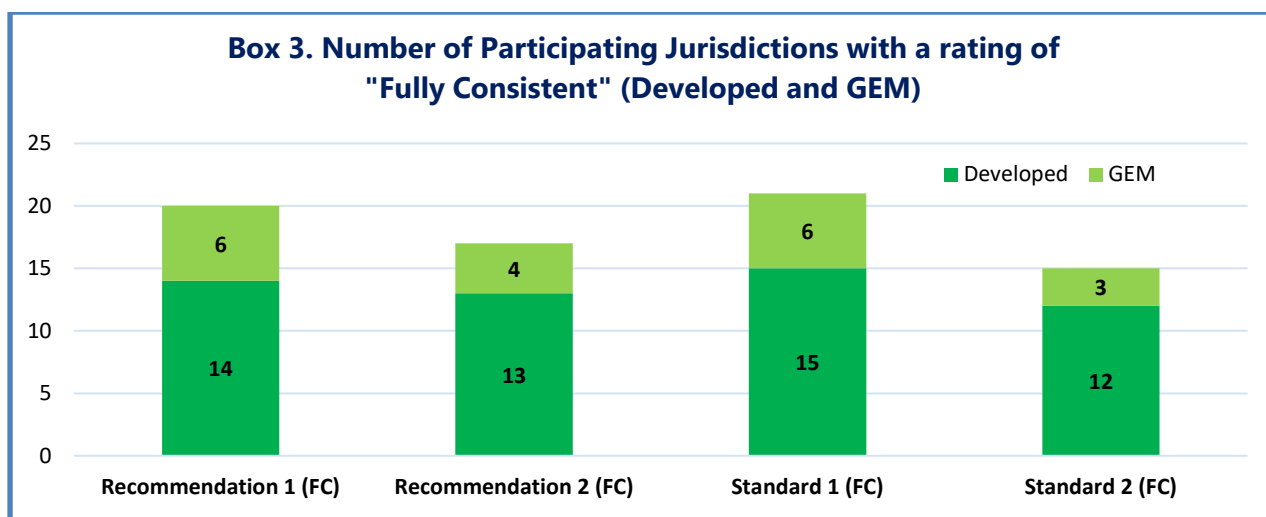
Participating Jurisdictions where intermediaries are required to carry out regular reviews but where there is not an additional obligation to update BCPs in response to material changes (or to keep up to date at all times) were rated as “**Partly Consistent**” with **Standard 2** (Brazil, Indonesia, Serbia).

Five Participating Jurisdictions were assessed as “**Not Consistent**” with **Standard 2** (The Bahamas, Kuwait, Morocco, South Africa, Tunisia), as they have no obligations on intermediaries for regular review of BCP arrangements or for updating of BCPs in response to material business changes.

4.2.5. Observations for Growth and Emerging Market (GEM) Participating Jurisdictions

Sections 4.2.1 through 4.2.4 have described the implementation measures taken by Participating Jurisdictions. This section briefly reflects on those findings from the perspective of the GEM Participating Jurisdictions. While no additional gaps are mentioned in this section, the emphasis is placed on the progress that GEM jurisdictions still have to make as a group to fully implement the Recommendations and Standards.

The Box 3 below shows the number of Participating Jurisdictions (developed and GEM) that have been found Fully Consistent under each Recommendation and Standard. The graph is the same as the one in Box 2, but broken down by developed and GEM Participating Jurisdictions. It clearly shows that most of the 16 developed Participating Jurisdictions have fully implemented the Recommendations and Standards, while fewer than half of the 17 GEM Participating Jurisdictions have fully implemented the Recommendations and Standards.



From a broader perspective, GEM Participating Jurisdictions were less likely than developed Participating Jurisdictions to have Fully Consistent or Broadly Consistent implementation of the Recommendations and Standards (15 developed Participating Jurisdictions for both Recommendations and Standards vs 8 GEM Participating Jurisdictions for the Recommendations and 5 for the Standards).

In general, implementation by GEM Participating Jurisdictions was more advanced in relation to the trading venue Recommendations than for the intermediary Standards (8 GEM jurisdictions assessed as Fully Consistent or Broadly Consistent with both trading venue Recommendations vs 5 assessed as Fully Consistent or Broadly Consistent with both intermediary Standards).

GEM Participating Jurisdictions encountered the most difficulty with intermediary Standard 1 – which requires all intermediaries to create and maintain a BCP. Only 35% of GEM Participating Jurisdictions were Fully Consistent with this Standard, compared with 94% of developed Participating Jurisdictions. Most GEM Participating Jurisdictions (53%) were Partly Consistent with this Standard, with 12% of GEM Participating Jurisdictions being Not Consistent.

Particular elements that contributed to the Partly Consistent ratings for GEM Participating Jurisdictions were a lack of regulatory requirement for either regular review or testing of BCPs by intermediaries, insufficient governance responsibility for BCPs, and insufficient scope in the BCP requirements (such as rules for disaster recovery for technology functions but no obligation for enterprise-wide business continuity).

In relation to ongoing review and updating of intermediary BCPs (Standard 2), 4 GEM Participating Jurisdictions were assessed as Not Consistent, having no regulatory obligation on intermediaries to update their BCPs in response to material changes to businesses.

5. RECOMMENDATIONS BY THE REVIEW TEAM AND THE AC

Based on the findings of the Review, the RT and Assessment have identified the following recommendations for strengthening implementation of the Recommendations and Standards. To enhance their regulatory frameworks, the AC recommends that IOSCO members consider:

From a broad perspective:

- Including in regulatory frameworks the necessary or appropriate powers for the regulator to set and enforce requirements or clear expectations on the establishment and proper maintenance and update of BCPs by trading venues and intermediaries.
- Enhancing their regulatory frameworks to include more specific and detailed guidance to address the issues and topics raised in the *Trading Venues Report* and the *BCP Report*. This might be beneficial regardless of the regulatory approach they employ (i.e., rule-based or a principles-based approach).
- Whether their existing regulatory frameworks provide adequate direction or guidance on the range of situations to which BCPs need to be responsive (e.g. natural disasters or public health emergencies and pandemics).
- Ensuring regulatory frameworks require enterprise-wide business continuity plans for both trading venues and intermediaries, rather than only disaster recovery or contingency measures for IT systems.
- Where regulatory frameworks require establishment of BCPs, assessing whether the regulation is sufficient to enable them to require firms to carry out regular reviews and necessary updates to BCPs.
- Adopting measures to require or encourage industry or market-wide scenario or stress testing of BCPs.
- For jurisdictions with more than one responsible regulatory authority and jurisdictions that rely on SROs for performance of frontline regulation, reviewing cooperation arrangements to ensure that these allow for appropriate coordination of policies and effective supervisory cooperation.

Regarding **Recommendation 1**:

- Ensuring that requirements aimed at critical systems sufficiently cover all aspects of business that fall within the definition of “critical systems” in the Recommendations.
- Whether measures for critical systems are broad enough to require trading venues to address all three elements of the Recommendation; that is resiliency, reliability, and integrity (including security).
- Whether the regulatory regimes provide sufficient clarity on governance and accountability of Boards or senior management in relation to critical systems.

- Where trading venues are permitted to outsource any critical functions, allowing regulators to enforce the same standards for resiliency, reliability, and integrity (including security) of critical systems operated or provided by outsource providers.
- Complementing the requirements for the identification, management and mitigation of risks with bespoke requirements for periodic reviews of critical systems, periodic capacity testing and periodic stress testing of critical systems.

Regarding **Recommendation 2**:

- Providing regulators with the ability to obtain a copy of the BCP as well as the power to challenge the trading venues' Board and/or senior officers in relation to material deficiencies of the BCP arrangements or in relation to the Board or senior management responsibility for the establishment and maintenance of the BCP.
- Specifically requiring periodic review, update and testing of the BCP.
- Where trading venues are permitted to outsource any functions that are required for business continuity, considering whether the regulator has authority to require trading venues to ensure that outsource providers have and maintain adequate BCPs.

Regarding **Standard 1**, in addition to the recommendations relevant to BCPs for trading venues:

- Including clear requirements on the role and responsibility of the intermediary's Board and/or senior management in relation to BCPs.

Regarding **Standard 2**:

- Adding specific requirements for intermediaries to conduct regular or periodic reviews of their BCPs and on the minimum periods for these reviews to occur (reviews should be at least annual). More specific requirements may also be needed for intermediaries to update their BCPs based on the outcomes of those periodic reviews and in response to material changes.

6. COVID-19 RELATED INFORMATION DEALING WITH BCPs

The global pandemic has required regulators, trading venues and market intermediaries to provide a prompt response to an unexpected and prolonged situation, which has tested the assumptions (and has stressed the components) of the pre-pandemic BCPs. It is highly possible that many BCPs at the outbreak of the pandemic did not explicitly consider a prolonged pandemic situation resulting in the disruption to travel, restrictions to mobility, and extensive use of remote working or Working from Home (WFH).

Pending further reviews and analysis, on balance trading venues and market intermediaries seem to have been resilient, from an operational point of view, during the initial and subsequent phases of the global pandemic, and seem to have functioned largely as designed.

Moreover, although the availability of many services and businesses have been restricted during the pandemic, in most jurisdictions financial services (including those provided by trading venues and market intermediaries) have been considered “essential services” and thus have been allowed to operate during the national lockdowns.

Notwithstanding this initial positive view, there are many lessons learned that would need to be further distilled and that might need to be reflected in regulatory frameworks and in actual BCP arrangements. Some of these initial thoughts are presented in the following pages.

This section presents a brief reference to some of the measures taken by the Participating Jurisdictions and their trading venues and/or market participants to address the challenges and issues deriving from Covid-19 during the initial stages of the pandemic. The section is based on information or experienced shared by Participating Jurisdictions. It is important to note that this information is presented to stimulate further thought on the subject matter, but has not been taken into account as part of the assessment conducted through the Thematic Review of this Report.

This section is structured around the following two main points:

- Measures taken by the regulators.
- Measures taken by the trading venues and/or market intermediaries.

Although the focus is on the responses or measures taken by trading venues and market intermediaries, some reference is made to the actions taken by the regulators, as this additional information would provide more context to the measures taken by trading venues and market intermediaries.

Some preliminary considerations are also included under each point, with a view to inviting further reflection. This may also provide input to IOSCO’s further work to be conducted in 2021 on remote working and operational resilience in the context of the COVID-19 pandemic.

A. Measures taken by regulators

Regulators, like trading venues and market intermediaries, were affected by the crisis situation created by the global pandemic. Thus, two of the initial actions taken by regulators were 1) to activate their own BCP or step up coordination mechanisms, and 2) establish a clear line of communication with trading venues and market intermediaries. In relation to the first aspect, the following points could be mentioned:

- a) Some regulators activated their own BCPs to ensure the continuity of their operations, while other regulators set up Crisis Management Committees or similar working groups to address the impact of the pandemic in the capital markets.
- b) Regulators also coordinated with other financial authorities within their jurisdictions (e.g. Central Bank, Ministry of Finance, National Financial Stability Committee) or made use of their specific pre-existing BCP interagency/inter-Ministry mechanisms to coordinate their actions.
- c) In view of the global nature of the pandemic, regulators also shared information and, to the extent possible, coordinated actions with fellow overseas authorities. In particular, IOSCO made extensive use of its Policy Committees, Regional Committees and the Growth and Emerging Markets Committee to facilitate the exchange of information and experience among its members. The IOSCO Board also set up a Covid-19 Repository of Measures to expand the channels of communication and information sharing among the IOSCO members.

In this context, and in line with public health recommendations or requirements, regulators also shifted to remote working for their staff. However, some regulators also identified a number of critical functions to be performed on site, thus in some cases a limited or pre-defined number of staff was allowed to continue working onsite or continue working from office for some pre-defined days.

In preparation for this change to remote work, some regulators conducted network capacity tests or testing of remote connectivity and staff was provided with VPN connections for their work.

Regulators also adjusted certain functions, including with respect to remote inspections. In many cases onsite examinations were temporarily changed to offsite reviews. Also, due to some regulatory relief measures (which are referred below), in some cases routine auditing programs were postponed.

Some regulators also conducted quick surveys among a sample of supervised entities (including trading venues and market intermediaries) to assess how well they were prepared and how they would ensure their business infrastructure would be able to continue to operate under the pandemic and continue to comply with investor protection requirements.

In addition to these actions, the regulators also put in place additional measures in relation to trading venues and market intermediaries, such as:

- 1) Ensure there was a clear way of communication with the trading venues and the market intermediaries, so that the regulator was informed about the actions taken or planned to be taken by trading venues and market intermediaries, but also to communicate any regulatory measures, decisions or instructions.
- 2) Regulators also verified or requested confirmation from trading venues and market intermediaries about the activation of their BCPs, and/or required a report of the measures taken or planned to be taken under the pandemic (covering, among other aspects, remote access, readiness to service clients remotely, and reliability of systems, controls and technology in place).

- 3) Regulators took other measures to facilitate and ensure the continuation of the services and the operation of trading venues and market intermediaries in an orderly manner under the critical circumstances. This included, for instance:
- a. Communication of supervisory expectations or guidance on the operations of the trading venues and intermediaries during the pandemic, and in some cases recommendations to prevent the spread of the virus;
 - b. Providing guidance or granting temporary, targeted regulatory relief in several areas, including, for instance:
 - i. in relation to the recording of oral communications or other telephonic communications applicable under audit trail requirements, recordkeeping requirements or monitoring requirements, as well as the handling of clients' orders;
 - ii. temporarily replacing regular periodic reporting obligations by *ad hoc* reports or granting an extension of time for submitting such regulatory reports or financial statements;
 - iii. allowing listed companies to set up electronic systems to enable shareholders to vote electronically in the general assembly meetings and/or use proxy voting via one of licensed custodians.
 - c. Some regulators also provided guidance on ways to address possible cybersecurity issues associated with remote work under Covid-19 and continue protecting customer and firm data.

In this way, regulators' efforts during the pandemic have been focused on, among other points, in maintaining the continuity of the regulator's operations; monitoring market functions and system risks; providing prompt, temporary and targeted regulatory relief and guidance to trading venues and intermediaries to facilitate continuing operations, including in connection with the execution of their BCPs; and maintaining remote oversight and supervision, including enforcement and investor protection efforts.

B. Measures taken by trading venues and/or market intermediaries

Trading venues and market intermediaries were also affected by the crisis situation originated by the COVID-19 pandemic. In addition to maintaining a close communication with the regulator, trading venues and market intermediaries activated their BCPs. This was complemented with additional measures, such as:

1. Informing the regulator about the measures they had taken or were planning to take under the activation and operation of their BCPs.²⁴

²⁴ Other measures taken by trading venues, not necessarily related to BCPs, included volatility control mechanisms (VCMs), such as activating circuit breakers; making changes to circuit breaker rules; tightening the thresholds for triggering VCMs; lengthening the time of trading halts; strengthening the monitoring of fraudulent activities (including market manipulation); and (temporary) banning or limiting short selling, but these measures are not the subject matter of this section.

2. In line with public health indications and their BCPs, trading venues and market intermediaries allowed their staff to work remotely and many provided employees with training on topics related to operating from a remote location.²⁵ However, for some types of staff this measure (WFH) had to be accompanied by a regulator's approval, in particular in the case of intermediaries, given that trading and sales staff are typically not permitted to work from home due to a) the risk of mishandling of confidential information, and b) the firms' capabilities to adequately record and supervise client interactions and trading activity. In this vein, some regulators (or depending on the case, SROs) granted the respective authorization or granted temporary regulatory relief so that a disciplinary action would not be taken against an intermediary that allowed their associated persons or respective staff (e.g. trading and sales staff) to temporarily work from locations not listed as a branch office and without a branch manager, as long as certain conditions were met (e.g. putting measures in place for alternative supervisory methods to adequately supervise those associate persons' activities and make sure recordkeeping requirements were observed).
3. In some cases, trading venues and intermediaries made use of split arrangements between the primary site and the back-up site, in conjunction with WFH arrangements. However, in some cases critical employees or employees performing critical functions were allowed to work at the trading venue's or the intermediaries' main venue or secondary site, while other staff operated remotely or from home. Thus, trading venues and intermediaries were able to operate under a split team workforce model (or similar models) where the teams work independently from each other from different locations, either from home or from an alternative site.
4. Some trading venues temporarily closed trading floor operations and moved to full electronic trading. In some cases, and in view of remote working, market intermediaries took measures to record in writing and formalize through manual procedures clients' orders, where call recording was unavailable.
5. As trading volumes and volatility increased significantly at different moments during the initial stages of the pandemic, some trading venues made use of dual server and split arrangements or decided to expand their processing capacity to ensure stable market access under such circumstances or double the volatility guards in order to not cause a series of trading stops. While the markets remained orderly, this situation placed strain on the trade processing capabilities of market infrastructures, market participants and other service providers.
6. Trading venues also kept a close dialogue with their critical service providers to ensure continuous operations. Given the use or reliance on (outsourced) critical services providers (such as IT services providers), regulators might need to further reflect on how to address potential challenges from these providers during a pandemic.
7. Some trading venues that are part of global groups also implemented measures across the different jurisdictions in which they operate following their parent's indications or guidance (e.g., a global pandemic management plan and/or a global pandemic steering committee). For instance, they put in place preventive measures, such as introducing a

²⁵ Also, non-essential business trips were cancelled or discouraged. Non-critical events, such as marketing/promotional roadshows or education seminars have also been put on hold.

production change freeze in the trading venues' systems and applications, so that no significant changes to critical services were implemented during the freeze period or were conducted with additional caution and scrutiny.

8. Trading Venues also ensured coordination between the trading venue and financial market infrastructures (e.g. Central Securities Depository) for the implementation of their BCPs and other crisis management procedures.

In general, trading venues and market intermediaries have been able to continue operating and providing their services notwithstanding the challenges posed by the global pandemic. Nevertheless, there are some additional considerations that are presented in the next section to stimulate the reflection on the experience gained up to this moment and that might merit further work by IOSCO and the regulators.

C. Additional thoughts

The trading venues' and market intermediaries' ability or capacity to respond to the challenges raised by the Covid-19 pandemic depend on several elements. Central to this response is having an adequate and updated BCP. However, there are other related elements that might need to be considered under this novel situation. For instance,

1. Not all the intermediaries had the same level of IT or digital development before the outbreak of the pandemic. For those more developed, the transition to a remote working model might have been easier and probably less challenging. This disparity among intermediaries affects both GEM and developed markets. Pending further analysis of this point, two examples could be useful.
 - a) FINRA has referred that *“firms that relied on web-based tools, electronic document management systems and cloud-based services, and regularly tested their remote connectivity, capacity, work processes and trading capabilities believed they faced fewer difficulties transitioning to a remote work and supervisory environment. Further, some firms that had been making continuous updates to their BCPs and maintained hot (fully live and connected) disaster recovery sites also concluded that they experienced a smoother transition.”*²⁶
 - b) The DFSA Dubai has mentioned that companies were required by law to have 90% of staff working from home for a temporary period during 2020, but much of the success in continuity was a product of the fact that most of the intermediaries had already moved to digital platforms that support remote operations. For the past couple of years, many of those intermediaries have been engaged in digital transformation, and this transformation prepared them to respond efficiently to the movement restrictions.
2. Prior to the global pandemic, in some jurisdictions there was a level of development of a WFH culture, which might have facilitated the transition to a widespread WFH environment. In fact, some Participating Jurisdictions have mentioned that many market intermediaries and trading venues did not experience significant disruptions related to

²⁶ <https://www.finra.org/rules-guidance/notices/20-16>

COVID-19 and the implementation of their BCPs, due in part to the previous testing of their BCPs and the existing WFH arrangements.

3. Notwithstanding the ability of trading venues and market intermediaries to switch to remote working arrangements, including a widespread WFH environment, there are some risks or challenges that would need to be addressed or further discussed:
 - a) Trading venues and intermediaries have recognised increased cyber risk from external threats but also internal risk due to the increasing number of employees WFH. Although this could be mitigated through employees accessing the intermediary's or trading venue's network by secured means and through staff education, additional preventive measures might need to be taken under a broad WFH model.
 - b) Although BCPs have considered elements or scenarios related to a natural disaster, a cyber-attack, a power failure or a major disruption to public transport, it appears that a prolonged global pandemic had not been contemplated in the "extreme but plausible" scenarios of firms in some jurisdictions.
 - c) Although most BCPs capture the use of a primary and a secondary site or a disaster recovery site, working from home has become an essential element in the response to the pandemic and this could be reflected in the review and adaptation of BCPs.
 - d) Although BCPs might be generally temporary in nature, the prolonged use of these plans by intermediaries and trading venues (such as under the COVID-19 pandemic) might require more frequent updates and testing of the plans whilst they are invoked for an extended period. It may also be appropriate to implement additional or permanent changes to governance and oversight frameworks in accordance with this prolonged operation of the BCPs
 - e) Although BCPs consider geographical diversification for backup facilities, consideration might be given to additional ways to achieve the objectives of a back-up site, as a way to mitigate novel risks deriving from a global pandemic. For instance, while some controls might be in place to segregate the Primary Data Centre and the Disaster Recovery Site through geographical distancing of both the locations, in a pandemic situation like COVID-19 there is a high likelihood that both the Primary Data Centre and the Disaster Recovery Site are affected at the same time, in particular in terms of availability of staff in view of restrictions to mobility during a prolonged period of time. The use of cloud services could help diversify and mitigate this geographical component of the BCPs, although IT and cyber risks, together with other risks deriving from (outsourced) critical service providers should also continue to be addressed.
4. While, in general, trading venues and market intermediaries have been able to continue operating and providing their services under the restrictions imposed by the global pandemic, it is worth noting two cases under which trading venues have seen as limiting their ability to function:
 - a) Although exchanges had the capacity to continue un-interrupted operations, some trading venues temporarily had to reduce the trading hours for all listed securities

due to the restrictions or measures taken by the national government or other public authorities.

- b) There were two jurisdictions in which the national government did not include the trading venues (and other financial services) in the list of “essential services” that were allowed to continue operating under the initial phases of the pandemic. This situation was corrected in due course.

Thus, BCP arrangements might need to reflect the lessons learnt from the Covid-19 global pandemic and calibrate the weight of non-traditional or non-cyber related factors as those mentioned before, accordingly.

- 5. Challenges for remote supervision and oversight. Addressing the challenges derived from oversight and supervision conducted through a remote mode and during a prolonged period of time may require further thought and discussion by regulators. This might also require a reflection on how to maintain the regulators’ enforcement and investor protection work under this scenario. Once the regulators review the degree of compliance by trading venues and market intermediaries with the applicable regulatory requirements during the pandemic, such review might provide valuable feedback for the design or the requirements applicable to BCP, as appropriate.

ANNEX A – LIST OF PARTICIPATING JURISDICTIONS

No.	Jurisdiction	Authority
1.	Australia	Australian Securities and Investments Commission (ASIC)
2.	Bahamas	Securities Commission of The Bahamas (SCB)
3.	Brazil	Comissão de Valores Mobiliários (CVM)
4.	Canada	Québec, Autorité des marchés financiers (QAMF) and Ontario Securities Commission (OSC) (joint response)
5.	China	China Securities Regulatory Commission (CSRC)
6.	Dubai IFC	Dubai Financial Services Authority (DFSA)
7.	Germany	Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin)
8.	Hong Kong	Securities and Futures Commission (SFC)
9.	India	Securities and Exchange Board of India (SEBI)
10.	Indonesia	Indonesia Financial Services Authority (OJK)
11.	Ireland	Central Bank of Ireland (CBI)
12.	Israel	Israel Securities Authority (ISA)
13.	Italy	Commissione Nazionale per le Società e la Borsa (CONSOB)
14.	Japan	Financial Services Agency (JFSA)
15.	Kazakhstan	Astana Financial Services Authority
16.	Kuwait	Capital Markets Authority (CMA)
17.	Mauritius	Financial Services Commission (FSC)
18.	Mexico	Comisión Nacional Bancaria y de Valores (CNBV)
19.	Morocco	Autorité Marocaine du Marché des Capitaux (AMMC)
20.	Netherlands	The Dutch Authority for the Financial Markets (AFM)
21.	New Zealand	Financial Markets Authority (FMA)
22.	Portugal	Comissão do Mercado de Valores Mobiliários (CMVM)
23.	Serbia, Republic of	Securities Commission
24.	Singapore	Monetary Authority of Singapore (MAS)
25.	South Africa	Financial Sector Conduct Authority (FSCA)
26.	Spain	Comisión Nacional del Mercado de Valores (CNMV)
27.	Sweden	Finansinspektionen (FSA)
28.	Switzerland	Swiss Financial Market Supervisory Authority (FINMA)
29.	Thailand	Securities and Exchange Commission (SEC)
30.	Tunisia	Conseil du Marché Financier (CMF)
31.	Turkey	Capital Market Board (CMB)
32.	United Kingdom	Financial Conduct Authority (FCA)
33.	United States of America	Commodities Futures Trading Commission (CFTC); Securities and Exchange Commission and Financial Industry Regulatory Authority (FINRA) (joint response)

ANNEX B – ASSESSMENT METHODOLOGY AND QUESTIONNAIRE

Available at: [https://www.iosco.org/library/pubdocs/pdf/AC Thematic Review on Business Continuit.pdf](https://www.iosco.org/library/pubdocs/pdf/AC%20Thematic%20Review%20on%20Business%20Continuit.pdf)

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