The State of Regulatory Sandboxes in Developing Countries

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ABSTRACT[4]

We review the emergence of a novel regulatory innovation called a 'regulatory sandbox,' designed to incubate innovation in the financial sector in a relaxed, but safeguarded regulatory environment. It also provides a symbiotic environment for innovators to test new technologies and for regulators to understand their implications for the financial sector and consumer protection.

While the concept has been embraced by a growing number of developed and developing world regulators, we describe where and how these sandboxes are being used in developing countries. We assess that for these countries, establishing thematic regulatory sandboxes which focus on specific national financial and developmental priorities - such as remittances - rather than spanning multiple national agendas may be preferred as a more efficient use of scarce resources.

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TABLE OF CONTENTS

Table of Exhibits

TABLE OF ABBREVIATIONS

ADGM	Abu Dhabi Global Market
AMBD	Autoriti Monetari Brunei Darussalam
AFI	Alliance for Financial Inclusion
AML	Anti-Money Laundering
AFIN	Asean Financial Innovation Network
AFSA	Astana Financial Services Authority
ASEAN	Association of Southeast Asian Nations
AI	Artificial Intelligence
AIFC	Astana International Financial Center
API	Application Programming Interface
ASIC	Australian Securities and Investments Commission
BCB	Banco Central do Brasil (Central Bank of Brazil)
BBVA	Banco Bilbao Vizcaya Argentaria, S.A.
BECB	Bahrain Economic Development Board
BI	Bank Indonesia
BIS	Bank for International Settlements
BNM	Bank Negara Malaysia
BNR	National Bank of Rwanda
BOI	Board of Investment (Mauritius)
BOT	Bank of Thailand
BSL	Bank of Sierra Leone
BSP	Bangko Sentral ng Pilipinas (Central Bank of the Philippines)
CARICOM	Caribbean Community
CBC	Central Bank of the Congo
CBN	Central Bank of Nigeria
CFPB	Consumer Financial Protection Bureau
CFT	Countering the Financing of Terrorism
CFTA	Continental Free Trade Association
CGAP	Consultative Group to Assist the Poor
CMA	Capital Markets Authority (Kenya)
DAB	Digital Asset Business
DFS	Digital Financial Services
DIFC	Dubai International Financial Centre
EAC	East African Community
EASRA	East African Securities Regulatory Authorities
ECOWAS	The Economic Community of West African States
EAEU	Eurasian Economic Union
EC	European Commission
EMDE	Emerging Markets and Developing Economies
EU	European Union
FCA	United Kingdom Financial Conduct Authority
FINMA	Swiss Financial Market Supervisory Authority
FSDMoc	FSD Mozambique
FTEG	Financial Technology Enabler Group
FTO	Financial Technology Operator

GFC	Global Financial Crisis
GPS	Global Positioning System
GSMA	Groupe Spéciale Mobile Association
HKMA	Hong Kong Monetary Authority
ICO	Initial Coin Offering
ICT	Information and Communication Technology
IDB	Inter-American Development Bank
IDRBT	Institute for Development and Research in Banking Technology
IFC	International Finance Corporation
IKD	Inovasi Keuangan Digital (Digital Financial Innovation)
IMF	International Monetary Fund
IRDAI	Insurance Regulatory and Development Authority of India
IT	Information Technology
JFSA	Japan Financial Services Agency
KPMG	Klynveld Peat Marwick Goerdeler
KYC	Know Your Customer
LAC	Latin America and the Caribbean
LONO	Letter of No Objection
LIFT	Laboratory of Financial and Technological Innovations
MAS	Monetary Authority of Singapore
MEDB	Mauritius Economic Development Board
MENA	Middle East North Africa
MGA	Malta Gaming Authority
MNO	Mobile Network Operator
NBFI	Non-Bank Financial Institution
NFIS	National Financial Inclusion Strategy
NIBSS	Nigeria Inter-Bank Settlement System
NGO	Non-Governmental Organization
NPP	New Payments Platform
OCC	Office of the Comptroller of the Currency
OIC	Office of Insurance Commission (Thailand)
OJK	Otoritas Jasa Keuangan (Financial Services Authority of Indonesia)
PFRDA	Pension Fund Regulatory Development Authority
RBI	Reserve Bank of India
RSL	Regulatory Sandbox License
RURA	Rwanda Utilities Regulatory Association
SAMA	Saudi Arabia Monetary Authority
SARB	South African Reserve Bank
SEBI	Securities and Exchange Board of India
SWIFT	Society for Worldwide Interbank Financial Telecommunications
TASS	Russian News Agency
TSEC	Thailand Securities and Exchange Commission
UAE	United Arab Emirates
UK	United Kingdom
UNCDF	United Nations Capital Development Fund
UNSGSA	UN Secretary-General’s Special Advocate for Inclusive Finance for Development

1 Overview

1.1 Introduction

Beneficial technological innovation can disrupt traditional business models, creating efficiencies which lead to new products and services[5] with greater accessibility, faster delivery times and at lower costs.[6] Surging investment in financial technologies (FinTech)[7] and the introduction of increasingly complex business and technical models, however, present a significant challenge for regulators to keep up with the furious pace of progress.[8]

Regulators must be able to identify, understand, adapt and respond to these disruptive new products and services in a timely and appropriate fashion.[9] Existing regulations crafted for outdated physical models may be incompatible with or difficult to apply to modern digital solutions. Regulatory uncertainty and incompatibility can hinder and discourage investment in innovation by increasing innovator costs, risks and efforts.[10] In response, an increasing number of jurisdictions are recognizing regulatory sandboxes[11] (or 'RegLabs'[12]) as a flexible framework or approach (among others)[13] to facilitate advancement of potentially beneficial innovation (which introduces risk) while ensuring the safety of consumers and stability of the marketplace.[14]

The definition, form and implementation of what constitutes a regulatory sandbox varies.[15] Generally, it refers to a framework allowing innovators, under the oversight of a regulator, to conduct small-scale short-term testing[16] of their innovations using live participants, in a controlled, bounded, safeguarded

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[5] The digital financial services (DFS) mobile money ecosystem leverages the basic messaging capabilities of mobile phones as a payment instrument and overcomes traditional physical and operational barriers, making financial services increasingly accessible and affordable to the unbanked who often reside in rural and remote areas. For an introduction to and overview of DFS, see Perlman, L (2018) *Digital Financial Services Primer 2018*, available at dfsobservatory.com

[6] Traditional business models (brick and mortar) and/or intermediaries ('the middleman') are typically removed or replaced, such as has occurred with Uber car services. Uber (2018) *About Us*, available at https://www.uber.com/about/

[7] KPMG (2018), *The Pulse of Fintech Q4 2017*, available at https://bit.ly/2CyGemI

[8] For example, in Indonesia, 'around 61 percent of local fintech players describe the current regulatory process as lagging behind and lacking clarity.' Amirio, D (2016) *Regulators to Play in 'Sandbox' with Infant Fintech Firms,* available at https://bit.ly/2caVb6s; Murphy, D & Mueller, J (2018) *RegTech: Opportunities for More Efficient and Effective Regulatory Supervision and Compliance*, available at https://bit.ly/2NyRp8a; The complete nature of legislation in the European Union (EU) can result in financial regulation lagging significantly behind the progress of of FinTech. Andhov, A (2018) *Will FinTech become the Enabler for the Capital Market Union?*, available at https://bit.ly/2xHvkv4

[9] A role of the financial sector regulator is to ensure that a proper balance exists between forces of promoting beneficial innovation and ensuring financial stability and consumer protection. Arner, D (2017) *FinTech and RegTech: Enabling Innovation While Preserving Financial Stability*, available at https://muse.jhu.edu/article/700299/pdf

[10] BBVA (2016) *Financial Regulation Outlook (March 2016)*, available at https://bit.ly/2QPPQ3Q; Garvey, K & Li, W & Shenglin, B et. al. (2018) *Guide to Promoting Financial & Regulatory Innovation*, available at https://bit.ly/2PmqOJ1; Crane, J & Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS

[11] The 'sandbox' concept refers to the cushioned, controlled, sand-filled receptacle within which children can play safely and cultivate, explore and unleash their inner creativity. See Wijewardena, W A (2018) *Introduction of Fintech Regulatory Sandbox by Central Bank is a Move in Correct Direction*, available at https://bit.ly/2IWetbI

[12] RegLab is an abbreviation for 'Regulatory Laboratory.'

[13] Examples of other regulatory approaches appear below in *Exhibit 1: Test-and-Learn as an Alternative Regulatory Tool* and its accompanying footnote 33.

[14] UNSGSA (2017) *What is a Regulatory Sandbox?,* available at https://bit.ly/2xtCKBZ; Jenik, I & Lauer, K (2017) *Regulatory Sandboxes and Financial Inclusion,* available at https://bit.ly/2yDDGU0

[15] See Section 2: Introduction to the Regulatory Sandbox.

[16] The concept of safe experimentation has been compared to clinical testing. FCA (2015) *Regulatory Sandbox,* available at https://bit.ly/2EG5Lez

environment under relaxed regulatory conditions.[17] Ideally, successful tests in the sandbox lead to a more streamlined method of safely expediting the deployment of desirable and beneficial innovation in the marketplace. The clinical environment of the sandbox fosters an important mutual learning experience. Increased, transparent and open communication between regulators and innovators allows each party to easily and regularly access and leverage the valuable expertise of the other and build capacity.[18]

Regulatory sandboxes primarily appear in developed countries and emerging economies. The number of 'developing countries'[19] implementing regulatory sandboxes has recently increased[20] and, in some cases, they are being used to directly advance financial inclusion.[21] Regulatory sandboxes can potentially impact on financial inclusion objectives by safely relaxing some regulatory barriers and encouraging innovation and implementation of FinTech products and services relevant to DFS – such as the development of electronic Know Your Customer (KYC and eKYC) solutions for customer identifications and verification,[22] biometric identification systems and remittance services.[23]

This paper examines the emergence of regulatory sandboxes, one of several available regulatory approaches to harness beneficial innovation that falls within regulatory gray areas, with a focus on developing countries.[24] It examines features common to many sandboxes, provides a status update of current operational efforts globally and in developing countries and identifies benefits and risks of implementation.[25] It also identifies potential limits of local sandboxes and recommends collaborative efforts, a vision focusing on cross-border activity which may ultimately prove to be valuable, beneficial and an effective moving forward strategy for facilitating FinTech innovation, especially for developing countries.

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[17] Ernst & Young (2017) *As FinTech evolves, can financial services innovation be compliant?*, available at https://go.ey.com/2QPH0Ee; Jenik, I & Lauer, K (2017) *Regulatory Sandboxes and Financial Inclusion*, available at https://bit.ly/2yDDGU0

[18] See Section 4.1: Benefits and footnote 158 for more information on sandbox communications.

[19] For the purposes of this paper, a 'developing country' is defined loosely as a jurisdiction (i) with a lower to middle income economy, sometimes referred to as an emerging market and developing economy (EMDE); and (ii) which has or is implementing a national financial inclusion strategy (NFIS). For a list of countries with a NFIS, see the following: The World Bank (2018) *National Financial Inclusion Strategies Resource Center*, available at https://bit.ly/2D2ur4l; AFI (2018) *National Financial Inclusion Strategies: Current State of Practice*, available at https://bit.ly/2D9wB3d; See also The World Bank (2018) *World Bank Country and Lending Groups*, available at https://bit.ly/2bBWnzX; G20 (2018) *G20 Participants*, available at https://bit.ly/2QHPwF4; See also Abiad, A & Bluedorn, J & Guajardo, J et. al. (2012) *The Rising Resilience of Emerging Market and Developing Economies*, available at https://bit.ly/2yhKyr2

[20] See Section 3: The State of Regulatory Sandboxes in Developing Countries for more information about the growing number of regulatory sandboxes in developing countries. See Annex B: Status of Regulatory Sandboxes Worldwide for jurisdictions where regulatory sandboxes have been announced in draft stages or as launched.

[21] CGAP (2018) *Digital Financial Services*, available at http://www.cgap.org/topics/digital-financial-services; AFI (2017) *DFS is the Key Catalyst to Advancing Financial Inclusion*, available at https://bit.ly/2MQ7eTP; See

[22] For a study on eKYC use for CIV, see Perlman, L & Gurung, N (2018) The Use of eIDs and eKYC for Customer Identity and Verification in Developing Countries: Progress and Challenges, available at www.dfsobservatory.com

[23] UNSGSA (2017) *What is a Regulatory Sandbox?*, available at https://bit.ly/2xtCKBZ

[24] The term 'developing countries' is defined as set forth in footnote 15.

[25] See Section 4: Benefits and Risks of Regulatory Sandboxes in Developing Countries.

1.2 Methodologies

As matter of organization and ease of reading, technical granularity and any additional background information is placed within footnotes. We have used the 'bit.ly' web address shortener throughout this study to improve readability of the footnotes, with all URLs verified as of October 20, 2018.

Research was undertaken through desktop research, interviews with practitioners and regulators dealing with sandboxes, and attendance at international conferences. Research is current to October 20, 2018.

2 Introduction to the Regulatory Sandbox Concept

2.1 Emergence of Regulatory Sandboxes

The sandboxing concept in a regulatory context emerged in the financial sector of developed countries shortly after the Global Financial Crisis (GFC) of 2007 – 2008.[26] It represented an effort at balancing increased global attention towards restrictive regulation favoring consumer protection[27] to avert repeating systemic failure during a time of exponential growth in the FinTech sector.[28]

Project Catalyst,[29] established in 2012 by the US Consumer Financial Protection Bureau (CFPB),[30] was an early effort that gave rise to the sandbox concept in an initiative to promote consumer friendly innovation.[31] In its 2015 FinTech Futures report, the UK Government Office for Science identified benefits of 'close collaboration between regulators, institutions and FinTech companies' from 'clinical trials' and recommended 'regulator monitored "sandboxes" for innovators to experiment with virtual environments or real people.'[32] Subsequently, the UK Financial Conduct Authority (FCA)[33] followed by launching its 'regulatory sandbox' in 2016[34] as part of its Project Innovate initiative to 'promote competition by supporting disruptive innovation.'[35]

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[26] See Section II of the BIS 79th Annual Report entitled 'The global financial crises.' BIS (2009) *79th Annual Report 1 April 2008 – 31 March 2009*, available at https://www.bis.org/publ/arpdf/ar2009e.pdf

[27] Zetzsche, D & Buckley, R & Arner, D, *et al.* (2017) *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation*, available at https://bit.ly/2NiZlav

[28] KPMG (2018), *The Pulse of Fintech Q4 2017*, available at https://bit.ly/2CyGemI ; Dong, H & Leckow, R & Vikram, H, et al. *IMF Staff Discussion Note, Fintech and Financial Services: Initial Considerations (June 2017)*, available at https://bit.ly/2mPbdG7

[29] CFPB (2012) *CFPB Launches Project Catalyst to Spur Consumer-Friendly Innovation*, available at https://bit.ly/2CVCWOV; This project was transitioned to the 'Office of Innovation', created in July 2018, created to promote innovation, interacting with innovators and removing outdated and incompatible regulation. CFPB (2018) *Bureau of Consumer Financial Protection Announces Director for the Office of Innovation*, available at https://bit.ly/2MZgclP

[30] Weissgold, N & Corbett, E (2017) *CFPB's Project Catalyst Offers Comfort for Startups – but with a Cost*, available at https://bit.ly/2J79d5a; CFPB (2012) *CFPB Launches Project Catalyst to Spur Consumer-Friendly Innovation*, *ibid*.

[31] CFPB (2016) *Project Catalyst report: Promoting consumer-friendly innovation*, available at https://bit.ly/2JgSlMu. The CFPB issued its first 'no-action letter' in September 2017. CFPB (2017) *CFPB Announces First No-Action Letter to Upstart Network*, available at https://bit.ly/2wv4ymd

[32] Government Office for Science (2015) *FinTech Futures: The UK as a World Leader in Financial Technologies*, available at https://bit.ly/2NG14Ws

[33] FCA (2018) *Financial Conduct Authority*, available at https://www.fca.org.uk/

[34] The FCA began accepting applications for its regulatory sandbox in June 2016. FCA (2017) *Regulatory sandbox lessons learned report, October 2017*, available at https://bit.ly/2yK7q3A

[35] FCA (2015) *Regulatory Sandbox*, available at https://bit.ly/2EG5Lez. Many sandboxes have followed the FCA's approach – which also coined the term 'regulatory sandbox' – and are operated in high to middle level income countries which do not experience substantial financial inclusion challenges. Jenik, I & Lauer, K (2017) *Regulatory Sandboxes and Financial Inclusion*, available at https://bit.ly/2yDDGU0

2.2 Basic Elements of a Regulatory Sandbox

Regulatory sandboxes are one of several regulatory approaches available to regulators striving to achieve an optimal balance between ensuring financial stability and consumer protection while also advancing beneficial innovation.[36] Before making a decision to implement a sandbox, a feasibility assessment should be conducted[37] to: determine whether a sandbox is needed and is a proper fit for a jurisdiction; consider whether a sandbox can be effectively implemented and under what circumstances, identifying barriers to success; contemplate design and feature set; compare results with sandbox alternatives[38] while also considering efforts necessary to implement a regulatory sandbox.[39]

Regulatory sandbox models and their components vary although many jurisdictions follow the FCA approach, currently the most active sandbox with the longest operating history.[40] Differences can be more pronounced where the legal mandates of the regulator and available resources are at a variance. Frameworks are tailored to fit the specific needs, priorities, laws, mandates and resources of a jurisdiction and the sandbox operator.[41]

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[36] Financial sector regulators strive to ensure that proper balance exists in the marketplace. Basel Committee on Banking Supervision (2017) *Sound Practices: Implications of fintech developments for banks and bank supervisors*, available at https://bit.ly/2pS45K0; Arner, D (2018) *Financial Stability, Economic Growth and the Role of the Law*, available at https://ssrn.com/abstract=1409544; Zetzsche, D & Buckley, R & Arner, D, *et al*. (2017) *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation*, available at https://bit.ly/2NiZlav

[37] Jenik & Lauer (2017) suggest a five-factor analysis to help regulators assess the feasibility and appropriateness of implementing a regulatory sandbox. An assessment includes an analysis of: (i) legal and regulatory framework; (ii) stakeholder ecosystem; (iii) capacity levels and available resources (financial and human); (iv) market conditions; and (v) an examination of policy priorities which are ideally reflected in these factors. Jenik, I & Lauer, K (2017) *Regulatory Sandboxes and Financial Inclusion*, available at https://bit.ly/2yDDGU0; See also Zhang, B & Rowan, P & Duff, S, et. al. (2018) *A Draft Report from the UNSGSA*

[38] Alternative approaches to regulatory sandboxes include (i) Test-and-Learn, as described in Exhibit 1; (ii) the 'Wait-and-See' or 'do nothing' approach of regulatory forbearance from intervention until such time is deemed appropriate (often used with regard to nascent, emerging technologies, such as was the case with crowdfunding/P2P lending in China); (iii) legislative and/or regulatory development, an approach requiring a more comprehensive effort which can be exemplified by the issuance of a FinTech License or 'class waiver' for all who qualify in meeting objective criteria, covered in Section 2.2.2. See Jenik, I & Lauer, K (2017) *ibid*. See also Zetzsche, D & Buckley, R & Arner, D, *et al*. (2017) *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation*, available at https://bit.ly/2NiZlav; Aveni, T & Jenik, I (2017) *Crowdfunding in China: The Financial Inclusion Dimension*, available at https://bit.ly/2P30dUV

[39] Efforts necessary to assess and implement a regulatory sandbox consists of a multi-step process which involves raising awareness and consultation. The regulator should consider meaningful engagement of other regulators, stakeholders, local and international peers and industry and market participants. Zhang, B & Rowan, P & Duff, S, et. al. (2018) *A Draft Report from the UNSGSA*; Jenik, I & Lauer, K (2017) *ibid.*

[40] The FCA regulatory sandbox which is conducting its fourth cohort[#] with 29 entities and 60 prior participants since its launch in 2015. A 'cohort' refers to a group of participants (as opposed to application or participation on a rolling basis.) FCA (2018) *Regulatory sandbox – cohort 4*, available at https://bit.ly/2u33TcF

[41] See *Exhibit 4: Partnerships for Sandboxes in Sub-Saharan Africa*, which indicate some less common terms present in the sandbox of Sierra Leone, a fragile, least developed country with one of the lowest levels of financial inclusion in the world. See also Ernst & Young (2017) *As FinTech evolves, can financial services innovation be compliant?*, available at https://go.ey.com/2QPH0Ee; Latham & Watkins (2017) *Regulatory Sandboxes – a Global Stocktake,* available at https://bit.ly/2QQVbc8

An alternative approach to the regulatory sandbox is 'Test-and-Learn', used successfully in developing nations to address issues of regulatory uncertainty and incompatibility with beneficial innovation.

Test-and-Learn is an ad hoc, bespoke solution, designed pursuant to a dialogue between innovators and regulators for testing an innovation with a live environment of limited size.[42] Using test-and-learn, regulators can provide innovators with the ability to operate, free from hindrances of specific regulations, through the use of instruments of forbearance such as 'letters of no objection' (LONO)[43] or waivers. At an appropriate time, regulators can respond as benefits and risks become clearer from operation. Examples of test-and-learn include early DFS implementations beginning with SMART money in the Philippines in 2001[44] and later in Kenya (M-PESA)[45] in 2005 and subsequently in Tanzania.[46]

The regulatory sandbox greatly resembles test-and-learn but is designed to be a more proactive, transparent, standardized and published process. Sandboxes are open to those meeting eligibility requirements which are predefined with publicized acceptance criteria and a standardized entrance process.[47]

Exhibit 1: Test-and-Learn: An Alternative Regulatory Approach

2.2.1 Sandbox Process

While process varies, many sandboxes traverse through the following stages:[48]

- **Application:** The sandbox framework is published and its objectives, eligibility requirements, evaluation criteria, application instructions and relevant details are publicized. Applications customarily screen the need for a sandbox[49] with a subsequent preliminary assessment to determine whether candidates have met eligibility requirements.[50]

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[42] Crane, J & Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS; This may also be referred to as 'flexibility and forbearance.' Zetzsche, D, Buckley, R & Arner, D, et al. (2017) *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation*, available at https://bit.ly/2NiZlav

[43] A LONO is also referred to as a 'letter of no action' in the U.S. Examples of other regulatory instruments or 'tools' may include waivers, removal of licensing requirements and expedited licensing.

[44] GSMA (2012) *Mobile Money in the Philippines – The Market, the Models and Regulation*, available at https://bit.ly/2JgVKLg

[45] The Central Bank of Kenya allowed Safaricom's M-Pesa mobile money service to engage in a small-scale pilot launch in 2005, despite the absence of any regulations directly authorizing its operation. AFI (2010) *Enabling mobile money transfer –The Central bank of Kenya's treatment of M-Pesa*, available at https://bit.ly/2J32WqO

[46] The Bank of Tanzania collaborated with the Tanzania Communications Regulatory Authority and issued LONOs to mobile network operators (MNOs), overcoming similar regulatory barriers to permit another successful implementation of mobile money. See di Castri, S & Gidvani, L (2014) *Enabling Mobile Money Policies in Tanzania: A 'Test and Learn' Approach to Enabling Market-Led Digital Financial Services,* available at https://ssrn.com/abstract=2425340.

[47] Jenik, I & Lauer, K (2017) *Regulatory Sandboxes and Financial Inclusion*, available at https://bit.ly/2yDDGU0

[48] The selection process can be perceived on a basic level as follows: (i) Is there a *genuine* innovation proposed? (ii) Does it benefit consumers/customers? (iii) What advantages does it bring to the financial system? (iv) Has it met eligibility criteria to enter (and need for) the sandbox? (v) Is the project ready for sandbox testing? (vi) Does the applicant have a realistic business plan for deployment?

[49] Many sandbox applications require the applicant to provide justification for sandbox necessity, such as identifying the presence of regulatory uncertainty or conflict, sometimes also justifying the need for testing with live users. See Eligibility Requirements / Evaluation Criteria in this Section 2.2.2 below.

[50] FinTech innovators tend to stress time being of the essence. By way of example, feedback provided to the MAS from several FinTech startups reflected concern about response times (both the initial assessment and overall application process) reasoning that 'FinTech is evolving at a rapid pace and many start-ups may be resource constrained.' While several firms recommended a response of 10 working days, the MAS deemed 21 working days as appropriate. MAS (2016) *Response to feedback received – FinTech Regulatory Sandbox Guidelines*, available at https://bit.ly/2OZyOPS

- **Selection**: An administrative review of eligible applicants is conducted. Some jurisdictions provide a preliminary evaluation to inform applicants of early denial.[51] Due diligence is performed on remaining applicants, finalists are interviewed and, with those accepted for admission, a formal participation agreement is drafted and executed.
- **Testing**: The proposed design of tests to be conducted, safeguards to be implemented and reporting requirements and protocols to be used are discussed. After agreement is reached, operation commences until the end of the testing period. The applicant assesses test results and generates a final report for submission containing a determination of the test outcome.
- **Exit**: Outcomes are evaluated and may result in (i) a request for an extension period is made (where possible) and may be granted (typically of limited duration); (ii) failure and the applicant exits; (iii) success and a plan and path for deployment is generated, such as (ideally) to meet current regulatory obligations (such as obtaining full licensing.)

2.2.2 Sandbox Framework / Guidelines

Many sandboxes include similar, common components,[52] often containing both objective and subjective criteria.

- **Objectives and Scope.** A primary purpose of regulatory sandboxes is to responsibly facilitate the advancement of beneficial innovation through regulatory gaps where uncertainty and incompatibility exist. Sandbox function and scope are limited to what is enumerated within the regulator's mandate, the sandbox framework and as may be set forth by law.[53] Mandates often include references to financial stability, financial integrity and consumer protection, sometimes complemented by market development and promotion of competition. Broadly constructed mandates provide a wider space for operation. Sandbox objectives which appear often (and may be linked to the core mandate) include promoting competition, fostering innovation, creating greater efficiencies and enhancement and modernization of the marketplace. At present, few sandbox objectives explicitly reference advancement of financial inclusion.[54]

- **Eligibility Requirements / Evaluation Criteria.** An invitation to apply to the sandbox is usually open to those who are actually or potentially subject to the regulator's authority and can meet published entry requirements. These often include variations of the following: requiring the presence of a 'genuine' innovation not prior seen in the marketplace (or seen in a less efficient

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[51] Singapore's Guidelines call for 21 working days. MAS (2016) *Fintech Regulatory Sandbox Guidelines*, available at https://bit.ly/2gDPTAm

[52] Crane, J & Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS

[53] By way of example, the regulatory sandbox established by legislature in Arizona (US) authorizes the state attorney general to operate the sandbox as opposed to the Arizona financial services regulator. State of Arizona, House of Representatives (2018) *Arizona House Bill 2434*, available at https://bit.ly/2QQEbT1

[54] See Section 3: The State of Regulatory Sandboxes in Developing Countries. As of September 2018, only sandboxes in Malaysia, Sierra Leone, Mozambique, Jordan and Bahrain explicitly reference financial inclusion objectives and are linked to the country's NFIS. Proposed sandboxes in Sri-Lanka, Kenya and India make references in preliminary documentation and in Sri Lanka's early efforts. See Zhang, B & Rowan, P & Duff, S, et. al. (2018) *A Draft Report from the UNSGSA FinTech Working Group*. CMA (2017) *Stakeholders Consultative Paper on Policy Framework for Implementation of a Regulatory Sandbox to Support Financial Technology (Fintech) Innovation in the Capital Markets in Kenya*, available at https://bit.ly/2wivqsp; RBI (2017) *Report of the Working Group on FinTech and Digital Banking*, available at https://bit.ly/2skIRWH; Central Bank of Sri Lanka (2018) *Sri Lankan Fintech Regulatory Sandbox*, available at https://bit.ly/2sjwTM8

form);[55] the innovation provides identifiable benefits to customers/consumers and is technically sound; the innovation provides improvements in accessibility and efficiency of services; the applicant is ready and able to begin sandbox testing and afford the entire cost; the applicant plans to deploy the innovation in/to benefit the jurisdiction; conditions to include or exclude incumbents and/or startups; justification for needing a sandbox, such as identification of legal or regulatory uncertainty and/or incompatibility and/or the need to use live participants for testing.[56] Some sandboxes may provide insight into regulator priorities e.g. solutions which create jobs (Malaysia)[57] and potential to advance financial inclusion (Sierra Leone).[58]

- **Risk Management, Safeguards, Records and Reporting.** Sandbox frameworks generally require the applicant to present a plan which adequately protects consumers. This often includes having proper marketplace disclosures, an appropriate risk management plan, adequate safeguarding procedures, incident reporting and dispute resolution and redress mechanisms (such as a fund for victim compensation.)[59] The applicant must also have a testing plan identifying key performance indicators, milestones and details of the composition of a final report determining whether key objectives were met and the test resulted in a success or failure.

- **Entry, Fees and Duration.** Application and admission to the sandbox may occur on a rolling basis (at any time), between set dates (with a group of applicants, known as a 'cohort') or both. Duration in the sandbox generally ranges between 6 – 24 months. Many sandboxes are free, others include application fees, some of which may be modifiable depending on circumstances and the jurisdiction.[60]

- **Exit Procedure.** Participants who exit the sandbox successfully may need to meet current regulatory obligations, such as applying for and obtaining a full license for deployment. Ideally the participant will receive regulator assistance and authorization to launch outside the sandbox with regulatory incompatibilities addressed.[61] Unsuccessful candidates are typically required to cease operations.

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[55] Jurisdictions vary in attempts to define what constitutes 'innovation' and implement varying stringency levels towards differentiation of comparable efforts prior or currently seen in the marketplace and may include substantial improvements over existing solutions, business models, focus on key features among other considerations.

[56] The FCA is one example requiring justification for live testing. FCA (2018) *Regulatory Sandbox -- application form*, available at https://bit.ly/2IUxA6I; FCA (2018) *Sandbox eligibility criteria*, available at https://bit.ly/2RMN2G0

[57] FTEG (2018) *Regulatory Sandbox*, https://bit.ly/2kEoakx; See also coverage of Malaysia in Section 3: The State of Regulatory Sandboxes in Developing Countries.

[58] BSL (2018) *Regulatory Sandbox Pilot Program Guidelines and Application Form*, available at https://bit.ly/2OZtSKF See also coverage of Sierra Leone in Section 3.8: The State of Regulatory Sandboxes in Developing Countries and Exhibit 4 – Thematic Sandboxes in Sub-Saharan Africa.

[59] Ceilings on customers served and transaction amounts may also be imposed.

[60] One comprehensive example of modification considerations includes Singapore. MAS (2016) *Fintech Regulatory Sandbox Guidelines*, available at https://bit.ly/2gDPTAm. Other examples can be found in *Annex B: Status of Regulatory Sandboxes Worldwide*.

[61] In addition, a licensing process may also still be required even with a successful test. Jenik, I & Lauer, K (2017) *Regulatory Sandboxes and Financial Inclusion,* available at https://bit.ly/2yDDGU0

The FinTech ecosystem includes several important initiatives designed to impact on innovation, knowledge and growth. The following are popular concepts, described generally, as terminology, usage and implementation can vary greatly.[62]

Innovation Hub. An innovation hub[63] generally refers to a regulator-provided knowledge center[64] open to regulated and unregulated entities.[65] It has become a popular and important complement to the regulatory sandbox and its form and breadth of offerings can vary greatly. At a most basic level, a dedicated e-mail address and/or telephone number may be offered for support, feedback and communication.[66] Ideally, the hub facilitates innovation by acting as a connection point between regulators and the industry.[67] Innovators may receive guidance, advice and assistance from hub staff, third party experts or other experienced parties regarding matters such as legal and policy issues, licensing issues and navigating a complex legal and regulatory system.[68] The hub can also serve as an opportunity for regulators to learn more about the industry through direct interaction. Global innovation hubs foster collaborative opportunities on an international level.[69]

Innovation Labs. Innovation 'Labs'[70] are generally collaborative and cooperative communities which foster building capacity, increased creativity and growth. They can comprise of public-private partnerships and may facilitate testing with 'dummy' data in a 'virtual sandbox.'[71] Those which are industry-led may also be referred to as 'industry sandboxes.'[72]

Incubators and Accelerators. Incubators help early stage startups hone and refine ideas and business models and move them towards market deployment. Accelerators generally work with more mature concepts and startups, contribute some seed investment and other support to accelerate growth and advance maturity. Often these initiatives are privately led and are one of several tools used to facilitate innovation.

Private, proprietary and Industry Led Sandboxes. Private and proprietary sandboxes also exist for testing and experimentation, available on a commercial or non-commercial basis. They may offer a development environment, tools,

[62] Basel Committee on Banking Supervision (2017) *Sound Practices: Implications of fintech developments for banks and bank supervisors*, available at https://bit.ly/2pS45K0
[63] Toivonen, T & Friederici, N (2015) *Time to Define What a 'Hub' Really Is*, available at https://bit.ly/2nmvxMQ.
[64] OJK's innovation hub serves as a 'development and one-stop contact center for the national Fintech industry where Fintech companies can network and cooperate with institutions and agencies that support digital financial ecosystem.' OJK (2016) *OJK Drafts Regulations on FinTech Development*, available at https://bit.ly/2JiKDBv. Notable examples among many include hubs operated by the FCA and ASIC. FCA (2018) *FCA Innovate*, available at https://bit.ly/2MfNbO3; ASIC (2018) *Innovation Hub*, available at https://bit.ly/2oavXs2
[65] Andhov, A (2018) *Will FinTech become the Enabler for the Capital Market Union?*, available at https://bit.ly/2xHvkv4
[66] Limited jurisdictions provide telephone support. Examples as of September 2018 include Canada and Kazakhstan.
[67] Research performed by the Kenya CMA suggests that 'a one-stop-shop regulatory helpline is what the Kenyan fintech market needs to continue innovating.' Kalunda, T (2018) *Groundbreaking new policy and regulatory initiatives may spur more fintech innovation in Kenya*, available at https://bit.ly/2onTLJ2; The exact form will vary with for some early examples See ASIC (2018) *Innovation Hub*, available at https://bit.ly/2oavXs2; FCA (2018) *FCA Innovate*, available at https://bit.ly/2MfNbO3; Nabila, O M (2018) *OJK Launches 'OJK Infinity', Digital Financial Innovation Center*, available at https://bit.ly/2NvWGKz
[68] RBI (2017) *Report of the Working Group on FinTech and Digital Banking*, available at https://bit.ly/2skIRWH; Faykiss, P, Papp, D & Sajtos, P et al. (2018) *Regulatory Tools to Encourage FinTech Innovations: The Innovation Hub and Regulatory Sandbox in International Practice*, available at https://bit.ly/2LCacuk; Crane, J & Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS
[69] See the following for comprehensive list of global FinTech hubs and efforts at regulatory collaboration agreements. Deloitte (2017) *A Tale of 44 Cities: Connecting Global FinTech: Interim Hub Review 2017*, available at https://bit.ly/2nZvKX3
[70] See Annex A for information about the LIFT virtual collaborative environment in Brazil provided by the BCB. LIFT (2018) *Propostas Selecionadas (Finlab Regulations)* 2018.1, available at https://bit.ly/2xKj11j
[71] FCA (2015) *Regulatory Sandbox*, available at https://bit.ly/2EG5Lez
[72] See Exhibit 5: Industry Sandboxes for more information.

shared data, APIs, sandbox-as-a-service and collaborative platforms.[73] Industry sandboxes are led and operated by industry stakeholders, not regulators. Testing is 'off-market' and does not involve the regulator or provide any regulatory relief. [74]

Exhibit 2: Terms and Concepts Related to Regulatory Sandboxes

2.2.3 Sandbox Application Form

Many sandboxes provide intake forms, some of which may request additional items from applicants such as provision of due diligence information about operating history, fitness of its executive team and its reasons for needing the sandbox.

- **Regulatory Uncertainty and Incompatibility.** Many sandbox frameworks require the applicant to enumerate what legal and/or regulatory uncertainties or incompatibilities exist with regard to its proposed innovation. Some frameworks may provide examples of what regulations may be considered[75] and others what must be maintained,[76] at times explicitly identifying what areas are not subject to consideration (for example, certain requirements related to consumer protection, privacy, AML/CFT and what falls outside the purview of the sandbox and regulator.)[77] Most jurisdictions do not provide a list and place the burden on the applicant to submit a request for consideration[78] and which may require consultation with legal counsel. Conditional regulatory relaxation can be accomplished through the issuance of instruments such as a LONO or waiver.[79]

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[73] Some examples include the Tenemos sandbox service provided to the Venture Lab at the American University in Cairo and Boston-based nonprofit 'FinTech Sandbox.' Tenemos (2018) *Temenos and AUC Venture Lab team up to accelerate fintech innovation in Egypt*, available at https://bit.ly/2N2pkG9; FinTech Sandbox (2018) *About Us*, available at http://www.fintechsandbox.org/

[74] Examples include Industry Sandbox provided by Innovate Finance, Maybank Sandbox, and the Asean regional collaborative FinTech sandbox. Innovate Finance (2018) *Comparing the Industry and Regulatory Sandbox*, available at https://bit.ly/2yDGuRb; Maybank (2018) *About Sandbox*, available at https://bit.ly/2PC8Cf3; AFIN (2018) *AFIN Sandbox*, available at http://afin.tech/index.php/afin-sandbox/. For additional information, see *Exhibit 5 – Industry Sandboxes*.

[75] The most comprehensive list of regulations and sandbox requirements possible to relax and to maintain is the example provided in Singapore's sandbox guidelines. MAS (2016) *Fintech Regulatory Sandbox Guidelines*, available at https://bit.ly/2gDPTAm See also Annex D: Potential Regulatory Relaxation and Maintenance in Select Countries.

[76] The sandbox framework for Sierra Leone explicitly represents that, for all applicants, the BSL will maintain character and fitness requirements for founders and directors, business premises suitability requirements and AML/CFT regulations. BSL (2018) *The Bank of Sierra Leone Regulatory Sandbox*, available at https://bit.ly/2NzKqZA

[77] Examples can include regulations related to anti-money laundering (AML), countering the financing of terrorism (CFG), data privacy, confidentiality and cybersecurity. The FCA explicitly states that it 'cannot waive requirements derived from EU law.' FCA (2015) *Regulatory Sandbox*, available at https://bit.ly/2EG5Lez

[78] Ringe, W-G & Ruof, C (2018) *A Regulatory Sandbox for Robo Advice*, available at https://bit.ly/2QNxmlg; Zetzsche, D & Buckley, R & Arner, D, *et al*. (2017) *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation*, available at https://bit.ly/2NiZlav; 'The HKMA has not stipulated an exhaustive list of the supervisory requirements that may potentially be relaxed… The HKMA stands ready to discuss with them individually on the appropriate supervisory flexibility that can be made available to them…' HKMA (2018) *Fintech Supervisory Sandbox (FSS)*, available at https://bit.ly/2QgVk7z

[79] Exhibit 1 and footnote 36 also address these instruments/tools.

2.3 Class Waivers and License Exemptions

The term 'regulatory sandbox' has been loosely applied to a variety of different regulatory mechanisms, including class waivers and license exemptions.[80] On the surface, these concepts may appear similar to a regulatory sandbox, but notable differences exist.[81]

Class waivers and license exemptions use objective criteria coupled with mandatory requirements and safeguards, avoiding the need for a regulator to make difficult decisions of subjective interpretation, e.g. what might constitute a 'genuine' innovation.[82] Applicants who meet predetermined objective criteria are generally eligible for admission.

Using the Australian Securities and Investments Commission (ASIC) regulatory sandbox[83] as an example, obtaining a class waiver consists of the innovator providing notice to ASIC and continuing to operate under specified thresholds throughout the duration of the license.[84] During the testing period, the licensee may not exceed, e.g. 100 retail clients, AUD $5 million in exposure and a duration of 12 months testing.[85] A meaningful, ongoing, knowledge-sharing dialogue between regulator and the innovator is not required.

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[80] The Australian Securities and Investments Commission (ASIC) permits eligible FinTech entities to obtain a 'class waiver' to test certain innovations without a license subject to certain operating criteria. ASIC (2017) *RG 257 Testing fintech products and services without holding an AFS or credit licence*, available at https://bit.ly/2P8hw3f; ASIC (2018) *Register of waivers granted under ASIC market integrity rules*, available at https://bit.ly/2PAi3M6; The Swiss Financial Market Supervisory Authority (FINMA) published a circular updating its FinTech regulations on sandboxes. FINMA (2017) *FINMA revises 'Public deposits with non-banks' circular*, available at https://bit.ly/2PO781x; See also a repository of FINMA circulars. FINMA (2018) *FINMA's supervisory practice*, available at https://bit.ly/2wWVCIA. Notable is the emergence of the 'FinTech Licenses' in Switzerland and the United States which may act as a 'step-up from the sandbox regime.' International Financial Law Review (2018) *Switzerland: Fintech outlook: 2018*, available at https://bit.ly/2FodpeT; See also special charters being established in the US by the Comptroller of the Currency (OCC). OCC (2018) *OCC Begins Accepting National Bank Charter Applications from Financial Technology Companies*, available at https://bit.ly/2QfhEiB; The regulatory sandbox operated by the Arizona Attorney General (US) also uses objective criteria to determine eligibility. State of Arizona, House of Representatives (2018) *Arizona House Bill 2434*, available at https://bit.ly/2QQEbT1; Arizona Attorney General (2018) *Frequently Asked Questions*, available at https://www.azag.gov/fintech/faq

[81] Class waivers used for testing Fintech have been observed to be a '[t]raditional approach cloaked as a Sandbox.' See Zetzsche, D & Buckley, R & Arner, D, *et al*. (2017) *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation*, available at https://bit.ly/2NiZlav

[82] The ASIC class waiver does not require a regulator to assess a level or degree of innovation, a task which may be difficult or beyond the capacity of the regulator to perform adequately. Zetzsche, D & Buckley, R & Arner, D, *et al*. (2017) *ibid.*

[83] ASIC (2018) Regulatory Sandbox, available at https://bit.ly/2OGZo4D; ASIC (2018) *Licensing for fintech exemption*, available at https://bit.ly/2ROS8l8

[84] ASIC (2018) *Licensing for fintech exemption, ibid.*

[85] *ibid.*

3 The State of Regulatory Sandboxes in Developing Countries

The regulatory sandbox concept originated in high income, developed countries. At present, most operational regulatory sandboxes still appear within these jurisdictions and emerging economies. However, a growing number of sandboxes are appearing in developing countries, which often feature significantly higher levels of unbanked and underserved populations and can present arduous challenges. Several of these jurisdictions explicitly mention financial inclusion within sandbox objectives, including Malaysia, Sierra Leone, Mozambique and Jordan as well as Bahrain.

3.1 Malaysia

Bank Negara Malaysia (BNM), Malaysia's central bank, was one of the earliest regulators after the FCA to implement a regulatory sandbox. BNM established the cross-functional Financial Technology Enabler Group (FTEG) in June 2016[86] to develop regulatory policy to support innovations that improve the quality, efficiency, security and accessibility of financial services in Malaysia and to facilitate the creation, operation and management of its regulatory sandbox.[87]

Eligibility requirements of Malaysia's sandbox framework,[88] issued in October 2016, explicitly include financial inclusion objectives.[89] They also require that the proposed innovation be 'wholly or partly incompatible with laws, regulations or standards' administered by BNM with relevant regulatory flexibility considered for innovations which possess 'strong value propositions.' The first four participants in the sandbox commenced testing in early 2017 (currently at six participants as of September 2018.)[90] These include WorldRemit,[91] a remittance service who tested an online customer identification technology incompatible with existing KYC regulations and is now used in Malaysia after the company's successful exit from the sandbox.[92]

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[86] BNM (2018) *Establishment of Financial Technology Enabler Group*, available at https://bit.ly/2J3Te7J

[87] FTEG (2018) *About*, available at https://www.myfteg.com/about; BNM (2018) *ibid.*

[88] BNM has indicated that key performance indicators (KPIs) which determine the success of the test include financial inclusion among others. Financial inclusion initiatives appear in several developing nations and MENA countries and are related to increasing access to Islamic financial products and services, such as appears in the sandbox framework of Malaysia. BNM (2016) *Financial Technology Regulatory Sandbox Framework*, available at https://bit.ly/2kDvvkj; Crane, J & Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS

[89] BNM (2016) *ibid.* See also, BNM (2018) *Overview of Financial Inclusion Framework in Malaysia*, available at https://bit.ly/2PU0BBI; BNM (2011) *Financial inclusion for greater shared prosperity*, available at https://bit.ly/2NXkr1x; BNM (2011) *Financial Sector Blueprint 2011-2020*, available at https://bit.ly/2OUT45q

[90] FTEG (2018) *List of approved participants in the Regulatory Sandbox*, available at https://bit.ly/2suz9Av; Jayaseelan, R (2017) *Bank Negara kicks off fintech sandbox*, available at https://bit.ly/2DiFHL7

[91] WorldRemit provides international remittances services, which includes the ability to deposit funds into mobile money accounts. Remittances are important to financial inclusion goals. World Bank Group (2018) *Migration and Remittances – Recent Developments and Outlook*, available at https://bit.ly/2K7z6Bb

[92] Existing law required KYC identification to be performed in person. WorldRemit was permitted to implement its remote, online solution such as through video. Wines, C (2017) *Presentation of Catherine Wines, World Remit, for CGAP Webinar: Regulatory Sandboxes: Harnessing Innovation for Financial Inclusion*?, available at https://bit.ly/2O0N4uK

Country	Sandbox Operator	Number of Firms	Launch
Bahrain	**Central Bank of Bahrain**	**11**	**Q2 2017**
Indonesia	**Bank Indonesia**	**34 registrants**	**Q4 2017**
	OJK (Financial Services Authority)	**Launching**	**Q3 2018**
Jordan	**Central Bank of Jordan**	**2**	**Q2 2018**
Kazakhstan	**Astana Financial Services Authority**	**5**	**Q1 2018**
Malaysia	**FTEG** **Bank Negara Malaysia**	**6 (1 exit)**	**Q3 2016**
Mauritius	**Economic Development Board**	**At least 5**	**~Q4 2016**
Mozambique	**Bank of Mozambique**	**5**	**Q2 2018**
Rwanda	**National Bank of Rwanda (BNR)**	**1**	**Q4 2018**
Sierra Leone	**Bank of Sierra Leone**	**4**	**Q2 2018**
Thailand	**Bank of Thailand (BOT)**	**12 (8 exit)**	**Q4 2016**
	Securities and Exchange Commission (SEC)	**~10**	**Q1 & Q2 2017**
	Office of Insurance Commission (OIC)	**5**	**Q2 2017**

Exhibit 3: Operational Regulatory Sandboxes in Developing Countries[93]

The 'Digital Finance Innovation Hub' launched in Malaysia during September 2018. It is a joint effort of the BNM, UNCDF and the Malaysia Digital Economy Corporation (MDEC) for promoting and supporting the innovation of products and services which address the needs of Malaysia's underserved population.[94]

3.2 Mauritius

The 'Regulatory Sandbox License' (RSL) of Mauritius, operated by the Economic Development Board (MEDB),[95] was officially announced in October 2016[96] and RSL Guidelines were subsequently issued.

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93 This chart and its data is a summary of and derived from **Annex A:** Status of Regulatory Sandboxes in Developing Countries.

94 BNM (2018) *Launch of the Digital Finance Innovation Hub and Inclusive Fintech Accelerator*, available at https://bit.ly/2yJlqbV

95 The MEDB represents the merger of the Mauritius Board of Investment, Enterprise Mauritius and the Financial Services Promotion Agency. The objectives of the MEDB include strategic economic planning designed to elevate the country to achieve high-income economy status, attract foreign investment and establish Mauritius as an international financial center. MEDB (2018) *The Economic Development Board (EDB)*, available at https://bit.ly/2xrYqO9

96 Virahsawmy,M & Beegoo, K (2018) *Fintech – Law & Practice – Mauritius*, available at https://bit.ly/2H6VUzG

The RSL is available for 'innovations' generally and not limited to financial products and services.[97] It is intended to operate in gaps where no adequate law or regulation exists.[98] Decisions to accept an applicant is made by the MEDB, the sandbox operator, with the input of the appropriate regulator who acts as part of a Technical Committee providing substantive evaluation, advice and recommendations concerning applicants.[99] As of January 2018, the Mauritius sandbox had at least five participants with two providing blockchain and cryptocurrency[100] based solutions[101] with others providing non-financial innovations.[102]

3.3 Thailand

The Bank of Thailand (BOT) launched its regulatory sandbox in December 2016 for banks and non-bank financial institutions (NBFIs) incorporated in Thailand who offer products related to lending, payments and fund transfers.[103] As of February 2018, the sandbox had four participants providing solutions using blockchain technology for letters of guarantee, international remittance services and biometric identification systems.[104] A project standardizing QR codes for domestic and cross-border payments was successfully tested using the sandbox by eight banks and financial institutions and was subsequently deployed in the market.[105]

Beginning in March 2017, the Thailand Securities and Exchange Commission (TSEC) launched several thematic sandboxes covering investment advisors and private funds, clearing and settlements, KYC and an electronic trading platform.[106] Several months earlier, the TSEC had launched an annual fintech challenge contest with winners offered admittance to the sandbox.[107] Its first cohort competed

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[97] One RSL was issued for stem cell production used in medical treatments. See Intercontinental Trust Ltd (2017) *Regulatory Sandbox Licence – ITL proud to be associated with 2nd issue of RSL by the BOI*, available at https://bit.ly/2ps6c7c

[98] A RSL 'offers the possibility for a person to conduct a business activity for which there are no, or no adequate provisions under any enactment.' BOI (2016) *Regulatory Sandbox License Guidelines*, available at https://bit.ly/2MWSSkh

[99] BOI (2016) *Regulatory Sandbox License Guidelines*, available at https://bit.ly/2MWSSkh

[100] For an overview of blockchain and DLTSs, see Perlman, L (2017) *Distributed Ledger Technologies and Financial Inclusion*, available at https://bit.ly/2nyxpBG

[101] While the MEDB does not officially publish a list of entities issued a RSL, licensees and/or their representatives have publicly issued statements. See Intercontinental Trust Ltd (2017) *Regulatory Sandbox Licence – ITL proud to be associated with 2nd issue of RSL by the BOI*, available at https://bit.ly/2ps6c7c; SelfKey (2018) *About the SelfKey Foundation*, available at https://selfkey.org/foundation/; Crowdfund Insider (2018) *SelfKey Receives Regulatory Sandbox License in Mauritius*, available at https://bit.ly/2xw5xbx

[102] Intercontinental Trust Ltd (2017) *ibid.*

[103] Latham & Watkins (2017) *Regulatory Sandboxes – a Global Stocktake*, available at https://bit.ly/2QQVbc8; Baker & McKenzie (2016) *FinTech Update: Thailand's FinTech Regulatory Sandbox*, available at https://bit.ly/2O8GT8e

[104] Gnanasagaran, A (2018) *Fintech sandboxes in Southeast Asia*, available at https://bit.ly/2opGzTt; See also Crane, J & Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS

[105] BOT (2017) *The permission of additional qualified banks to exit from regulatory sandbox and provide QR Code payment service to the general public*, available at https://bit.ly/2N1Mmc7; Finextra (2017) *Five banks exit Thai regulatory sandbox with QR payment codes*, available at https://bit.ly/2zsZBPG; BOT (2018) *Payment Systems: Standardized QR Code in Thailand*, available at https://bit.ly/2Ie21UZ

[106] For information about the SEC sandbox verticals, *see* Corbett, J & Walker, G & Sornumpol, D, et al. (2018) *FinTech in Thailand: overview*, available at https://tmsnrt.rs/2O8sSam; Kietduriyakul, K & Phongsathaporn, K & Triwiboonvanit, M (2017) *Thailand: The FinTech wave and regulatory response*, available at https://bit.ly/2q6A9JL; Chirasavinuprapand, N (2017) *Regulatory Sandbox: Thailand's experience*, available at https://bit.ly/2QTgNo8; Crane, J, Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS; TSEC (2018) *SEC News – No. 39/2560*, available at https://bit.ly/2zt9Ymk; Silk Legal (2017) *SEC Introduces KYC Sandbox*, available at https://bit.ly/2DrbsBI

[107] Royal Thai Embassy (2016) *Ten fintech startups slated for sandbox by SEC*, available at https://bit.ly/2OQCoMv

in categories of financial inclusion, blockchain technology and RegTech.[108] In June 2017, the Office of Insurance Commission (OIC) – the insurance regulator of Thailand – launched its InsureTech sandbox, which has five pilot projects as of April 2018.[109]

3.4 Indonesia

In December 2017, Bank Indonesia (BI) – the country's central bank – launched its regulatory sandbox, open to innovations qualifying as payment systems.[110] As of September 2018, 34 entities qualifying as 'Financial Technology Operators' (FTOs) were registered with BI, a prerequisite requirement for applying for sandbox admission.[111] In August 2018, the Financial Services Authority (OJK)[112] issued a regulation establishing its sandbox and requirements for Digital Financial Innovation (Inovasi Keuangan Digital – IKD) operators,[113] which also requires registration prior to sandbox application. Later in August, the OJK also launched an innovation hub to support the country's FinTech ecosystem and serve as a complement to the country's regulatory sandboxes.[114]

3.5 Republic of Kazakhstan

The Astana International Financial Center (AIFC)[115] is a financial hub launched in July 2018, designed to attract investment through a preferential, attractive and business friendly environment for financial services and capital markets.[116] The AIFC is afforded a special legal status, has its own independent jurisdiction and uses a legal system based on common law which makes it attractive to a number of global markets.[117]

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[108] *ibid.*

[109] Chudasri, D (2018) *Insuretech hub in the works to help the industry integrate*, available at https://bit.ly/2QSgsSF; Gnanasagaran, A (2018) *Fintech sandboxes in Southeast Asia*, available at https://bit.ly/2opGzTt

[110] Bank Indonesia (2017) *Regulation Number 19/14/PADG/2017 on Regulatory Sandbox for Financial Technology*, available at https://bit.ly/2pvxBVT

[111] Financial Technology Operator (FTO) is any party operating activities related to the use of technology in financial system, which generates new products, services, technology, and/or business models and may affect monetary stability, financial system stability, and/or efficiency, smoothness, security, and reliability of payment system. Bank Indonesia (2017) *Regulation Number 19/12/PBI/2017 on Financial Technology Integration*, available at https://bit.ly/2NnnqMI; Bank Indonesia (2018) *Teknologi Finansial*, available at https://bit.ly/2Gshsaw

[112] The OJK is the regulator of the financial services sector, having 'regulatory and supervisory duties over financial services activities in banking, capital markets, and non-bank financial industries sectors.' OJK (2018) *About OJK*, available at https://bit.ly/2oIsUYb; In 2013, BI transferred its regulatory and supervisory authority of the banking sector to the OJK. Supervision of individual banks (microprudential) is conducted by the OJK and macroprudential supervision remain with Bank Indonesia in coordination with the OJK. BI and OJK (2013) *Joint Press Release No. 15 / 56 /DKom*, available at https://bit.ly/2ONVPFN

[113] The scope of Digital Financial Innovation (IKD) Operators includes: transaction settlement; capital accumulation; investment management; collection and distribution of funds; insurance; market support; other digital financial supporters; and / or other financial services activities. OJK (2018) *Regulation POJK 13/POJK.02/2018*, available at https://bit.ly/2wFUuZO; Makarim & Taira (2018) *Regulatory Sandbox of OJK*, available at https://bit.ly/2N63Sfp

[114] Nabila, O M (2018) *OJK Launches 'OJK Infinity', Digital Financial Innovation Center*, available at https://bit.ly/2NvWGKz

[115] AIFC is a financial hub intended for Central Asia, the Caucasus, EAEU, the Middle East, West China, Mongolia and Europe. It aims to attract investment into Kazakhstan by developing a beneficial and attractive environment to investors. AIFC (2018) *Objectives*, available at https://aifc.kz/article/celi; AIFC (2018) *Questions and answers*, available at https://aifc.kz/faq

[116] The Astana Times (2015) *Astana International Financial Centre to Cement Capital's Place in Global Finance*, available at https://bit.ly/2InOdHO; ADGM (2018) *Abu Dhabi Global Market and Astana International Financial Centre Financial services authority (aifc-afsa) signed agreement to enhance cooperation on financial markets*, available at https://bit.ly/2IoU0Ni

[117] ADGM (2018) *ibid.*

The Astana Financial Services Authority (AFSA) is the independent regulator of the AIFC and a legal entity and statutory body of Kazakhstan.[118] It acts as a registrant of companies seeking to offer services within the AIFC and throughout Kazakhstan.[119] The AIFC was modeled after the Dubai International Financial Centre (DIFC) in the UAE,[120] seeking to make Astana (in similar fashion to Dubai) the global financial hub which connects Western Europe and East Asia (including China.)

The AFSA launched its regulatory sandbox in January 2018,[121] with its framework covering a wide array of FinTech products and solutions[122] and requiring submission of a comprehensive pre-application and post-application form.[123] The AFSA may grant regulatory flexibility for legal and regulatory requirements incompatible with an applicant's innovation which exhibits 'strong value propositions.'[124] Unlike many sandboxes, the AFSA provides live telephone support to assist with applications.[125] As of September 2018, five entities are listed in its company register who participate in the country's Public Register.[126]

3.6 Bahrain

The Central Bank of Bahrain (CBB) first issued its regulatory sandbox framework in June 2017, the product of a partnership between the Bahrain Economic Development Board (BEDB),[127] the Singapore Fintech Consortium (a FinTech incubator, platform and ecosystem builder) and Trucial Investment Partners in Dubai (an asset management, financing and advisory firm).[128] In addition to positioning itself to be a Shari'ah compliant regional FinTech hub, it is notable as one of the few sandboxes which explicitly identifies financial inclusion within its framework as one of its primary objectives.[129] As of September 2018, the Bahrain sandbox had 11 participants (1 exit) and included several entities with innovations covering services involved in financial inclusion efforts.[130]

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[118] AFSA (2018) *About AFSA*, available at http://afsa.kz
[119] AIFC (2018) *Questions and answers*, available at https://aifc.kz/faq
[120] The Astana Times (2015) *Astana International Financial Centre to Cement Capital's Place in Global Finance*, available at https://bit.ly/2InOdHO
[121] AFSA (2018) *About AFSA*, available at http://afsa.kz
[122] The AFSA Sandbox Guidance is 'applicable to any company that utilises or plans to utilise FinTech in capital markets, asset management, private banking, Islamic finance, (re)insurance, green finance and other activities (i.e. peer-to-peer lending and financing, crowdfunding, payment processing) that are or likely to be regulated by AFSA.' AFSA (2018) *Astana International Financial Centre FinTech Regulatory Sandbox Guidance*, available at https://bit.ly/2zpjYNF
[123] *ibid.*
[124] See 'Eligibility Criteria' of the sandbox guidelines. AFSA (2018) *Astana International Financial Centre FinTech Regulatory Sandbox Guidance*, available at https://bit.ly/2zpjYNF
[125] AFSA (2018) *Fintech*, available at http://afsa.kz/fintech
[126] AFSA (2018) *Public Register*, available at http://afsa.kz/public-register
[127] The BEDB is a public agency which creates, develops and supports initiatives to bring in and maximize foreign direct investments in Bahrain to enhance the Kingdom's economic climate. BEDB (2018) *What We Do*, available at http://bahrainedb.com/about-us/
[128] BEDB (2017) *Bahrain signs with Singapore Fintech Consortium and UAE's Trucial Investment Partners for FinTech ecosystem and regulatory framework*, available at https://bit.ly/2xA1Cbk
[129] The CBB regulatory sandbox framework states that the CBB '... made a conscious decision to initiate a Regulatory Sandbox in order to promote effective competition, embrace new technology, encourage financial inclusion and improve customer experience.' CBB (2017) *Regulatory Sandbox Framework*, available at https://bit.ly/2xvri8i
[130] See Crane, J, Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS; CBB (2018) *Fintech Regulatory Sandbox Approved Companies as of 16th September 2018*, available at https://bit.ly/2xNpHL9

3.7 Jordan

The regulatory sandbox framework of the Central Bank of Jordan (CBJ) was recently introduced in April 2018.[131] It emphasizes enhancing the characteristics of and access to DFS to achieve sustainable financial inclusion.[132] Some of the eleven financial sectors enumerated within the scope of its sandbox framework include crypto-currencies,[133] blockchain and DLT platforms, electronic payments, savings and financing, remittances, e-KYC and RegTech. Notably, the CBJ sandbox appears to be the first regulatory sandbox which explicitly calls for local and international collaboration and cooperation with organizations and other regulatory sandboxes in the banking and financial sectors.[134]

The Financial Sector Deepening Africa (FSD Africa) Network, [135] in conjunction with financial and technical support from partnering organizations and respective central banks, launched 'FinTech challenge' contests in Sierra Leone[136] and Mozambique – two developing countries in Sub-Saharan Africa with high unbanked populations.[137] These challenges represented an effort to promote, attract and catalyze development of local FinTech innovation to create beneficial solutions to the country, specifically encouraging innovation in providing financial services to the underserved.[138]

Contest winners[139] who addressed areas of need were awarded cash prizes and invited to participate in the subsequent launch of a 'thematic' financial inclusion focused regulatory sandbox pilot program. The contest funding provided a vital injection of seed capital to local innovators, an investment similar to an accelerator.

Thematic regulatory sandboxes can promote and encourage innovation which focuses on accomplishing policy priorities, such as those contained within a national financial inclusion strategy (NFIS). Evaluation criteria, such as that appearing in the Sierra Leone sandbox framework, requires an applicant to demonstrate how its proposed innovation can advance the country's NFIS. Financial inclusion objectives may also be bound to sandbox participants through requirement that the underserved be included in sandbox testing (collecting vital information and data about their needs) and/or being a direct beneficiary of the proposed innovation after deployment.[140] Incentives may also be offered to innovators who primarily address financial inclusion objectives.[141]

Exhibit 4: Thematic Sandboxes in Sub-Saharan Africa

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[131] AFI (2018) *Policy Forum in Jordan: FinTech as a key catalyst for financial inclusion*, available at https://bit.ly/2Ctg6hY
[132] CBJ (2018) *FinTech Regulatory Sandbox*, available at https://bit.ly/2Q7hwl5
[133] The sandbox framework specifically excludes 'virtual' currencies but does not provide a definition or distinction.
[134] CBJ (2018) *Central Bank of Jordan Regulatory Sandbox*, available at https://bit.ly/2rAaBpa
[135] 'The FSD Africa network is an alliance of organisations (or FSDs) that reduce poverty through financial sector development in sub-Saharan Africa.' FSD Africa (2018) *The FSD Network*, available at https://bit.ly/2Og3QD1; Napier, M (2013) *Market Building Through Financial Sector Deepening In Africa*, available at https://bit.ly/2OpVRTS.
[136] BSL (2017) *Sierra Leone FinTech Challenge 2017*, available at https://bit.ly/2PfiIFx; UNCDF (2018) *The Sierra Leone FinTech Initiative in the Words of the FinTechs*, available at https://youtu.be/hqSV-_qobOQ
[137] In his speech about the Sierra Leone FinTech Challenge and the purpose of the country's thematic regulatory sandbox, the BSL Governor stated that over 87% of the population was unbanked in 2017. See BSL (2017) *Statement by the Governor, Bank of Sierra Leone, Dr Patrick S Conteh at the Announcement of the winners of the Sierra Leone FinTech Challenge 2017 & presentation of the BSL Sandbox Framework*., available at https://bit.ly/2xJjEYL; The World Bank (2017) *The Global Findex Database 2017*, available at https://bit.ly/2r4xgtt; Duff, S (2017) *Presentation of Schan Duff, Bank of Sierra Leone: Regulatory Sandbox Pilot Program*, available at https://bit.ly/2O0N4uK; FSDMoc (2017) Analysis of Unbanked Mozambicans, available at https://bit.ly/2IUHFk7
[138] BSL (2017) *Sierra Leone FinTech Challenge 2017*, available at https://bit.ly/2PfiIFx; UNCDF (2018) The Sierra Leone FinTech Initiative in the Words of the FinTechs, available at https://youtu.be/hqSV-_qobOQ
[139] Contest participants were judged by two panels consisting of Accion Ventures, UN Capital Development Fund's MM4P programme and FSD Africa. BSL (2018) *Four FinTechs Approved to Enter the Sierra Leone Sandbox Programme*, available at https://bit.ly/2CXXZ3u
[140] Jenik, I & Lauer, K (2017) *Regulatory Sandboxes and Financial Inclusion*, available at https://bit.ly/2yDDGU0
[141] *ibid.*

3.8 Sierra Leone

The Bank of Sierra Leone (BSL) created a regulatory sandbox 'pilot program'[142] in an effort to encourage, cultivate and promote financial innovation domestically in a country which has one of the lowest levels of financial inclusion worldwide.[143] The BSL, in a partnership with FSD Africa and UNCDF Mobile Money for the Poor (MM4P) (and support from USAID and the Last Mile Trust Fund), launched the Sierra Leone FinTech Challenge in June 2017 with the winners receiving cash prizes and automatic entry into the first cohort of the BSL sandbox.[144] Twenty innovators applied to the FinTech Challenge,[145] helping the BSL justify the sandbox and commit to engaging a full-time, cross-functional sandbox team to conduct all related activities.[146]

The development of the sandbox framework was a comprehensive process which involved collaboration and assistance of domestic and international expertise.[147] The first cohort of the BSL Sandbox launched in May 2018 with four participants[148] which included a mobile payment aggregator, mobile money cash transfer for agriculturalists, a financial literacy mobile app and electronic money platform.

The BSL sandbox framework is specifically linked to its NFIS, as explicitly set forth in its objectives and identified as a priority within evaluation criteria of applicants.[149] Some eligibility requirements are uncommon and indicative of the impact of the NFIS and national priorities. Applicants must have no less than a 10% ownership interest by a Sierra Leone citizen,[150] intended to encourage a strong connection between sandbox innovators and the country.[151] Sandbox objectives also address capacity limitations by explicitly permitting the BSL to adjust the number of participants in a cohort as a function of reasonably sufficient regulatory support and available resources.

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[142] The one-year pilot program is operating with a single cohort, originally designed to be two six-month cohorts. Duff, S (2017) *Presentation of Schan Duff, Bank of Sierra Leone: Regulatory Sandbox Pilot Program*, available at https://bit.ly/2O0N4uK; Massally, T & Duff, S (2018) *What Can We Learn from Sierra Leone's New Regulatory Sandbox?*, available at https://bit.ly/2rKq6M4

[143] As of November 2017, over 87% of the population was 'unbanked' and financially excluded. See BSL (2017) *Statement by the Governor, Bank of Sierra Leone, Dr Patrick S Conteh at the Announcement of the winners of the Sierra Leone FinTech Challenge 2017 & presentation of the BSL Sandbox Framework*., available at https://bit.ly/2xJjEYL; Massally, T & Duff, S (2018) *ibid.*

[144] BSL (2017) *Sierra Leone FinTech Challenge 2017*, available at https://bit.ly/2PfiIFx; UNCDF (2017) *Sierra Leone FinTech Challenge 2017*, available at https://bit.ly/2DwMfpL

[145] 80% were Sierra Leone youth. See UNCDF (2018) *The Sierra Leone FinTech Initiative in the Words of the FinTechs*, available at https://youtu.be/hqSV-_qobOQ

[146] Massally, T & Duff, S (2018) *What Can We Learn from Sierra Leone's New Regulatory Sandbox?*, available at https://bit.ly/2rKq6M4

[147] Duff, S (2017) *Presentation of Schan Duff, Bank of Sierra Leone: Regulatory Sandbox Pilot Program*, available at https://bit.ly/2O0N4uK

[148] BSL (2018) *The Bank of Sierra Leone Regulatory Sandbox*, available at https://bit.ly/2NzKqZA; BSL (2018) Four *FinTechs Approved to Enter the Sierra Leone Sandbox Programme*, available at https://bit.ly/2CXXZ3u; UNCDF (2018) *The Sierra Leone FinTech Initiative in the Words of the FinTechs*, available at https://youtu.be/hqSV-_qobOQ

[149] BSL (2018) *The Bank of Sierra Leone Regulatory Sandbox*, *ibid.*

[150] BSL (2018) *Regulatory Sandbox Pilot Program Guidelines and Application Form*, available at https://bit.ly/2OZtSKF

[151] Originally the ownership requirement was 50%. BSL (2017) *Regulatory Sandbox Pilot Program – Response to Public Consultation*, available at https://bit.ly/2wNI174

3.9 Mozambique

In a partnership with inputs from the FSD Mozambique (FSDMoc), the Bank of Mozambique[152] (BOM) launched its 'Sandbox Incubator' project in May 2018, a financial inclusion themed sandbox for FinTech innovators. Preparation began in early 2017 when FSDMoc began preliminary scoping research, outreach, communication with industry stakeholders and engagement of the BOM.[153] The FSDMoc discovered that local FinTech innovation is primarily accomplished through development funding[154] and so devised a 'FinTech Challenge.' This yielded 20 proposals, five of which were selected and are currently participating in a six-month testing period.[155] Regulatory challenges included regulatory restrictions on bidirectional cross-border remittances and constraints on innovations in payment systems.[156] The central bank has made efforts to have the banking law modified to allow these FinTechs to participate in the financial ecosystem but is reportedly meeting with resistance from the Ministry of Finance.[157]

More information on the status of these and other regulatory sandboxes in developing countries can be found in Annex A.

4 Benefits and Risks of Regulatory Sandboxes in Developing Countries

Regulatory sandboxes can take different forms but generally share several common benefits. The ultimate impact and success of a sandbox can depend upon the jurisdiction of implementation, the legal and regulatory environment, the size and sophistication of its marketplace and the skill of the sandbox operator and regulator.

4.1 Benefits

4.1.1 Innovation-friendly signal to the market

Promoting innovation, such as through the existence of a regulatory sandbox and within a regulator's mandate, can broadcast positive signals to the marketplace that a jurisdiction and/or authority welcomes innovation, potentially attracting interest and investment.[158]

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[152] FSDMoc (2018) *The central bank of mozambique and the financial sector deepening moçambique (fsdmoç) launch the regulatory sandbox to promote innovation with 'fintechs'*, available at https://bit.ly/2IbwVxu; A Republica (2018) *Banco de Moçambique e parceiros lançam projecto de Incubadora Sandbox*, available at https://bit.ly/2xwLuHQ

[153] BOM took the wait-and-see approach towards regulating innovation. FSDMoc (2018) *How FSDMoç is addressing financial sector regulation challenges: The regulatory sandbox story!*, available at https://bit.ly/2NM6FuC

[154] *ibid.*

[155] Two fintech provides domestic and international remittance services and three alternative payment systems – a payments gateway, portal and aggregator. *Deloitte (2018) The Ecosystem of Digital Financial Services in Mozambique*, available at https://bit.ly/2zpPtqV; FSDMoc (2018) *ibid.*

[156] FSDMoc (2018) *How FSDMoç is addressing financial sector regulation challenges: The regulatory sandbox story!*, available at https://bit.ly/2NM6FuC; Interview: August 16, 2018 with FSDMoc (Esselina Macome, Chief Executive Officer of FSDMoc and Anabela Mabota)

[157] Remarks by the Bank of Mozambique at the Alliance for Financial Inclusion Global Policy Forum in Sochi, Russia, September 2018.

[158] Zetzsche, D & Buckley, R & Arner, D, *et al*. (2017) *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation*, available at https://bit.ly/2NiZlav

4.1.2 Potential for a more seamless path towards deployment of innovation

Under the right circumstances, the regulatory sandbox can potentially bring innovation to the marketplace with greater speed, efficiency, proof of concept,[159] lower costs[160] and with reduced regulatory uncertainty and hindrances.[161] It may be particularly relevant where outdated regulations can stifle the rapid global rise and pace of FinTech innovation, including in developing countries (such as the DFS ecosystem) and create additional risks and uncertainty for innovators along with regulatory arbitrage.[162]

4.1.3 Emphasis of policy objectives and potential for financial inclusion benefits

Sandboxes can place emphasis on important policy objectives such as financial inclusion, as explicitly stated within the regulatory frameworks of Sierra Leone, Malaysia, Bahrain and Jordan. In developing countries, such objectives can assist in promoting economic development by creating incentives for the private sector to invest in customers who otherwise may not fall under the scope of their business plan. It is important, however, that regulators ensure that sandbox participants stay focused on the policy objectives of the sandbox, as innovations which may have been initially aimed towards the underserved may ultimately be diverted to primarily serve a more lucrative target demographic.[163]

4.1.4 Potential to enhance regulatory capacity and innovator knowledge

The sandbox experience, through greater open and transparent communication,[164] provides bidirectional educational benefits. Innovators achieve a better appreciation for how existing regulation may (or may not) apply to them and regulators, through exposure, obtain a better understanding of and comfort with approaching increasingly complex innovation.[165] Helping regulators catch up with the speed of progress in the FinTech sector is of significant importance as regulatory capacity is a common and difficult challenge to overcome.

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[159] Mueller, J (2017) *FinTech: Considerations on How to Enable a 21st Century Financial Services Ecosystem,* available at https://bit.ly/2NMbKDS

[160] FCA (2015) *Regulatory Sandbox*, available at https://bit.ly/2EG5Lez

[161] Crane, J, Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS; FCA (2015) *ibid.*

[162] The Central Bank of Kenya allowed Safaricom's M-Pesa mobile money service to engage in a small-scale pilot launch, despite the absence of an enabling regulatory environment directly allowing its operation. AFI (2010*) Enabling mobile money transfer –The Central bank of Kenya's treatment of M-Pesa*, available at https://bit.ly/2J32WqO; Perlman, L (2012) *LLD Doctoral Thesis: Legal and regulatory aspects of Mobile Financial Services, University of South Africa*, available at http://uir.unisa.ac.za/handle/10500/13362

[163] FCA (2017) *Regulatory sandbox lessons learned report, October 2017*, available at https://bit.ly/2yK7q3A; Crane, J & Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS

[164] Jenik, I & Lauer, K (2017) *Regulatory Sandboxes and Financial Inclusion,* available at https://bit.ly/2yDDGU0; A substantial benefit of the FCA sandbox is that cohort participants 'have a regulator on speed-dial' with whom they speak on a weekly basis who can provide insights and clarity as to what will likely happen by choosing to go to market in a specific manner. Duff, S (2017) *Presentation of Schan Duff, Bank of Sierra Leone: Regulatory Sandbox Pilot Program*, available at https://bit.ly/2O0N4uK

[165] Crane, J & Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS

4.1.5 Reduction of Regulatory Uncertainty

A primary goal of regulatory sandboxes is to reduce regulatory uncertainty which can discourage and hinder innovation.[166] The knowledge exchange that is an integral component of the sandbox experience should potentially lead to greater regulatory clarity among innovators, industry and in the marketplace. Ideally, this process should ultimately lead to regulatory authorities engaging in meaningful regulatory reform and updating outdated, inflexible and incompatible frameworks to comport with the demands of the new digital era of innovation.[167]

4.2 Risks

4.2.1 Challenges of regulatory capacity

Regulatory sandboxes can be demanding on the time and skill level of regulators, who may be required to define testing plans and performance metrics, assess complex innovation and innovator applicants in the course of conducting case-by-case evaluations. They must also identify resources to supervise participants in their sandbox.[168] This will require additional staff and/or time commitments[169] which regulators, especially in developing countries with limited resources, may not possess and who may be otherwise occupied by (or distracted from) other primary duties as a regulator.[170]

Some regulators have full-time staff dedicated to operating the sandbox. The FCA has approximately 40 people involved in its FinTech initiatives.[171] Formulating a dedicated cross-functional team specifically for sandboxes is especially challenging outside of developed countries (who have much greater financial and human resources), although Sierra Leone has dedicated such a team for its one-year pilot program.[172]

4.2.2 Regulatory conservatism and zeal

Sandboxes may foster more open communication between regulators and innovators which can produce a mutually beneficial learning experience. But regulators may simply not possess the ability,

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166 FCA (2015) *Regulatory Sandbox*, available at https://bit.ly/2EG5Lez; CMA (2017) *Stakeholders Consultative Paper on Policy Framework for Implementation of a Regulatory Sandbox to Support Financial Technology (Fintech) Innovation in the Capital Markets in Kenya*, available at https://bit.ly/2wivqsp

167 As echoed above, regulatory sandboxes have a short operating history and it may be premature to come to firm conclusions. However, the Milken Institute in its response to the GFIN consultation document, had observed that '[w]hile significant efforts continue to be undertaken by various regulatory authorities to promote the development of FinTech, we observe that there is little indication that the insights gained by regulatory authorities have been directly responsible for changes to current laws or regulations.' Mueller, J & Murphy, D & Piwowar, M (2018) *Response to the Global Financial Innovation Network (GFIN) Consultation Document*, available at https://bit.ly/2RZnZQj

168 Massally, T & Duff, S (2018) *What Can We Learn from Sierra Leone's New Regulatory Sandbox?*, available at https://bit.ly/2rKq6M4

169 Even where third parties may provide assistance, regulatory capacity may still be stretched by needs of communication, oversight and supervision.

170 Duff, S (2017) *Presentation of Schan Duff, Bank of Sierra Leone: Regulatory Sandbox Pilot Program*, available at https://bit.ly/2O0N4uK

171 See Section 2.2. Crane, J & Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS

172 Massally, T & Duff, S (2018) *What Can We Learn from Sierra Leone's New Regulatory Sandbox?*, available at https://bit.ly/2rKq6M4; Duff, S (2017) *Presentation of Schan Duff, Bank of Sierra Leone: Regulatory Sandbox Pilot Program*, available at https://bit.ly/2O0N4uK

resources and necessary experience to understand and appreciate the complex nature of FinTech innovations (especially given lower levels of market sophistication) and stay current with its rapid pace and change.[173]

Ideally, actions by regulators will be mindful of regulatory objectives with an appreciation of and respect for the confines of legal boundaries. Regulators who do not possess adequate capacity to fully understand and appreciate what may be new, complex, disruptive innovation may resist approvals, opting to protect against risk of failure and personal exposure by maintaining the status quo.[174] At the other extreme, an overzealous agenda to promote innovation may result in excessive deregulation with unjustifiable risks being introduced into the testing system and resulting in potential failures.[175]

4.2.3 Foundational challenges may still persist

The ultimate success of the sandbox may be impacted and undermined by existing conditions and limitations within a jurisdiction. While sandboxes have generated substantial interest and enthusiasm, they are but one of several regulatory approaches and are not always an optimal solution.

In some jurisdictions, regulatory reform may be needed to address regulatory inflexibility and incompatibility which can act to stifle sandbox effectiveness and success. Smaller and less sophisticated markets, such as those in developing countries, often present foundational challenges. These can include limited local resources (such as availability of capital and human talent), distance from resources (such as global FinTech hubs and talent pools), limited infrastructure and suboptimal marketplace conditions.[176]

Economic activities of local sandboxes are also limited to domestic borders and, in developing countries, achieving sufficient economies of scale for long term viability can be challenging.[177] Such risks reduce the attractiveness of innovation and opportunities for local and foreign direct investment.[178] Furthermore, framework and regulation which restricts transactions to physical borders

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[173] Mueller, J (2017) *FinTech: Considerations on How to Enable a 21st Century Financial Services Ecosystem*, available at https://bit.ly/2NMbKDS; Lauer, K (2017) *Podcast: How Regulatory Sandboxes are Shaping Fintech in Asia*, available at https://bit.ly/2koG8dL; Murphy, D & Mueller, J (2018) *RegTech: Opportunities for More Efficient and Effective Regulatory Supervision and Compliance*, available at https://bit.ly/2NyRp8a; Gurung, N & Perlman, L (2018) *Use of Regtech by Central Banks and its Impact on Financial Inclusion*, available at https://www.dfsobservatory.com

[174] Arner, D (2018) *Financial Stability, Economic Growth and the Role of the Law*, available at https://ssrn.com/abstract=1409544. Allen, L (2018) *A US Regulatory Sandbox?*, available at https://ssrn.com/abstract=3056993

[175] Ringe, W-G & Ruof, C (2018) *A Regulatory Sandbox for Robo Advice*, available at https://bit.ly/2QNxmlg

[176] '...emerging market governments need to take a holistic approach to creating business environments that truly enable FinTech innovation and address the many challenges that can prove fatal to the growth of FinTech firms.' di Castri, S & Plaitakis, A (2018) *Going beyond regulatory sandboxes to enable FinTech innovation in emerging markets*, available at https://ssrn.com/abstract=3059309; Four key factors of success for FinTech hubs include adequate talent, capital, demand and policy and regulation. Brett, L (2017) *What makes a successful FinTech hub in the global FinTech race?*, available at https://bit.ly/2ISWSSK

[177] Thompson, H & Shepherd, B & Welch, G, et al. (2017) D*eveloping Businesses of Scale in Sub-Saharan Africa Insights from Nigeria, Tanzania, Uganda and Zambia*, available at https://bit.ly/2PBJ55T

[178] Thompson, H & Shepherd, B & Welch, G, et al. (2017) D*eveloping Businesses of Scale in Sub-Saharan Africa Insights from Nigeria, Tanzania, Uganda and Zambia*, available at https://bit.ly/2PBJ55T; Zetzsche, D & Buckley, R & Arner, D, *et al*. (2017) *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation*, available at https://bit.ly/2NiZlav

may stifle the establishment of cross-border activities and the borderless nature of FinTech, [179] which is capable of building needed and beneficial economies of scale.

4.2.4 Limited transparency

With details about sandbox participation agreements generally not made public and often subject to confidentiality agreements,[180] care should be taken to avoid echoing negative public perception, especially in developing countries where high levels of corruption can exist. Participants admitted into the sandbox may realize benefits over others from special status through accommodation of relaxation of regulations and communication with the regulator.[181]

Certain applicants may be more likely to be accepted into the sandbox.[182] In Malaysia, applicants who are 'high value added jobs' creators 'will be more favorably assessed by the Bank'[183] and a similar implication might be read about FinTech companies collaborating with financial institutions.[184] Greater use of objective criteria, transparency and potentially the use of cohorts (versus a race for rolling acceptance) can act to mitigate the impact of a perception of unfairness and corruption.[185]

4.2.5 De-Risking

Sandbox participants are responsible for managing their own affairs, such as securing adequate financing, financial accounts at banks and financial institutions and obtaining access to data. These tasks may prove challenging for innovators, including those servicing and/or operating within or in connection with developing countries. The FCA mentioned de-risking[186] as an issue for regulatory sandbox participants, particularly pronounced among innovators '...wishing to leverage DLT, become

[179] One example of cross-border activities being stifled is remittance service, WorldRemit, discussed above in Section 3: The State of Regulatory Sandboxes in Developing Countries (Malaysia) and in footnote 87.

[180] In some jurisdictions an official list of accepted sandbox participants may not be available and, where present, often contains meager information a participant's name. Innovator concerns regarding publicity can include issues of first mover advantage, intellectual property protection and negative marketplace perception in the event of a testing failure.

[181] Jenik, I & Lauer, K (2017) *Regulatory Sandboxes and Financial Inclusion*, available at https://bit.ly/2yDDGU0

[182] Potential exists for accusations of regulatory favoritism towards one entity over comparable solutions. Mueller, J (2017) *FinTech: Considerations on How to Enable a 21st Century Financial Services Ecosystem,* available at https://bit.ly/2NMbKDS

[183] FTEG (2018) *Regulatory Sandbox*, https://bit.ly/2kEoakx

[184] 'Fintech companies that collaborate with financial institutions could gain added advantages from guidance and support provided by financial institutions with respect to regulatory requirements and risk mitigations in applying to participate in a sandbox.' FTEG (2018) *Regulatory Sandbox*, https://bit.ly/2kEoakx

[185] Crane, J & Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS

[186] The term 'de-risking' has been used to describe the practice of financial institutions exiting product and service lines, terminating or restricting relationships with clients (including in classes) perceived as presenting a 'high-risk' of an undesirable outcome. Rather than attempting to manage associated risks (such as concerns surrounding AML/CFT) and/or mitigate economic challenges, some financial institutions have opted in favor of reducing their exposure by culling high-risk (or potentially competitive) clients, leaving them to find alternative financial arrangements. This practice presents special challenges to the underserved and parties providing services, which tend to be flagged as high-risk candidates. For more information on this topic, *see* Durner, T & Shetret, L (2015) *Understanding Bank De-risking and its Effects on Financial Inclusion*, available at https://bit.ly/2ErWQ5s; The World Bank (2016) *The World Bank's Data Gathering Efforts: De-risking? Key Findings and Recommendations*, available at https://bit.ly/2yghKzf

payment institutions, or become electronic money institutions...'[187] These topics can have a special relevance to developing countries and financial inclusion applications, which are deemed high risk.[188]

5 Multi-Jurisdictional Sandboxes and Collaboration

Jurisdictional challenges related to lack of regulatory capacity and limited economies of scale in developing countries can hinder the functionality, impact and success of regulatory sandboxes.[189] Local and national sandboxes are limited to accomplishing what is contained within jurisdictional boundaries. Accordingly, consideration and attention should be given towards fostering international collaborative efforts[190] and enabling cross-border transactions and activity.[191]

5.1 Regional Sandboxes

The borderless nature of FinTech and benefits of larger economies of scale to support business models through cross-border transactions prompts consideration of regional sandboxing to promote an international agenda. A 2017 Inter-American Development Bank (IDB) and Finnovista survey found that 20% of FinTechs in Latin America and the Caribbean (LAC) operate within different jurisdictions within the region.[192] Regional obstacles facing innovators, which include limited funding, local talent and varied legal and regulatory frameworks across jurisdictions, makes cross-border transactions challenging to accomplish.[193] A subsequent IDB discussion paper recognized the study in its proposal of a regional sandboxing concept for LAC, with local initiatives leading to the ultimate objective of reaching regional regulatory convergence.[194]

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[187] FCA (2017) *Regulatory sandbox lessons learned report, October 2017*, available at https://bit.ly/2yK7q3A; See also Artingstall, D & Dove, N & Howell, J, et. al. (2016) *Drivers & Impacts of Derisking*, available at https://bit.ly/2eHb80Z

[188] Blockchain solutions are being used for KYC and eKYC products and services, used for compliance requirements for money transfers and international remittances, of substantial importance to the poor in developing countries.

[189] See Section 4.2: Risks

[190] The regulatory sandbox framework introduced by Jordan in April 2018 suggests that a wider scope of vision regarding the sandboxing approach might already be acknowledged. The framework makes specific allowances for 'collaboration and communication amongst local entities and international regulatory sandboxes…' including collaborative agreements, partnerships and cooperative arrangements with international organizations and central banks. AFI (2018) *Policy Forum in Jordan: FinTech as a key catalyst for financial inclusion*, available at https://bit.ly/2Ctg6hY; CBJ (2018) *FinTech Regulatory Sandbox*, available at https://bit.ly/2Q7hwl5

[191] Regulators have increasingly focused on establishing relationships with partners possessing similar goals – interested in sharing information, collaboration and efforts at harmonization which can expand the reach of domestic FinTech innovators beyond national boundaries. Some relevant examples include agreements between regulators in the following jurisdictions: India and the Singapore; Kenya and both ADGM and ASIC, Kazakhstan and ADGM. See MAS (2018) *Singapore and India advance in FinTech cooperation*, available at https://bit.ly/2sKPssS; ADGM (2017) *First FinTech Bridge between the UAE and an African Financial Regulatory Authority*, available at https://bit.ly/2QUMlsZ; ASIC (2018) *16-359MR Kenyan and Australian regulators sign agreement to support fintech innovation*, available at https://bit.ly/2EoU9BR; ADGM (2018) *Abu Dhabi Global Market and Astana International Financial Centre Financial services authority (aifc-afsa) signed agreement to enhance cooperation on financial markets*, available at https://bit.ly/2IoU0Ni; See the following for comprehensive list of global FinTech hubs and efforts at regulatory collaboration agreements. Deloitte (2017) *A Tale of 44 Cities: Connecting Global FinTech: Interim Hub Review 2017*, available at https://bit.ly/2nZvKX3

[192] IDB & Finnovista (2017) *Fintech Innovations that you may not know were from Latin America and the Caribbean*, available at https://bit.ly/2IYLHYF

[193] *ibid.*

[194] Herrera, D & Vadillo, S (2018) *Regulatory Sandboxes in Latin America and the Caribbean for the FinTech Ecosystem and the Financial System*, available at https://bit.ly/2OSRpgH

Regional cooperative and collaborative efforts exist in Africa which include economic communities focused on promoting regional harmonization, cooperation and liberalization of trade to build economies of scale. These efforts can potentially initiate a regulatory sandbox.[195] In July 2018, members of the East African Securities Regulatory Authorities (EASRA) adopted regional framework to ensure fitness of capital market practitioners who operate regionally.[196] They further agreed to employ regulatory sandboxes to encourage innovation and adopt a model sandbox application and evaluation criteria for members to use as a template for national implementation. Regional intergovernmental organizations, economic unions and agreements in Africa could be vehicles for regional harmonization and foster movement towards cross-border transactions and a regional sandbox.[197]

An initiative for developing countries to consider would be initially focusing on establishing thematic regional sandboxes, one which could impact upon financial inclusion across borders such as for international remittances.[198] In doing so, the multi-jurisdictional collaborative effort can concurrently help address regulator exposure to innovation within the remittances sector and enhance capacity building needs and accountability in developing countries.

Establishing a regional regulatory sandbox to facilitate seamless "passporting" of FinTech solutions across borders is not a new concept, existing in the European Union (EU) for remittances among other examples.[199] An EU regional sandbox is already a topic of discussion and examination.[200] The European Commission's (EC) "FinTech Action Plan" sets its sights on regional harmonization, proposing a regulation which includes framework to allow for a comprehensive passporting regime to establish a unified cross-border crowdfunding solution.[201] In a separate but topically related issue, the EC noted that thirteen Member States had established FinTech facilitators[202] and invited efforts to help identify best practices across the EU and set up common principles and criteria for innovation hubs and regulatory sandboxes.[203]

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[195] Akorede, S (2018) *How a single market would transform Africa's economy*, available at https://bit.ly/2HzHhWB; Ranganathan, R & Foster, V (2011) *ECOWAS's Infrastructure – A Regional Perspective*, available at https://bit.ly/2MQ0Gtj; Dong, H & Leckow, R & Vikram, H, et al. *IMF Staff Discussion Note, Fintech and Financial Services: Initial Considerations (June 2017)*, available at https://bit.ly/2mPbdG7

[196] Member countries of the EASRA include Kenya, Tanzania, Uganda, Rwanda and Burundi. CMA Uganda (2018) *East African Securities Regulators agree on criteria for fit and proper assessment of market practitioners*, available at https://bit.ly/2NCMjEn

[197] These organizations include the East African Community (EAC), Economic Community of West African States (ECOWAS) and the Continental Free Trade Area (CFTA).

[198] After two years of decline, remittances to low and middle-income countries have jumped 8.5% to reach a record amount at $613 billion. World Bank Group (2018) *Migration and Remittances – Recent Developments and Outlook*, available at https://bit.ly/2K7z6Bb

[199] The 'passporting' concept allows for entities licensed in one-member country to operate across borders in another with an approved 'passport' within the union, which has been used for money transmitters in the EU. FCA (2018) *Passporting*, available at https://www.fca.org.uk/firms/passporting; Brnovich, M (2017) *Regulatory sandboxes can help states advance fintech*, available at https://bit.ly/2DDr990

[200] See one example of an EU regional sandbox being considered from a policy perspective. See Andhov, A (2018) *Will FinTech become the Enabler for the Capital Market Union?*, available at https://bit.ly/2xHvkv4

[201] EC (2018) *FinTech Action plan: For a more competitive and innovative European financial sector*, available at https://bit.ly/2DcalQZ

[202] FinTech facilitators is a term used to describe regulatory sandboxes or innovation hubs. *ibid.*

[203] *ibid.*

Establishing regional regulatory sandboxes, however, will require substantial efforts including standardized and harmonized legal and regulatory framework across borders. Creating a harmonized regulatory framework for cross-border solutions would require several steps to be accomplished, some of which include the following: (i) reviewing the current legal and regulatory frameworks to determine whether sufficient enabling regulation exists; (ii) consideration at a regional level to identify inter-jurisdictional incompatibilities such as civil, common and religious law to reach acceptable levels of compatibility; (iii) standardization of products and services to ensure "passporting" of solutions across borders; and (iv) consideration of changes that may have a national impact such as AML/CFT.

Industry sandboxes are private sector, industry led and operated 'off-market' environments where participants can collaborate and access shared data which can assist in validating assumptions, spotting trends and solving common problems.[204] These initiatives do not involve the regulator or provide any regulatory relief, although they can foster development of innovations capable of advancing financial inclusion.

Asean Financial Innovation Network (AFIN). An initiative of the IFC, MAS and ASEAN Bankers Association, AFIN is a regional industry sandbox promoting innovation and collaboration between regional[205] banks, NBFIs, microfinance institutions and FinTech innovators with an emphasis on financial inclusion.[206] Ultimately it is a multi-jurisdictional effort to create a cloud-based virtual sandbox where banks and FinTechs can jointly test applications to solve similar industry problems, such as customer onboarding and alternative credit scoring.[207]

Since banks and institutions in developing countries have limited resources to develop solutions to reach the underserved, partnerships like those facilitated by the AFIN sandbox can further financial inclusion by reducing costs for individual institutions.[208] AFIN plans to collaborate closely with MAS and other regulators, providing them with an opportunity to better understand challenges faced by FinTechs and initiate policy harmonization within the ASEAN region which, in turn, can further business and investment opportunities.[209]

In September 2018, AFIN announced the launch of its API Exchange ('APIX') consisting of a FinTech marketplace, collaborative industry sandbox environment and adoption of APIs 'to drive digital transformation and financial inclusion across Asia-Pacific.'[210] AFIN also entered into a partnership with ADGM to expand the reach of APIX beyond ASEAN borders.[211]

Industry Sandbox (UK). Pursuant to FCA invitation, Innovate Finance originally chaired an industry-led consultation (and resulting report) to explore an industry sandbox environment, producing synergies from a collaborative 'shared off-market development environment' for financial innovation.[212] Project objectives include providing the UK FinTech ecosystem with common access to valuable resources (such as a data exchange and open APIs), using collaboration to

[204] In its industry consultation report, Innovate Finance defined an industry sandbox as '...a shared off-market development environment where developers of FinTech solutions can access data, technologies, and services from different providers in order to validate innovative ideas or address common industry challenges.' Innovate Finance (2017) *Industry Sandbox Consultation Report*, available at https://bit.ly/2rH4yhP
[205] The Association of Southeast Asian Nations (ASEAN) consists of ten members in Southeast Asia promoting collaboration and cooperation among its members. ASEAN (2018) *Introduction*, available at https://on.cfr.org/2txllEu
[206] AFIN (2018) *AFIN Sandbox*, available at http://afin.tech/index.php/afin-sandbox/
[207] MAS (2018) *ASEAN Financial Innovation Network to support financial services innovation and inclusion*, available at https://bit.ly/2PoO1dE
[208] AFIN (2018) *World's First Cross-Border, Open-Architecture Platform to Improve Financial Inclusion*, available at https://bit.ly/2Cjwccn
[209] *ibid.*
[210] *ibid.*
[211] *ibid.*
[212] Innovate Finance (2018) *Industry Sandbox*, available at https://industrysandbox.org/

solve complex problems and promoting regulatory efficiency through the involvement of regulators as observers.[213] The Industry Sandbox Consultation Report includes comments recognizing how industry sandboxes can benefit innovation (and the process) and positively impact on consumers, advancing financial inclusion goals and can also supplementing thin data sets on important issues.[214]

New Payments Platform (NPP) API Sandbox. NPP Australia[215] (the national real-time payments service) has partnered with The Society for Worldwide Interbank Financial Telecommunications (SWIFT)[216] to provide a cloud-based "API sandbox' to enable innovators to learn, test and experiment with the NPP API Framework and integrate NPP payments functionality into their own products and services.[217]

Exhibit 5: Industry Sandboxes

5.2 Global Sandboxes

The Global Financial Innovation Network (GFIN)[218] represents a network of eleven financial regulators (primarily from developed countries) and related organizations exploring the potential for a global sandbox. Goals enumerated in the GFIN consultation document include accomplishing the following on a global level: (i) a network of regulators (information and knowledge sharing about innovation); (ii) joint policy work and regulatory trials (regulator collaboration such as approaches on key policy questions, exploring RegTech synergies); and (iii) conducting cross-border innovations testing worldwide (both business to business and to consumers.)[219]

Pertinent to developing countries, GFIN calls for a channel of cooperation between financial regulators, assisting them with addressing common challenges and developing the capacity and knowledge of their staff.[220] It also provides a platform for firms to interact with regulators, opportunities to scale ideas across borders and to reduce time to deploy products and services to the international market – an incentive which may attract more innovators into the sandbox.[221] It is crucial, however, that the sandbox is transparent, fair and available for all potential applicants. Inclusion of

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[213] Goals of an industry sandbox as described in the consultation report include acceleration of developing solutions for the entire FinTech ecosystem through 'access to resources such as data, APIs, or reference architectures which enable entrepreneurs to create solutions that are additive and more readily integrated with the existing technology stack.' Innovate Finance (2017) *Industry Sandbox Consultation Report*, available at https://bit.ly/2rH4yhP

[214] See comments of Omidyar Network and Azimo. *ibid.*

[215] NPP Australia Limited is a 13-member owned company (formed pursuant to industry collaboration) to develop and operate a real-time payments system. NPP Australia (2018) History, available at https://bit.ly/2OBvM8T; NPP Australia (2018) Our Company, available at https://bit.ly/2q4yFAn

[216] SWIFT is a cooperative non-profit organization which develops standards for global interactivity of financial transactions and operates the SWIFT messaging system, enabling over 11,000 institutions in over 200 countries to exchange payment information and instructions concerning cross-border financial transactions in a secure, standard and reliable environment. SWIFT (2018) *Messaging and Standards*, available at https://bit.ly/2ySBmc1

[217] SWIFT (2018) *SWIFT and NPP Australia launch sandbox for testing APIs*, available at https://bit.ly/2S7pCve; SWIFT (2018) *SWIFT and the New Payments Platform*, available at https://bit.ly/2AlgyvQ

[218] FCA (2018) *Global Financial Innovation Network*, available at https://bit.ly/2Maebm8

[219] The GFIN consultation document was published in August with a request for comments by October 14, 2018. GFIN (2018) *Global Financial Innovation Network (GFIN) Consultation Document*, available at https://bit.ly/2np2p9N; It is important to recognize that GFIN represents a long-term vision with a significant setup time. Mueller, J & Murphy, D & Piwowar, M (2018) *Response to the Global Financial Innovation Network (GFIN) Consultation Document*, available at https://bit.ly/2RZnZQj

[220] FCA (2018) *Global Financial Innovation Network*, available at https://bit.ly/2Maebm8

[221] *ibid.*

EMDE jurisdictions as members at an earlier stage could prove mutually beneficial, recognizing and welcoming the value of the growth of 'inclusive FinTech' innovation[222] occurring in global south.

6 Conclusions

Regulatory sandboxes have a short operating history and are evolving, only recently emerging in least developing countries. They present an important opportunity to foster valuable information and knowledge sharing between regulators and innovators, national and internationally, and to substantially increase regulatory capacity and a deeper understanding of FinTech innovation. Over time and by way of the learning experience, the sandbox framework can and should be improved, enhanced and refined so that they may reach their potential.

While sandboxes have generated substantial interest and enthusiasm, it is important to remember that they are but one of several regulatory frameworks and other options exist which may also be potentially more suitable. Challenges and risks for successful sandbox implementation exist. A long-term vision for developing countries who have assessed the need for a sandbox would be the establishment of thematic regulatory sandboxes which focus on specific national priorities rather than spanning multiple national agendas. The presence of adequate regulatory capacity is necessary to identify beneficial sandbox participants and technologies as well as for devising rules around the sandboxes and shepherding participants through the sandbox process.

The impact of these thematic regulatory sandboxes, however, will be limited at regional borders and issues with low participation rates and economies of scale may still persist. Ultimately, success for developing countries at a national level should include early consideration of how to leverage synergies and collaborative efforts on a multi-jurisdictional level. This includes planning enabling frameworks early in the process to effectuate harmonization from the ground up, fostering cross-border activity while avoiding incompatibility.

[222] Ahmed, W (2017) *How fintech is changing lives in the global south*, available at https://bit.ly/2AN8uRI

Annex A: Status of Regulatory Sandboxes in Developing Countries[223]

Country	Status
Bahrain	Central Bank of Bahrain announced its regulatory sandbox in Q2 of 2017.[224] As of August 2018, there are 12 approved entities in its sandbox.[225] In an effort to bolster the use of FinTech in Islamic finance worldwide, Bahrain FinTech Bay launched the Global Islamic & Sustainable FinTech Center in October 2018.[226]
Brazil [collaboration]	In May 2018, the Central Bank of Brazil (BCB) launched the Laboratory of Financial and Technological Innovations (LIFT),[227] a collaboration between the Central Bank of Brazil, Fenasbac Institute and industry partners.[228] It is incubator in a 'virtual collaborative environment' involving a diverse, experienced community of participants who focus on projects aligned with the BCB agenda (increase financial education and inclusion, make credit cheaper, modernize legislation and make the financial system more efficient.)[229] Of projects submitted on its website, 22 projects were selected for the first edition of LIFT.[230]
Egypt [private]	VentureLab at The American University in Cairo (a startup accelerator in the MENA region) and Tenemos (banking software company) collaborate to provide sandbox service to companies in the accelerator program. Objective is to promote FinTech innovation in Egypt.[231]
India	On February 8, 2018, the RBI published its Report of the Working Group on FinTech and Digital Banking,[232] a committee representative of all the financial sector regulators[233] and select industry members 'to study the entire gamut of regulatory issues relating to FinTech and Digital Banking in India.'[234] IDRBT (Institute for Development and Research in Banking Technology) is recommended as a group whose expertise could run a regulatory sandbox and innovation hub in collaboration with the RBI. The Insurance Regulatory and Development Authority of India (IRDAI) published a circular

[223] See Footnote 15 for tis paper's definition of developing countries, defined loosely as primarily emerging markets and developing economies which have a national financial inclusion strategy.

[224] CBB (2017) *Regulatory Sandbox Framework*, available at https://bit.ly/2xvri8i; CBB (2017) *Central Bank of Bahrain Announces Landmark Regulatory Sandbox for Fintech Startups*, available at https://bit.ly/2Dq1XTl

[225] CBB (2018) *Fintech Regulatory Sandbox Approved Companies as of 5th August 2018*, available at https://bit.ly/2DjnwVG

[226] TradeArabia (2018) *Bahrain Fintech Bay launches Islamic financial center*, available at https://bit.ly/2Cx3ZPv

[227] The LIFT website is available at LIFT (2018) *LIFT - Laboratório de Inovações Financeiras Tecnológicas*, available at https://www.liftlab.com.br

[228] LIFT (2018) *Propostas Selecionadas (Finlab Regulations)* 2018.1, available at https://bit.ly/2xKj11j; BCB (2018) *BC launches innovation laboratory to develop technological financial solutions*, available at https://bit.ly/2DzmqW4

[229] Brazil Monitor (2018) *Central Bank launches laboratory for financial innovations*, available at https://bit.ly/2ImzNaR

[230] LIFT (2018) *Propostas Selecionadas (Finlab Regulations)* 2018.1, available at https://bit.ly/2xKj11j

[231] Tenemos (2018) *Temenos and AUC Venture Lab team up to accelerate fintech innovation in Egypt*, available at https://bit.ly/2N2pkG9

[232] RBI (2017) *Report of the Working Group on FinTech and Digital Banking*, available at https://bit.ly/2skIRWH; RBI (2018) *Press Release: Report of the Inter-Regulatory Working Group on FinTech and Digital Banking*, available at https://bit.ly/2OW4dTI

[233] RBI organized a working group consisting of representatives from various regulators Securities and Exchange Board of India (SEBI), Insurance Regulatory and Development Authority (IRDAI), Pension Fund Regulatory and Development Authority (PFRDA) and 'select financial entities regulated by these agencies, rating agencies… and FinTech consultants / companies.' RBI (2017) *ibid.*

[234] RBI (2018) *Press Release: Report of the Inter-Regulatory Working Group on FinTech and Digital Banking*, available at https://bit.ly/2OW4dTI

	announcing the establishment of a committee to prepare a consultation paper on a "Regulatory Sandbox Approach" which creates a safe and contained space for FinTech experimentation.[235]
Indonesia	Bank Indonesia (the country's central bank) launched its sandbox, open to innovations qualifying as 'payments systems' in Q4 2017.[236] As of September 2018, 34 companies have registered as FTOs and are eligible for consideration for admission to the sandbox[237] In August 2018, OJK (the financial sector regulator) issued a regulation establishing its regulatory sandbox and requirements for IKD operators (which cover activities involving transaction settlements, crowdfunding and fundraising, investment management, insurance, others.)[238]
Jordan	The Central Bank of Jordan launched its sandbox in Q2 2018.[239] Two entities have been admitted to the sandbox. One provides the 'possibility of issuing, exchanging and accepting cheques electronically.'[240] The other is a blockchain-based remittance company.
Kazakhstan	The AIFC financial hub launched in July 2018.[241] Its independent regulator, the AFSA, launched its regulatory sandbox in Q1 2018[242] and is open to a wide array of activities under its purview as the regulator and registrant of companies seeking admission to the AIFC and Kazakhstan.[243] As of September 2018, there are 5 participants registered and listed as being accepted into its sandbox.[244]
Kenya	In August 2017, the Capital Markets Authority published its latest draft of its consultative paper on policy framework to consider the implementation of a regulatory sandbox to support the promotion of FinTech innovation in the capital markets.[245] Its objectives include using Fintech innovation to enhance capital market activity.
Malaysia	In Q3 2016, BNM issued its sandbox framework with its regulatory sandbox operated by FTEG.[246] It is currently live with 6 participants, 1 successful exit in May 2018.[247]
Mauritius	The Economic Development Board[248] officially launched the Mauritius Regulatory Sandbox License in Q4 2016[249] and subsequently issued guidelines.[250] The MEDB does not officially publish a list of entities

[235] IRDAI (2018) *Re: Committee on Regulatory Sandbox in insurance space in India*, available at https://bit.ly/2PBc6Oy
[236] Bank Indonesia (2017) *Regulation Number 19/14/PADG/2017 on Regulatory Sandbox for Financial Technology*, available at https://bit.ly/2pvxBVT
[237] Bank Indonesia (2017) *Regulation Number 19/12/PBI/2017 on Financial Technology Integration*, available at https://bit.ly/2NnnqMI; Bank Indonesia (2017) *Regulation Number 19/14/PADG/2017 on Regulatory Sandbox for Financial Technology, ibid.*; Deloitte (2017) *New Financial Services Authority (OJK) & Banking Regulations*, available at https://bit.ly/2J40rVv; Bank Indonesia (2018) *Teknologi Finansial*, available at https://bit.ly/2Gshsaw
[238] OJK (2018) *Regulation POJK 13/POJK.02/2018*, available at https://bit.ly/2wFUuZO; Makarim & Taira (2018) *Regulatory Sandbox of OJK*, available at https://bit.ly/2N63Sfp
[239] CBJ (2018) *FinTech Regulatory Sandbox*, available at https://bit.ly/2Q7hwl5; AFI (2018) *Policy Forum in Jordan: FinTech as a key catalyst for financial inclusion*, available at https://bit.ly/2Ctg6hY
[240] CBJ (2018) *ibid.*
[241] AIFC (2018) *Objectives*, available at https://aifc.kz/article/celi; AIFC (2018) *Questions and answers*, available at https://aifc.kz/faq
[242] AFSA (2018) *About AFSA*, available at http://afsa.kz/about-afsa; AFSA (2018) *Astana International Financial Centre FinTech Regulatory Sandbox Guidance*, available at https://bit.ly/2zpjYNF; AFSA (2018) *Fintech*, available at http://afsa.kz/fintech
[243] AFSA (2018) *Astana International Financial Centre FinTech Regulatory Sandbox Guidance*, *ibid.*
[244] AFSA (2018) *Public Register*, available at http://afsa.kz/public-register
[245] CMA (2017) *Stakeholders Consultative Paper on Policy Framework for Implementation of a Regulatory Sandbox to Support Financial Technology (Fintech) Innovation in the Capital Markets in Kenya*, available at https://bit.ly/2wivqsp
[246] BNM (2016) *Financial Technology Regulatory Sandbox Framework*, available at https://bit.ly/2kDvvkj; FTEG (2018) *About*, available at https://www.myfteg.com/about
[247] WorldRemit successfully exited the sandbox in May 2018. FTEG (2018) *List of approved participants in the Regulatory Sandbox*, available at https://bit.ly/2suz9Av
[248] MEDB (2018) *About Us*, available at https://bit.ly/2xrYqO9
[249] Niamut, J & Bheekharry, P (2017) *Mauritius: Regulatory Sandbox License*, available at https://bit.ly/2MW3KPE
[250] Board of Investment (2016) *Regulatory Sandbox License Guidelines*, available at https://bit.ly/2MWSSkh

	issued a RSL. As of January 2018, the Mauritius sandbox had at least five participants with two providing blockchain and cryptocurrency-based solutions.[251]
Mexico	On March 10, 2018, Mexico's 'Law to Regulate Financial Technology Institutions' became effective, which includes the authorization to create a regulatory sandbox.[252]
Mozambique	Bank of Mozambique launched an incubator sandbox program in Q2 2018 to support non-bank financial institutions offering FinTech innovation, including startups.[253] It includes 5 pre-selected participants.[254] The central bank is trying to have the banking law modified to allow these fintechs to participate in the financial ecosystem.[255]
Nigeria	The "Financial Industry Sandbox" is to be managed by the newly created Financial Service Innovators Association[256] and supervised by the Central Bank of Nigeria (CBN) and the Nigeria Interbank Settlement System (NIBSS) – the result of a collaborative effort..[257] The sandbox is likely to have financial inclusion initiatives (a partnership with the Bill and Melinda Gates Foundation) and with a focus on startups being able to test innovations.[258] The Securities and Exchange Commission, Nigeria is in the process of setting up a sandbox and has provided an assessment form for interested companies.[259]
Philippines	The governor of the Philippines central bank (BSP) has stated that he considers the country's 'test-and-learn' regulatory framework the country's regulatory sandbox.[260]
Russian Federation	The Central Bank of Russia CBR) launched its regulatory sandbox in Q1 of 2018[261] and has been accepting applications.[262] Sberbank is the first entity to pass through the CBR sandbox and is a 'service that helps remotely control permissions to carry out transactions using corporate client accounts.'[263] The

[251] The EDB does not officially publish a list of entities issued a Regulatory Sandbox License although licensees and/or their representatives have publicly issued statements. See Intercontinental Trust Ltd (2017) *Regulatory Sandbox Licence – ITL proud to be associated with 2nd issue of RSL by the BOI*, available at https://bit.ly/2ps6c7c; SelfKey (2018) *About the SelfKey Foundation*, available at https://selfkey.org/foundation/; Crowdfund Insider (2018) *SelfKey Receives Regulatory Sandbox License in Mauritius*, available at https://bit.ly/2xw5xbx

[252] Bank of Mexico (2018) *Ley para Regular las Instituciones de Tecnología Financiera*, available at https://bit.ly/2NoRR8X

[253] FSDMoc (2018) *The central bank of mozambique and the financial sector deepening moçambique (fsdmoç) launch the regulatory sandbox to promote innovation with 'fintechs'*, available at https://bit.ly/2IbwVxu; Bouche, C (2018) *Press Release: Launch – Regulatory Sandbox to Promote Innovation with 'FinTechs'*, available at https://bit.ly/2MEhZNO; Club of Mozambique (2018) *Mozambique: Incubator extends access to financial services*, available at https://bit.ly/2NAJDYw

[254] Deloitte (2018) *The Ecosystem of Digital Financial Services in Mozambique*, available at https://bit.ly/2zpPtqV

[255] Remarks by the Bank of Mozambique at the Alliance For Financial Inclusion Global Policy Forum in Sochi, Russia, September 2018.

[256] The association is a cross-industry, not-for-profit organization intended to facilitate collaboration within the FinTech ecosystem. It has also announced development on the regulatory sandbox. Association of Financial Service Innovators (2018) *About Financial Service Innovators*, available at https://fsi.ng/pages/aboutus.html

[257] Mueller, J & Murphy, D (2018) *FinTech in Focus*, available at https://bit.ly/2IndktX; Statement of Musa Jimoh, Deputy Director of banking and payment system department of the CBN. See Independent Newspapers Limited (2018) *CBN, NIBSS Launch Regulatory Sandbox To Empower Fintechs*, available at https://bit.ly/2x00X1N

[258] Central Bank of Nigeria (2018) *Exposure Draft of the National Financial Inclusion Strategy Refresh*, available at https://bit.ly/2PhcKQT; Moses-Ashike, H (2018) *CBN, NIBSS create sandbox for start-up FinTechs*, available at https://bit.ly/2MBPUqa

[259] The Securities and Exchange Commission, Nigeria (2018) *Regulatory Sandbox – Assessment*, available at https://bit.ly/2sg4Spw

[260] BSP (2018) *Providing an Enabling Environment at the Crossroads of Digital Transformation*, available at https://bit.ly/2wxPNBd

[261] Bank of Russia (2018) *Regulatory Platform*, available at http://cbr.ru/Press/event/?id=1765

[262] *ibid.*

[263] Sberbank (2018) *Sberbank's service is first to pass piloting of Bank of Russia's regulatory sandbox*, available at https://bit.ly/2Oe505p

	bank also was reported to have completed conducting a test ICO trial successfully from a technical standpoint, although some legal issues do remain.[264]
Rwanda	Draft regulatory sandbox framework November 8, 2017 was issued by the Rwanda Utilities Regulatory Authority (RURA).[265] Riha Mobile Wallet was announced as the first entity admitted to the regulatory sandbox being launched by the National Bank of Rwanda (BNR).[266]
Sierra Leone	Bank of Sierra Leone launched its regulatory sandbox with four participants in May 2018.[267]
Sri Lanka	The Central Bank of Sri Lanka invited stakeholders (academics, innovators, investors, government, NGOs, banks, NBFIs, others) to provide the bank with expectations for a sandbox, comments due May 31, 2018.[268]
Thailand	The BOT sandbox launched in December 2016 covering lending, payments and fund transfers products.[269] As of February 2018, there were 4 participants with 8 having exited the sandbox.[270] The TSEC launched several thematic sandboxes in the first half of 2017, starting with investment advisors and private funds, clearing and settlements, KYC, and an electronic trading platform.[271] At least ten participants were expected in the TSEC sandbox launch.[272] The OIC launched its InsureTech sandbox in June 2017, with a reported five pilot projects as of April 2018.[273]

[264] TACC (2018) *CB conducted a successful ICO trial within the test site*, https://tass.ru/ekonomika/5548251
[265] RURA (2017) *Draft Regulatory Sandbox Framework*, available at https://bit.ly/2PjIOnh
[266] Bizimungu, J (2018) *Central Bank grants testing approval to emerging fintech firm*, available at https://bit.ly/2QTz9EL
[267] BSL (2018) *The Bank of Sierra Leone Regulatory Sandbox*, available at https://bit.ly/2NzKqZA; BSL (2018) *Announcement of the Fintech Challenge Winner(s) & the 1st Cohort of Sandbox Participants, Key Note Address by Dr. Patrick Saidu Conteh Governor*, *Bank of Sierra Leone*, available at https://bit.ly/2zp4Lw1
[268] Central Bank of Sri Lanka (2018) *Sri Lankan FinTech Regulatory Sandbox*, available at https://bit.ly/2sjwTM8
[269] Latham & Watkins (2017) *Regulatory Sandboxes – a Global Stocktake*, available at https://bit.ly/2QQVbc8; Baker & McKenzie (2016) *FinTech Update: Thailand's FinTech Regulatory Sandbox*, available at https://bit.ly/2O8GT8e; BOT (2016) *Practice Guidelines for Participating in Testing and Developing New Technologies to Support Regulatory Sandbox December 21*, *2016*, available at https://bit.ly/2LF7WUC
[270] Gnanasagaran, A (2018) *Fintech sandboxes in Southeast Asia*, available at https://bit.ly/2opGzTt; BOT (2017) *The permission of additional qualified banks to exit from regulatory sandbox and provide QR Code payment service to the general public*, available at https://bit.ly/2N1Mmc7; Finextra (2017) *Five banks exit Thai regulatory sandbox with QR payment codes*, available at https://bit.ly/2zsZBPG; BOT (2018) *Payment Systems: Standardized QR Code in Thailand*, available at https://bit.ly/2Ie21UZ
[271] For information about the TSEC sandbox verticals, *see* Corbett, J & Walker, G & Sornumpol, D, et al. (2018) *FinTech in Thailand: overview*, available at https://tmsnrt.rs/2O8sSam; Kietduriyakul, K & Phongsathaporn, K & Triwiboonvanit & M (2017) *Thailand: The FinTech wave and regulatory response*, available at https://bit.ly/2q6A9JL; Chirasavinuprapand, N (2017) *Regulatory Sandbox: Thailand's experience*, available at https://bit.ly/2QTgNo8; Crane, J, Meyer, L & Fife, E (2018) *Thinking Inside the Sandbox: An Analysis of Regulatory Efforts to Facilitate Financial Innovation*, available at https://bit.ly/2oD1ZwS; TSEC (2018) *SEC News – No. 39/2560 (The SEC provides an opportunity for businesses to test new customer acquisition processes)*, available at https://bit.ly/2zt9Ymk; Silk Legal (2017) *SEC Introduces KYC Sandbox*, available at https://bit.ly/2DrbsBI
[272] Royal Thai Embassy (2016) *Ten fintech startups slated for sandbox by SEC*, available at https://bit.ly/2OQCoMv
[273] Chudasri, D (2018) *Insuretech hub in the works to help the industry integrate*, available at https://bit.ly/2QSgsSF; Gnanasagaran, A (2018) *Fintech sandboxes in Southeast Asia*, available at https://bit.ly/2opGzTt

Annex B: Status of Regulatory Sandboxes Worldwide

Country	Status
Australia	Live[274]
Bahrain	Live[275]
Bermuda	Officially announced, in progress.[276]
Brunei	Live[277]
Canada	Live[278]
China	Reported in city of Ganzhou[279]
Denmark	Live[280]
Fiji	Officially announced[281]
Hong Kong	Live[282]
India	Working Group Report published[283]
Indonesia	Live[284]
Japan	Proposed, operating a 'FinTech PoC Hub'[285]
Jordan	Live[286]
Kazakhstan	Live[287]
Kenya	Proposed, consultation document published. Agreement to implement via EASRA[288]

[274] ASIC (2018) *RG 257 Testing fintech products and services without holding an AFS or credit licence*, available at https://bit.ly/2P8hw3f

[275] CBB (2018) *Regulatory Sandbox*, available at https://bit.ly/2yOibA0

[276] Premier and Minister of Finance announced the creation of the Insurance Regulatory Sandbox in June (pursuant to the Insurance Amendment Act 2018) after a consultation paper was released in April 2018. BMA (2018) *Insurance Regulatory Sandbox to Boost InsurTech in Bermuda*, available at https://bit.ly/2ChDKMJ; BMA (2018) *Insurance Regulatory Sandbox (Consultation Paper) April 2018*, available at https://bit.ly/2Enz0Ii. In September 2018, BMA announces a regulatory sandbox will be available for 'modified' digital asset license holders. BMA (2018) *BMA Releases Licensing Requirements for Digital Asset Businesses*, available at https://bit.ly/2yxyDo7

[277] AMBD (2017) *Press Release - The FinTech Sandbox*, available at https://bit.ly/2NT7LVz; AMBD (2017) *FinTech Regulatory Sandbox Guidelines*, available at https://bit.ly/2PNQzlR

[278] Canadian Securities Administrators (2018) *CSA Regulatory Sandbox*, available at https://bit.ly/2wLA0Qz

[279] Wang, L (2017) *Will Ganzhou's new regulatory sandbox dictate the future of Fintech in China?*, available at https://bit.ly/2IpYovb

[280] Finanstilsynet (2018) *FT Lab*, available at https://bit.ly/2y5TRJP

[281] The Governor of the Reserve Bank of Fiji announced that the Bank '...will be issuing guidelines for a 'regulatory sandbox' to enable financial institutions and other entities to experiment on FinTech based solutions.' Reserve Bank of Fiji (2018) *Press Release No 13 - RBF Acknowledges the Role of Fintech in Enabling Innovative Financing*, available at https://bit.ly/2pUEQa7

[282] HKMA (2018) *Fintech Supervisory Sandbox (FSS)*, available at https://bit.ly/2QgVk7z

[283] RBI (2017) *Report of the Working Group on FinTech and Digital Banking*, available at https://bit.ly/2skIRWH

[284] Bank Indonesia (2017*) Regulation of Members of Board of Governors Number 19/14/PADG/2017 on Regulatory Sandbox for Financial Technology*, available at https://bit.ly/2pvxBVT; OJK (2018) *Regulation POJK 13/POJK.02/2018*, available at https://bit.ly/2wFUuZO

[285] The Japan Financial Services Agency (JFSA) established a 'FinTech Proof-of-Concept Hub' in September 2018, a limited sandbox with the possibility of being a predecessor to a full-fledged regulatory sandbox. JFSA (2017) *Establishment of 'FinTech PoC (Proof-of-Concept) Hub' (Japanese)*, available at https://bit.ly/2yEIwQZ; Gehrke, N (2018) The Japan FSA Regulatory Sandbox, available at https://bit.ly/2yhjxEg; Payments Compliance (2018) *Japan: Financial Services Agency Regulatory Sandbox Announces Outcome of Blockchain-based KYC Experiment*, available at https://bit.ly/2OsHK4g

[286] CBJ (2018) *FinTech Regulatory Sandbox*, available at https://bit.ly/2Q7hwl5

[287] AFSA (2018) *Fintech*, available at http://afsa.kz/fintech

[288] CMA Uganda (2018) *East African Securities Regulators agree on criteria for fit and proper assessment of market practitioners*, available at https://bit.ly/2NCMjEn; Gitonga, D (2018) *Fintech SandBox Policy to be Ready by July 2018, Says CMA Boss, Paul Muthaura*, available at https://bit.ly/2CvPWcV

Korea, South	Pilot test launched[289]
Lithuania	Live (sandbox opens for submissions October 15, 2018)[290]
Malaysia	Live[291]
Malta	Proposed, consultation document published[292]
Mauritius	Live[293]
Mexico	Proposed, regulation to authorize sandbox passed[294]
Mozambique	Live[295]
Netherlands	Live[296]
Nigeria	Proposed, in progress[297]
Norway	Announced, launch expected in 2019[298]
Philippines	Uses 'test-and-learn' as a sandbox equivalent[299]
Russian Federation	Live[300]
Rwanda	RURA - Consultation document published,[301] BNR – Unofficially reported as live.[302]
Saudi Arabia	Officially announced[303]
Sierra Leone	Live[304]
Singapore	Live[305]
South Africa	Being explored[306]
South Korea	Announced[307]

[289] Pilot test launched. Financial Services Commission (2018) *Press Release: Financial Policy Roadmap for 2018* available at https://bit.ly/2NSeQKP

[290] Lietuvos Bankas (2018) *Lithuania's financial regulator launches its regulatory sandbox*, available at https://bit.ly/2RQiL9a; Lietuvos Bankas (2018) *Regulatory Sandbox*, available at https://bit.ly/2P2zdBD

[291] FTEG (2018) *Regulatory Sandbox*, https://bit.ly/2kEoakx

[292] Malta Gaming Authority (2018) *The MGA publishes a consultation document on a Sandbox Environment for Distributed Ledger Technology and Virtual Currencies*, available at https://bit.ly/2pVnjhM; Malta Gaming Authority (2018) *Guidance on the use of Distributed Ledger Technology and the acceptance of Virtual Currencies through the implementation of a Sandbox Environment*, available at https://bit.ly/2uNJ455

[293] Board of Investment (2016) *Regulatory Sandbox License Guidelines*, available at https://bit.ly/2MWSSkh

[294] Bank of Mexico (2018) *Ley para Regular las Instituciones de Tecnología Financiera*, available at https://bit.ly/2NoRR8X

[295] FSDMoc (2018) *The central bank of mozambique and the financial sector deepening moçambique (fsdmoç) launch the regulatory sandbox to promote innovation with 'fintechs'*, available at https://bit.ly/2IbwVxu ; Club of Mozambique (2018) *Mozambique: Incubator extends access to financial services*, available at https://bit.ly/2NAJDYw

[296] De Brauw Blackstone Westbroek (2016) *DNB and the AFM create regulatory sandbox*, available at https://bit.ly/2OEOnRq

[297] Central Bank of Nigeria (2018) *Exposure Draft of the National Financial Inclusion Strategy Refresh*, available at https://bit.ly/2PhcKQT; The Securities and Exchange Commission, Nigeria (2018) *Regulatory Sandbox – Assessment*, available at https://bit.ly/2sg4Spw

[298] Walker, P (2018) *Norway to set up FinTech regulatory sandbox*, available at https://bit.ly/2y7QK7v

[299] BSP (2018) *Providing an Enabling Environment at the Crossroads of Digital Transformation*, available at https://bit.ly/2wxPNBd

[300] Bank of Russia (2018) *Launch of the regulatory platform of the Bank of Russia*, available at http://cbr.ru/Press/event/?id=1765

[301] RURA (2017) *Draft Regulatory Sandbox Framework*, available at https://bit.ly/2PjIOnh

[302] Bizimungu, J (2018) *Central Bank grants testing approval to emerging fintech firm*, available at https://bit.ly/2QTz9EL

[303] SAMA (2018) *Monetary Policy and Financial Stability Department*, available at https://bit.ly/2xZE5QH

[304] BSL (2018) *BSL Sandbox Program*, available at https://bit.ly/2MQs8pQ

[305] MAS (2016) *Fintech Regulatory Sandbox Guidelines*, available at https://bit.ly/2gDPTAm

[306] SARB (2018) *Opening remarks by Francois Groepe, Deputy Governor of the South African Reserve Bank, at the Inaugural Intergovernmental Fintech Outreach Workshop*, available at https://bit.ly/2AfeN39

[307] Yonhap News Agency (2018) *S. Korea to set framework for 'regulatory sandbox'*, available at https://bit.ly/2CBDoSi

Spain	Officially announced (draft bill)[308]
Sri Lanka	Officially announced[309]
Sweden	Tabled for discussion, pursuing an 'Innovation Center'[310]
Switzerland	Live[311]
Taiwan	Live[312]
Tanzania	Agreement to implement via EASRA[313]
Thailand	Live[314]
Uganda	Agreement to implement via EASRA[315]
UAE	Live
UK	Live[316]
US	Live[317]

[308] Osbourne Clarke (2018) *Regulatory Sandbox in Spain: the draft bill for the Law of 'digital transformation of the financial system*, available at https://bit.ly/2Itl9yr

[309] Central Bank of Sri Lanka (2018) *Sri Lankan Fintech Regulatory Sandbox*, available at https://bit.ly/2sjwTM8

[310] Finansinspektionen (2018) *Erik Thedéen: Rules prevent crises*, available at https://bit.ly/2OwR07u

[311] FINMA (2017) *FINMA revises 'Public deposits with non-banks' circular*, available at https://bit.ly/2PO781x; See also a repository of FINMA circulars. FINMA (2018) *FINMA's supervisory practice*, available at https://bit.ly/2wWVCIA

[312] Financial Supervisory Committee (2018) *The Executive Yuan announced the Financial Development Action Plan*, available at https://bit.ly/2Pdfxy6; Small and Medium Enterprise Administration, Ministry of Economic Affairs (2018) *Innovative Regulatory Sandbox*, available at https://www.sandbox.org.tw/; Shih-ching, K (2018) *First sandbox experiment approve*d, available at https://bit.ly/2q5rffS

[313] CMA Uganda (2018) *East African Securities Regulators agree on criteria for fit and proper assessment of market practitioners*, available at https://bit.ly/2NCMjEn

[314] *Practice Guidelines for Participating in Testing and Developing New Technologies to Support Regulatory Sandbox December 21, 2016*, available at https://bit.ly/2LF7WUC; TSEC (2018) *SEC News – No. 39/2560*, available at https://bit.ly/2zt9Ymk; Silk Legal (2017) *SEC Introduces KYC Sandbox*, available at https://bit.ly/2DrbsBI; Chudasri, D (2018) *Insuretech hub in the works to help the industry integrate*, available at https://bit.ly/2QSgsSF; TSEC (2018) *SEC News – No. 39/2560 (The SEC provides an opportunity for businesses to test new customer acquisition processes)*, available at https://bit.ly/2zt9Ymk; Chirasavinuprapand, N (2017) *Regulatory Sandbox: Thailand's experience*, available at https://bit.ly/2QTgNo8

[315] CMA Uganda (2018) *East African Securities Regulators agree on criteria for fit and proper assessment of market practitioners*, available at https://bit.ly/2NCMjEn

[316] FCA (2015) *Regulatory Sandbox*, available at https://bit.ly/2EG5Lez

[317] Live in the state of Arizona. Arizona Attorney General (2018) *Arizona Becomes First State in U.S. to Offer Fintech Regulatory Sandbox*, available at https://bit.ly/2pKW9tN

Annex C: Summary Comparison Chart of Select Regulatory Sandboxes

Country	Regulator Mandate / Mission / Objectives	Sandbox Objective[318]	Eligibility Criteria[319]
Bahrain [CBB]	Objectives in CBB and Financial Institutions Law 2006[320] - Set /implement monetary, credit, financial sector policy; - Act as central bank; - Develop the financial sector; - Protect depositors, customers in financial institutions; - Enhance credibility as a financial center; - Issuance of national currency; - Licensing, regulation and supervision of persons undertaking regulated financial services; - Manage Kingdom gold and foreign currency reserve	'... promote effective competition, embrace new technology, encourage financial inclusion and improve customer experience.'	- Innovation: truly, significantly different from existing offerings; - Customer benefit: identifiable, direct/indirect; - Technical Testing for existing Solution: prior tested or have external validation; - Ready for testing: due diligence performed, risk mitigation, reporting - Intent to deploy in Bahrain: proposed exit strategy
Bermuda [BMA]	The Bermuda Monetary Authority released an Information Bulletin outlining what documentation is required when submitting an application for a digital asset business (DAB) license.[321] -The Digital Asset Business Act 2018 makes provision for DAB licenses. -There is also an insurance sandbox in progress.[322] -Two classes of DAB licenses are available; Class F (full) and Class M (modified). Modified licensees will operate in a sandbox environment (similar to, but separate from the Authority's Insurance Regulatory Sandbox) before graduating to become full licensees, where applicable. -To supplement the Act, the Digital Asset Business (Cybersecurity) Rules 2018, Digital Asset Business (Client Disclosure) Rules 2018, and Digital Asset Business (Prudential Standards) (Annual Return) Rules 2018 are also in effect. -Anti-Money Laundering/Anti-Terrorist Financing (AML/ATF) legislation applicable to the other financial sectors also applies to DABs.	Framework built to ensure that core objectives of financial regulation are respected, that is: protecting consumers, ensuring stability of our institutions and maintaining the integrity and confidence in financial markets – with a focus on maintaining the highest standards of AML/ATF.	- Requires annual returns and broad disclosure data

[318] Source of the sandbox objective is the regulatory sandbox framework for the respective jurisdiction.
[319] Source of eligibility criteria is the regulatory sandbox framework for the respective jurisdiction.
[320] CBB (2018) *Central Bank of Bahrain Objectives*, available at https://bit.ly/2IfoEsc
[321] BMA (2018) BMA Releases Licensing Requirements for Digital Asset Businesses, available at https://bit.ly/2yxyDo7
[322] BMA (2018) *Insurance Regulatory Sandbox (Consultation Paper) April 2018*, available at https://bit.ly/2Enz0Ii

Malaysia [FTEG] [BNM]	BNM:[323] '…excellence in promoting monetary and financial system stability and fostering a sound and progressive financial sector, to achieve sustained economic growth.' FTEG:[324] Support innovations that will improve the quality, efficiency, accessibility of financial services; - Formulate and enhance regulatory policies to facilitate adoption of technological innovations in the financial services industry.	'... to provide a regulatory environment that is conducive for the deployment of fintech.' '… to enable innovation of fintech to be deployed and tested in a live environment, within specified parameters and timeframes.'	- Innovation must (i) improve accessibility, efficiency, security, quality in provision of financial services; (ii) enhance efficiency and effectiveness of domestic financial institutions risk management; or (iii) address gaps, open financing or investments in the economy; - Adequate assessment performed - Necessary resources and expertise to test and mitigate potential risks; - Realistic plan to deploy in Malaysia; - Innovation is wholly/partially incompatible with law, regulations or standards issued by BNM; - Credible management team. - Companies collaborating with financial institutions or create high value jobs are assessed more favorably.
Sierra Leone [BSL]	BSL Objectives: Bank of Sierra Leone Act 2011:[325] - Achieve and maintain price stability; - Formulate and implement monetary policy, financial regulation and prudential standards; - Act as banker, adviser, fiscal agent of Government; - Formulate, implement the foreign exchange policy; - Conduct foreign exchange operations; - Own, hold and maintain the official international reserves including gold reserves; - Issue and manage the currency; - Establish, promote, license and oversee sound and efficient payment and securities settlement systems; - License, register, regulate and supervise financial institutions per BSL Act or other enactment; - Depository for funds from international organizations.	- Provide regulatory environment conducive for deployment of new and innovative FinTech and business models domestically; - Enable testing innovations in live environment before deployment; - Facilitate BSL's understanding of emerging technologies, support evidence-based approaches to regulation that advance the goals of financial inclusion, financial stability, integrity and consumer protection. - Foster responsible innovation that benefits consumers in Sierra Leone by improving the quality of and access to financial products and services.	- Registered business in Sierra Leone - 10% or more ownership of applicant by a citizen - FinTechs can apply as a cohort, incumbents on a rolling basis if proposed innovation is incompatible with existing law / regulation. Evaluation criteria requires proof of: - Potential to advance financial inclusion - Legal due diligence conducted - Ready for testing - Sufficient resources to participate - Clear business plan and exit strategy - Fit and proper management and leadership

[323] BNM (2018) *About the Bank*, available at https://bit.ly/2OWtQDK
[324] FTEG (2018) *About*, available at https://www.myfteg.com/about; BNM (2018) *Establishment of Financial Technology*
[325] BSL (2018) *About Bank of Sierra Leone*, available at https://www.bsl.gov.sl/about_bsl.html

Singapore [MAS]	Mission:[326] - Promote sustained non-inflationary economic growth and a sound/progressive financial center. - Central bank, conduct of monetary policy, issuance of currency, oversee payment systems, serve as banker / financial agent of Government; - Conduct integrated supervision of financial services and financial stability surveillance; - Manage official foreign reserves of Singapore; - Develop Singapore international financial center.	- Grow smart financial center, encourage adoption of innovative, safe technology in financial sector; - Enhance value, increase efficiency, better manage risks; - Create new opportunities, improve lives of people/residents - Encourage FinTech experimentation of promising innovations	Evaluation criteria include: - Innovation: not similar to existing offering unless new technology offered or used in a different manner; - Due diligence performed: legal and regulatory; - Benefits to consumers/industry; - Intended deployment in Singapore, adequate exit and transition strategy; - Defined testing plan and outcomes; - Risk assessment and mitigation plans.
United Kingdom [FCA]	Mission:[327] - Protect consumers; - Protect and enhance the integrity of the UK financial system; - Promote effective competition in interest of consumers.	- Promote more effective competition in the interests of consumers by allowing firms to test innovative products, services and business models in a live market environment, while ensuring that appropriate safeguards are in place.[328] - Promote competition by supporting disruptive innovation - Deliver more effective competition in the interests of consumers by: (i) reducing time and potentially cost of getting innovative idea to market; (ii) enabling greater access to finance for innovators; enabling more product testing prior to market and allowing FCA to work with innovators to ensure adequate consumer protection safeguards are implemented.	- In scope: innovation intended for UK; - Genuine innovation: significantly different than other market offerings; - Consumer benefit: direct or indirect, the innovation promotes competition and includes risk mitigation; - Needs a sandbox: innovation is incompatible or difficult fit with regulation, full authorization impractical, benefit from live testing; - Ready for testing: plan is developed, all/partial testing performed, sufficient resources for sandbox testing, adequate safeguards are/can be established for consumer protection; - Qualification with threshold conditions.

[326] MAS (2018) *Overview*, available at https://bit.ly/2xTsdPQ
[327] FCA (2017) *Our Mission 2017; How we regulate financial services*, available at https://bit.ly/2rgBn8b
[328] FCA (2017) *Regulatory sandbox lessons learned report, October 2017*, available at https://bit.ly/2yK7q3A

Annex D: Potential Regulatory Relaxation and Maintenance in Select Countries

Country	Regulator	Possible to Relax Requirements	Possible to Maintain Requirements
Singapore	**Monetary Authority of Singapore**[329]	● Asset maintenance requirement ● Board composition ● Cash balances ● Credit rating ● Financial soundness ● Fund solvency and capital adequacy ● License fees ● Management experience ● MAS Guidelines, such as technology risk management guidelines and outsourcing guidelines ● Minimum liquid assets ● Minimum paid-up capital ● Relative size ● Reputation ● Track record	● Confidentiality of customer information ● Fit and proper criteria particularly on honesty and integrity ● Handling of customer's moneys and assets by intermediaries ● Prevention of money laundering and countering the financing of terrorism
Bahrain	**Central Bank of Bahrain**[330]	Depending on the case of the Applicant, the CBB will determine which requirements will be relaxed and to what extent. For example, in Bahrain, cryptocurrency exchanges are being provided sandbox licenses in order to study and define rules to regulate them.	● Confidentiality of customer information ● KYC ● AML/CFT
Canada	**Canadian Securities Administrators Sandbox**[331]	● Applicants have previously been granted relief related to: ○ audit requirement regarding financial statements ○ know-your-client requirements ○ suitability requirements ○ dispute resolution requirements ○ certain disclosure and reporting requirements ○ the requirement to issue and distribute a prospectus	● KYC requirements for initial coin offerings

[329] MAS (2016) *Fintech Regulatory Sandbox Guidelines*, available at https://bit.ly/2gDPTAm

[330] CBB (2017) *Regulatory Sandbox Framework*, available at https://bit.ly/2xvri8i; The Hindu Business Line (2018) *Bahrain Steps Up Cryptocurrency Push*, available at https://bit.ly/2ObF4ra

[331] Canadian Securities Administrators (2018) *Decisions*, available at https://bit.ly/2LBUf8P; Zetzsche, D & Buckley, R & Arner, D, *et al*. (2017) *Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation*, available at https://bit.ly/2NiZlav

Indonesia	**Bank of Indonesia**[332]	Bank Indonesia will determine the testing scenario for products, services, technology, and/or business models and submit a letter to the Financial Technology Operator after the Financial Technology Operator declares their undertaking to enact the testing scenario**.**	● Consumer protection ● Risk management
Malaysia	**Bank Negara Malaysia**[333]	Applicants need to identify the legal or regulatory requirements that are incompatible with the proposed product, service or solution and the regulatory flexibilities needed to undertake the test. For example: ● Risk management or outsourcing requirements when collaborating with emerging technology and software companies ● Conduct of Business rules that do not apply neatly to AI or big data applications ● Licensing requirements such as track record or capital resources requirements	● Regulated activities under the purview of the Securities Commission Malaysia (e.g. fund management, peer-to-peer lending, equity crowd funding) ● Bank will give due regard to: ○ preserving sound financial and business practices consistent with monetary and financial stability; ○ enforcing sufficient consumer protection measures; ○ establishing proper procedures for anti-money laundering and countering terrorism financing; ○ protecting the confidentiality of customer information; ○ promoting the safety, reliability and efficiency of payment systems and payment instruments; ○ having sufficient risk management systems including IT and cyber security ○ ensuring innovative solutions for Islamic financial services are consistent with prevailing Shariah standards; and ○ encouraging healthy competition for financial products and services.
Sierra Leone	**Bank of Sierra Leone** [334]	● BSL will determine the specific regulatory requirements it is	● Character and fitness requirements for the Applicant, its founders and directors

[332] Bank Indonesia (2017) *Regulation Number 19/14/PADG/2017 on Regulatory Sandbox for Financial Technology*, available at https://bit.ly/2pvxBVT
[333] BNM (2016) *Financial Technology Regulatory Sandbox Framework*, available at https://bit.ly/2kDvvkj; Baker McKenzie (2017) *A Guide to Regulatory Fintech Sandboxes Across Asia Pacific*, available at https://bit.ly/2PxST0c; Baker & McKenzie (2016) *FinTech Update: Thailand's FinTech Regulatory Sandbox*, available at https://bit.ly/2O8GT8e
[334] BSL (2018) *Regulatory Sandbox Pilot Program Guidelines and Application Form*, available at https://bit.ly/2OZtSKF

		prepared to temporarily modify during a Sandbox test on a case-by-case basis.	● Suitability requirements pertaining to business premises ● AML/CFT regulation
Thailand	**Bank of Thailand**[335]	● Participants in the sandbox may test their financial products or services in a live but limited environment, without being fully subject to all licensing/ supervision requirements that normally would be applicable.	● Not exempt from having to apply for any applicable licenses that are necessary to conduct their intended businesses ● Regulations related to electronic transactions ● Customer's information and secret protection ● Customer's money and asset management ● Security of work system and information, Integrity of work system and information, Availability of work system. ● Protection of money laundry and terrorism financing
Australia	**Australian Securities and Investment Commission**[336]	ASICs provides regulatory sandbox licenses that allows eligible firms that are not currently authorized to provide services covered by the exemption to test these services for 12 months without an AFS or credit license.	● Consumer protection ● Dispute resolution ● Compensation arrangements

[335] Silk Legal (2017) *Bank of Thailand Public Hearing on Guidance to Participate the Regulatory Sandbox*, available at https://bit.ly/2sh6iQF; Corbett, J (2017) *Thailand launches Regulatory Sandbox for Fintech Services*, available at https://bit.ly/2Es3toK; Latham & Watkins (2017) *Regulatory Sandboxes – a Global Stocktake*, available at https://bit.ly/2QQVbc8

[336] ASIC (2017) *RG 257 Testing fintech products and services without holding an AFS or credit licence*, available at https://bit.ly/2P8hw3f; GFIN (2018) *Global Financial Innovation Network (GFIN) Consultation Document*, available at https://bit.ly/2np2p9N