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Payment Systems Department

OVERSIGHT POLICY FRAMEWORK FOR RWANDA NATIONAL PAYMENT SYSTEM

Initiator: Payments System Department

Approved by: Board of Directors

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BNR Identity Statement

The National Bank of Rwanda strives to become a World-Class Central Bank that contributes to economic growth and development, by using robust monetary policy tools to maintain stable market prices. The Bank embraces innovations, diversity and inclusiveness, economic integration and ensures financial stability in a free market economy.

BNR Vision

To become a World-Class Central Bank

BNR Mission

To ensure Price Stability and a Sound Financial System

BNR Core Values

Integrity

We uphold high moral, ethical and professional standards for our people, systems and data

Accountability

We are result-focused, transparent and reward according to performance

Mutual respect and Team-work

We keep ourselves in high spirit, committed to each other for success

Excellence

We passionately strive to deliver quality services in a timely and cost effective manner. We continuously seek improvement by encouraging new ideas and welcoming feedback that adds value to customer services.

BNR Key Strategic Focus Areas:

Formulation and Implementation of efficient Monetary Policy;
Financial System Development and Stability;
Reserves Management;
Payment, Settlement and Currency Systems;
Business Excellence.

LIST OF ABBREVIATIONS

BIS	:	Bank for International Settlements
BNR	:	Banque Nationale du Rwanda
CCP	:	Central Counter-Party
CPMI	:	Committee on Payments and Market Infrastructures
CPSS	:	Committee on Payment and Settlement Systems
CSD	:	Central Securities Depositary
E-Money	:	Electronic Money
FMI	:	Financial Market Infrastructure
IOSCO	:	International Organization of Securities Commissions
NBR	:	National Bank of Rwanda
NPC	:	National Payments Council
NPS	:	National Payments System
OPF	:	Oversight Policy Framework
PFMI	:	Principles for Financial Market Infrastructures
PSP	:	Payment Service Provider
SIPS	:	Systematically Important Payments Systems
SSS	:	Securities Settlement System
TR	:	Trade Repository

EXECUTIVE SUMMARY

The National Payments System (NPS) is one of the pillars of financial stability of the economic system and the central banks have always had a close interest in them as part of their responsibilities for monetary and financial stability. The NPS does not only entail payments made between banks, but encompasses the total payment process. This includes all the systems, mechanisms, institutions, agreements, procedures, rules and laws that come into play from the moment an end-user, using a payment instrument, issues an instruction to pay another person or a business, through to the final interbank settlement of the transaction in the books of the central bank. The NPS therefore enables the transacting parties to exchange value to conduct business efficiently.

In this regards, a well-designed and managed payment systems help to maintain financial stability by preventing or containing financial crises, and help to reduce the cost and uncertainty of settlement, which could otherwise act as an impediment to economic activity. Financial instability may be characterised by banking failures, intense asset price volatility, interest and exchange rate volatility, liquidity problems, and systemic risk, which are often manifested in the disruption of the payment and settlement system. Modern payment systems also involve the settlement of substantial trade in financial instruments such as bonds, equities and derivatives. Collegiality, co-operation and inter-operability are vital elements of a world-class payment system.

The oversight of the payment systems is a responsibility of the Central Bank, as specified by the article 6 (4°) of the Law N°48/2017 of 23/09/2017 governing the National Bank of Rwanda. The National Bank of Rwanda aims at promoting the safety and efficiency by monitoring the systems, assessing them against these objectives and, where necessary, inducing change. By overseeing payment systems, the National Bank of Rwanda helps to maintain systemic stability and reduce systemic risk, and to maintain public confidence in payment and settlement systems.

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I. INTRODUCTION

The payment systems provide the channels through which funds are transferred among financial institutions to discharge the payment obligations arising in the financial markets and across the wider economy. As such, they are a vital part of the economic and financial infrastructure and their efficient functioning contributes to overall economic performance. The National Payments System (NPS) comprises the Financial Market Infrastructures (FMIs) as well as retail payment systems, instruments and Payment Service Providers (PSPs).[1] FMIs facilitate the clearing, settlement, and recording of monetary and other financial transactions. They are the channels through which monetary policy is implemented and are required for credit extension on a collateralized basis. When they operate efficiently, FMIs contribute to financial and overall economic stability and development. However, they concentrate risk and can be sources of financial shocks that can be transmitted across domestic and international markets.

In case the payment and settlement systems are viewed as inefficient, unreliable or unsafe, this could erode public confidence in their use. For this reason, as the public institutions responsible for preserving public trust in the national currencies, and in line with their mandate for financial and monetary stability, Central Banks exercise a special form of supervision of payment systems which is called "Oversight". The aim of the Oversight is to ensure that National Payment Systems operate safely and efficiently.[2] Additionally, networks and platforms for the delivery of retail payments play an important role today in supporting financial access, especially in developing countries. Indeed, modern retail payment technologies are already being used in Rwanda to integrate underserved and non-served segments of the population into the formal financial sector and are central to the achievement of the authorities' financial inclusion and economic development goals. Increasingly, these public good considerations serve to expand and re-define the aims of oversight.

II. LEGAL FOUNDATION

The legal foundation for the Oversight of the NPS derives from the Law Nº 03/2010 of 26/02/2010 concerning payment system and the Law Nº 48/2017 of 23/09/2017 governing the National Bank of Rwanda. These laws and the related regulations have bolstered the authority of the National Bank of Rwanda by granting it powers to oversee payment systems, participants, instruments, and service providers, and to protect consumers in payment systems.

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[1] The term "Financial Market Infrastructure (FMI)" refers to Systemically Important Payment Systems (SIPS); Central Securities Depositories (CSDs); Securities Settlement Systems (SSSs); Central Counter-Parties (CCPs); and Trade Repositories (TRs). FMIs are deemed to be systematically important. (Definition of Financial Market Infrastructure (FMI) from ARTHAPEDIA, available at http://www.arthapedia.in/index.php?title=Financial_Market_Infrastructure_(FMI), accessed on 11th March, 2019.)

[2] The Oversight of payment and settlement systems is the function of the Central Bank. The objectives of ensuring safety and efficiency are promoted by monitoring the existing and planned systems, assessing them against these objectives and where it's necessary, inducing change. (2005 CPSS Report on CENTRAL BANK OVERSIGHT OF PAYMENT AND SETTLEMENT SYSTEMS, available at https://www.bis.org/cpmi/publ/d68.pdf, accessed on 11th March, 2019.)

III. OBJECTIVES AND CONSIDERATIONS

In discharging its oversight responsibilities, the BNR will be mainly concerned with the safety and efficiency of the payment systems, as opposed to the efficiency and safety of individual participants in such systems. For the oversight of payment instruments and service providers, while the BNR will consider the risks they face in the course of their business, its main concern will be with the risks that each of them poses to the wider NPS. Through oversight, the BNR will ensure that NPS operators and PSPs manage risks appropriately.

The main objectives of NPS oversight are the following:

- Safety
- Efficiency
- Consumer protection
- Market development (including through promoting competition and a level playing field)

In recent years, the security risks relating to electronic payments have increased. This is due to the growing technical complexity of electronic payments, and their increasing use and acceptance across all segments of the country and economy. The BNR will carry out relevant activities to ensure that users of payment services are adequately protected against such risks.

The BNR will ensure comparable rules and standards are applied to existing and new players, enabling new means of payment to reach a broader market and ensuring a level and competitive playing field in the delivery of those payment services in the country. The BNR will also act to improve public education and awareness and cooperate with the NPS stakeholders to promote the development of a modern, dynamic and innovative market for the provision of payment services, with a view to making such services convenient, secure and accessible to the largest number of citizens.

IV. SCOPE AND INSTRUMENTS

As mandated by statute, the scope of the BNR's oversight extends to:

- Financial market infrastructures
- Payment services.

The BNR shall designate the systems and identify payment services that will be subjected to oversight and establish the applicable standards. Identified systems and services will be assessed against such standards. The BNR will apply oversight requirements or standards in a consistent way to prevent competitive distortions between comparable systems or services. Central bank-operated systems that meet the designation or licensing criteria are also subject to oversight in a manner similar to other comparable systems or services.

A. PAYMENT SYSTEMS

Payment systems are deemed to be:

Systemically important – systems that are exposed to systemic risk, that is, the risk that the failure of one participant to meet its obligations in the system can result in other participants being unable to meet their obligations, thus endangering the financial system and the economy.

The criteria to designate payment systems as "systemically important" include:
- The system's potential to create significant credit and liquidity exposures, or disruptions in the economy, should it fail to perform as expected;
- Whether the system is used to settle other systems;
- Whether substitutes are available at short notice;
- The system settles transactions for critical financial markets;
- The system settles a high proportion of large-value or time-critical transactions; and
- The system settles large volumes of small value transactions that cumulatively are of large value.

Prominent – systems that are not systemically important but whose failures have the potential to disrupt economic activity and to affect public confidence. Payment systems that are not "systemically important" but whose domestic market share in terms of volume or value of transactions is equal or above a threshold of *25 percent* of the total volume or value of transactions, shall be designated as "prominent". The threshold will be subject to periodic review and amendment.

B. PAYMENT SERVICES

The BNR has identified six categories of payment services performed by PSPs in the context of digital payment. These are:

1) **Account Issuance Services:** Services of issuing a payment account to any person in Rwanda, providing service in relation to any of the operations required for operating a payment account including enabling money to be placed in or be withdrawn from a payment account.
2) **Funds transfer services:** the service of accepting money for the purpose of execution of payment transactions, including transfers of funds on a payment account with the user's payment services provider or with another payment services provider;
3) **Money business services:** money remittances and money exchange services;
4) **Merchant acquisition services:** acquiring of payment transactions such as physical and online merchant acquisition services or payment aggregator;
5) **Payment initiation services:** all services facilitating the authorization and/or validation of an electronic fund transfer or facilitating the execution of electronic transactions.
6) **E-money issuance services:** services related to the issuance and management of e-money for the purpose of providing payment services.

The oversight framework shall apply to any PSP when performing one of the above-mentioned payment services rendered to end users. If a PSP outsources some of its operations, it would be required to ensure that outsourced operations meet the same requirements as if they were provided internally.

However, consistent with the principles developed to guide the development of the oversight framework, certain types of transactions posing limited risk to end users would be excluded from the perimeter of the oversight framework:

- Transactions entirely made in cash;
- Physical transport of banknotes and coins, including their collection, processing and delivery;
- Transactions made with instruments that allow the holder to acquire goods or services only in the premises of the issuing merchant;
- Transactions related to securities asset servicing;
- Transactions between entities of a same corporate group, if no intermediary outside of the corporate group is involved in the transaction

The application of the payment services oversight framework will be limited to transactions that are carried out solely in fiat currencies (i.e., regulated currencies such as Rwanda Franc). Various types of unregulated virtual currencies now exist. However, the use of virtual currencies in retail payments is limited. The BNR will continue to monitor the use of virtual currencies in retail payments and propose adjustments to the scope as warranted.

The BNR will state relevant criteria and operating standards in the regulations to ensure requirements are proportionate to the risk posed by every service. These criteria shall be but not limited to business risk impact on a widely used service, credit risk such as liability to customers, the size of the wallet and time it is held, operation risk looking at the technology used, the level of integration with other systems or services, business conduct, etc.

C. OVERSIGHT STANDARDS

Oversight standards provide the benchmark for safety and efficiency, and a means to identify gaps and induce change. The focus of the BNR's oversight is risk management, which is enabled through the appropriate and consistent application and observance of oversight standards. Annex 1 provides a brief description of the main types of risks inherent in the payment and settlement systems. Operators, participants, and PSPs hold the ultimate responsibility for the risks they manage and for the risks they bring in to the systems and are expected to bear the attendant costs. The BNR will take the following approach regarding the use of oversight standards:

Systems[3] – For the oversight of "systemically important" FMIs – the SIPS, CSD and securities settlement system – the BNR adopts the CPSS-IOSCO Principles for Financial Market

[3] Note that two FMIs: CCPs and TRs are not currently operated in Rwanda.

Infrastructures (PFMI). [See Annex 2.] For "prominent" payment systems, the Bank will use less demanding standards (a subset of the PFMI);[4]

Payment Service – For the oversight of the PSPs the BNR will adopt specially designed standards that address such issues as critical service providers, corporate governance and risk management, information technology, information security, business continuity and resilience planning. Relevant standards will be communicated to the industry in the regulations and/or directives;

For payment systems and payment services, the BNR will also draw on and adapt, as necessary, good practices developed by other central banks with significant experience in this area.

D. <u>OVERSIGHT PHILOSOPHY</u>

The BNR's approach to oversight is informed by the philosophy outlined below:

Necessity – Oversight should address risks that can lead to significant harm to end users and avoid duplication and overlap with effective existing rules.

Functional – irrespective of their legal nature, all PSPs – including bank, non-bank and non-financial entities – will be subject to the same regulation. This will level the playing field and ensure fair competition among different entities offering the same or similar services.

Risk-based – oversight requirements will be guided by considerations concerning risks to NPS safety, efficiency and consumer rights. This will enable the BNR to adapt the oversight requirements to different types of entities according to objective and transparent criteria based on the relative importance of the risks associated with each type.

Proportional – the intensity of oversight and the oversight priorities will reflect the perceived riskiness of each overseen entity. This corresponds to the principle of fairness and, operationally, it will allow the BNR to prioritize its oversight action and allocate its oversight resources to areas where needs are more pressing.[5] In other words, PSPs will be treated consistently under the same rules, though not necessarily equally if their risk profile is different.

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[4] For the FMIs and for 'prominent' systems, the standards will be complemented as appropriate, by both current guidance from the Committee on Payment and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO) on central bank FMIs, cyber risk, fraud in endpoint security and future guidance that may be promulgated by the CPMI and IOSCO.

[5] The "intensity of oversight" reflects the extent to which the Overseer monitors, analyzes, assesses, and evaluates the performance of each designated entity – and by extension, the resources directed to these activities – and the depth of the oversight requirements, standards, or expectations applied to the entity.

E. OVERSIGHT ACTIVITIES

a. Registration/licensing

The BNR will license any entity (banks excluded) that intends to provide payment services or to operate a payment system after submission of appropriate documents and information, as prescribed by regulation.[6] A license will be granted based on the fulfillment by the applicant of the eligibility criteria prescribed in the regulations. The objective of licensing is to bring payment system operators and service providers within the regulatory ambit of the overseer, and obtain information necessary for oversight monitoring, analysis and performance assessment. Prior to issuing a license, the BNR will have to be satisfied that the operator or service provider is competent to manage effectively the risks associated with its activity. The BNR will require information and documentation, which will allow it to decide on the extent to which risk is (or is likely to be) well managed and systemic risk mitigated and these requirements will be set out in the regulations.

New PSPs and applicants may fall outside existing regulations for licensing and authorization which may prevent the new entities from entering the market at the cost of stifling innovation and competition. The BNR shall address this by experimenting with flexible regulatory approaches such as sandboxes which enable PSPs to familiarize themselves with the new technologies, appreciate their potential impact, benefits and risks, evaluate their implications for market efficiency and growth, and adapt regulation where necessary. The BNR will adopt a similar approach, as set out in Box 1 below.[7]

Box 1. Regulatory Sandbox

The pace of change in the financial services industry has been accelerating because of the technological advances that have caused paradigm shifts in the sector. Globally, several Financial Technology (FinTech) startups have successfully challenged large incumbent financial institutions in various segments of their business, disrupting business models and taking market share. Regulators have cautiously welcomed this trend but have expressed concern regarding the reliability of the various technologies as well as the financial soundness of the FinTech companies.

A Regulatory Sandbox (Sandbox) is a framework and process that facilitates the development of the FinTech industry in a calculated and systematic way. It is defined as "a safe space in which businesses can test innovative products, services, business models and delivery mechanisms without immediately incurring all the normal regulatory and financial consequences of engaging in the activity in question." Financial products/services based on new technologies, or new permutations of existing technologies, can be tested in the

[6] Banks are exempt as they are already subject to even more stringent requirements under the terms of their banking licenses and these licenses contemplate the provision of payment services, which is central to the business of banking.
[7] This is also consistent with the BNR's 'catalyst' role outlined in section I below.

Sandbox without the burden of heavy regulations and licensing. Those that are successful (i.e. that meet the predefined experimentation criteria to the satisfaction of the regulator) can apply for the relevant license subsequently while others have to leave the Sandbox after a defined time period. This allows both existing licensed financial and non-financial institutions and newcomers to the market to experiment with innovative financial services for a specified period of time in an environment where actual products and services are rendered to customers, but where the risks to customers and to the financial system as a whole are defined, contained and mitigated.

b. Ongoing monitoring

The BNR will monitor the functioning of the NPS by screening the FMIs' operations and risks through access to real-time system information. The BNR will also prescribe reporting obligations for systems and PSPs and access information through *ad hoc* inquiries and consultations. Through offsite oversight, the Bank will analyze NPS weaknesses and the need for improvement or change and will identify sources of risk and system design weaknesses that might require intervention. The BNR will follow the evolution of selected indicators on NPS operations, will run *ad-hoc* analyses whenever observations reveal significant divergence from trends and/or expected performance, or when unusual circumstances materialize.

c. Assessment and Compliance

Risk analysis of the designated systems will be conducted at three different control levels. The first control level will be a responsibility of payment system operators to assess compliance of the FMI with the PFMI. The second control level will be a responsibility of the BNR staff responsible for oversight.[8] A third control level may be performed by external independent evaluators, at the request of the BNR. Assessments will largely draw on the outcomes of the continuous oversight activities, the impact analysis of payment system changes, and the analysis of incidents. The BNR will also undertake stocktaking exercises and identify specific actions to be taken with regard to existing or planned systems.

The BNR will conduct oversight of PSPs through regular or *ad hoc* inspections; it will evaluate their performance against select standards and assess their compliance with rules and regulations. The BNR will evaluate PSP policies and procedures to deal with such risks as fraud and other forms of criminal abuse (e.g., money laundering, terrorism financing, security and cyber risk breaches), inappropriate market conduct, operational failures, disclosure and confidentiality breaches and consumer claims. To discourage market abusive practices from individual PSPs, the Bank will ensure that dispute resolution mechanisms and redress

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[8] Through periodic assessments, the Overseer should make sure that the designated entities comply with the standards on an ongoing basis and require corrective action in the event of noncompliance. Also, whenever changes are proposed or introduced in designated payment and settlement systems (their design, rules, operation, or technology), the Overseer should evaluate the potential impact of those changes, verify whether they would compromise the system's compliance with the applicable standards and expectations, and require /mandate changes in that event.

procedures for customer claims are in place and effective. It will take action to protect the values stored in electronic money instruments.[9] For the purpose of PSP oversight, the BNR will require PSPs to submit relevant information on a regular basis or on an ad hoc basis where appropriate. The Bank may also request external or specialized audits of PSPs.

d. Inducing change

The results of NPS assessments and risk analysis, as well as emerging issues and trends, may point to the need for enhanced technical, procedural and governance structures. The BNR and other NPS stakeholders will seek to agree on solutions and cooperate in implementing them. To this end, the BNR will promote and facilitate dialogue to achieve consensus on policy choices and changes. The BNR aims to induce change through policy dialogue and moral suasion. However, where moral suasion proves to be ineffective, it will invoke its statutory powers and issue directives to system operators, settlement agents, PSPs; impose sanctions; or revoke the authorization/license if warranted. The incentives/ sanctions structure of the BNR will help to align the profit-seeking motives of the private-sector entities with the public good interests and the economy more broadly.

e. Relationship with other regulators

In carrying out its oversight activities the BNR will need to have regular or ad hoc contacts with other regulatory and supervisory institutions and agencies through established lines of communication and exchange of information, domestically, regionally and internationally, as appropriate. Protocols of mutual collaboration may be agreed upon between the BNR and other authorities and national agencies to define the terms of the collaboration, determine the information flows and design the operational modalities. The most direct and effective lines of inter-institutional communication will be established, and contact points identified, thereby ensuring that communication channels will be active and open at all times, especially in crisis situations.

f. Crisis management

In the case of critical events, three stages of crisis management will be considered by the FMI operator and overseer: pre-crisis, crisis and post-crisis.

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[9] E-money is, broadly speaking, the monetary value of a claim on the e-money issuer, that is stored electronically and is accepted by others as a means of payment. It derives its value, not from any intrinsic worth, but from the expectation that it can be exchanged for its underlying value. The legal definition of e-money includes magnetically stored value, issued for the purposes of making payment transactions, that is accepted by a natural or legal person. It extends to e-money held on a plastic card or on an information technology server.

The FMI Operator

- **Pre-crisis:** the FMI operator must establish, exchange, and maintain complete and correct contact lists with all relevant participants and providers. Drill tests will be conducted periodically, at defined intervals, to ensure that communication, information flows, and agreed procedures function effectively in emergency situations.
- **Crisis:** in the event of a crisis, the operator must ensure that the FMI operations – in particular its critical functions – are preserved or recovered as soon as possible, by prompting the intervention and cooperation of all the relevant parties and institutions, including the overseer, as circumstances require.

The Overseer

- **Post-crisis:** After the crisis, the BNR will report on how systems have performed during the crisis, pointing to any weakness or vulnerability that the crisis may have manifested, and will review the proposed action plan to resolve them, and afterwards follow up on its execution.

g. Policy, research and development

The BNR will design NPS policies, rules and regulations, and will revise them when necessary to ensure that the performance and behavior of payment system operators and providers are consistent with the oversight policy objectives. The BNR will promote research and development activities on NPS-related issues. These activities range across several areas: operational, legal, institutional and technological. It will study payment system and payment service developments and provide essential inputs to their evolution.

h. Policy Dialogue

The BNR will promote an active policy dialogue with NPS stakeholders, including users. The dialogue will secure a fair representation of all relevant public and private interests involved in NPS activities and will offer a channel to communicate BNR's policy orientation, collect views from stakeholders, and share knowledge within the stakeholder community on NPS issues. The BNR will undertake consultations with NPS stakeholders on policy issues and options to enhance its knowledge, raise awareness, and build consensus around policy decisions. The National Payments Council (NPC) will be used for this purpose. The NPC provides an important forum for cooperation and forms a key part of the institutional and governance framework for the NPS. It will comprise all relevant stakeholders with an interest or involvement in payment systems matters and operate as a consultative body, providing ongoing support to the BNR to ensure the payment and securities settlement systems are safe and efficient and a suitable array of modern, affordable, efficient payment instruments become available to the Rwandan people.

i. The BNR – Catalyst Role

The BNR will also play the role of catalyst in the development of the NPS. Its actions will be transparent, credible and supportive of a level playing field in the delivery of payment services. This means determining and communicating overall objectives and leaving it up to market players to decide how to achieve them. In the performance of its oversight functions, the BNR will take care not to hamper competition and innovation in an area characterized by continuous technical changes. It will not promote any particular technical solution; it is the responsibility of the market to select or promote a given technical solution.

j. External Reporting

The BNR will regularly release a report on its oversight activity. This will be published at a minimum, annually. The report will provide an overview of the functioning of the NPS, its progress in terms of operation, level of safety and efficiency, new features, instruments and services, challenges and the solutions adopted to address them. The report will inform on progress in complying with standards and summarize the results of risk analysis and system assessments. The report will present plans to further develop and modernize the NPS. A summary of the report may be included, as is now done, in the BNR's Annual Report and an evaluation of NPS-related developments, risks and oversight findings will be included in a chapter of the BNR's publication of the Annual Financial Stability Report. The section of the Bank's website dedicated to oversight developments and statistics will be kept up to date.

ANNEX I: TYPICAL RISKS IN PAYMENT AND SETTLEMENT SYSTEMS

Credit risk	The risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter. In exchange-for-value systems, the risk is generally defined to include replacement cost risk and principal risk.
Financial risk	The term covers a range of risks, including liquidity and credit risks, incurred in financial transactions.
Foreign exchange settlement risk	The risk that one party to a foreign exchange transaction will pay the currency it sold but not receive the currency it bought.
Gridlock	A situation that can arise in a funds or securities transfer system in which the failure of some transfer instructions to be executed (because the necessary funds or securities balances are unavailable) prevents a substantial number of other instructions from other participants from being executed.
Legal risk	The risk of loss because of the unexpected application of a law or regulation, because a contract cannot be enforced, or because laws or regulations do not support the rules of the securities settlement system, the performance of related settlement arrangements, or the property rights and other interests held through the settlement system. Legal risk also arises if the application of laws and regulations is unclear.
Liquidity risk	The risk that a counterparty (or participant in a settlement system) will not settle an obligation for full value when due. Liquidity risk does not imply that a counterparty or participant is insolvent, as it may be able to settle the obligations at some unspecified time thereafter.
Market risk	The risk of loss in on- and off-balance sheet positions arising from movements in market prices.
Operational risk	The risk that deficiencies in information systems or internal controls could result in unexpected losses. These deficiencies could be caused by human error or a breakdown of some component of the hardware, software or communications systems that are crucial to settlement.
Principal risk	The risk that the seller of a security delivers a security but does not receive payment or that the buyer of a security makes payment but does not receive delivery. In this event, the full principal value of the securities or funds transferred is at risk. In the settlement process, this term is typically associated with exchange-for-value transactions when there is a lag between the final settlement of the various legs of a transaction (i.e., the absence of delivery versus payment).
Replacement cost risk	The risk that a counterparty to an outstanding transaction for completion at a future date will fail to perform on the settlement date. This failure may leave the solvent party with an unhedged or open position or deny the solvent party unrealized gains

	on the position. The resulting exposure is the cost of replacing, at current market prices, the original transaction.
Reputational risk	The risk of loss of confidence in the payment system due to lack of management control, capacity, security, business continuity plans and/or contingency measures.
Settlement risk	General term used to designate the risk that settlement in a transfer system will not take place as expected. If a party defaults on one or more settlement obligations to its counterparties or to a settlement agent, this can generate both credit and liquidity risk.
Systemic risk	The risk that the failure of one participant in a transfer system, or in financial markets generally, to meet its required obligations will cause other participants or financial institutions to be unable to meet their obligations (including settlement obligations in a transfer system) when due. Such a failure may cause significant liquidity or credit problems and, as a result, might threaten the stability of financial markets.

ANNEX II. CPSS-IOSCO PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES (PFMI)

A. General organization

Principle 1: Legal basis

The FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.

Principle 2: Governance

The FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Principle 3: Framework for the comprehensive management of risks

The FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

B. Credit and liquidity risk management

Principle 4: Credit risk

The FMI should effectively measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions.

Principle 5: Collateral

The FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity, and market risks. The FMI should also set and enforce appropriately conservative haircuts and concentration limits.

Principle 6: Margin

The CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.

Principle 7: Liquidity risk

The FMI should effectively measure, monitor, and manage its liquidity risk. The FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

C. Settlement

Principle 8: Settlement finality

The FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, the FMI should provide final settlement intraday or in real time.

Principle 9: Money settlements

The FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, the FMI should minimize and strictly control the credit and liquidity risk arising from the use of commercial bank money.

Principle 10: Physical deliveries

The FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.

D. Central securities depositories and exchange-of-value settlement systems

Principle 11: Central securities depositories

The CSD should have appropriate rules and procedures to help ensure the integrity of securities issues and minimize and manage the risks associated with the safekeeping and transfer of securities. The CSD should maintain securities in an immobilized or dematerialized form for their transfer by book entry.

Principle 12: Exchange-of-value settlement systems

If the FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

E. Default management

Principle 13: Participant-default rules and procedures

The FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Principle 14: Segregation and portability

The CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.

F. General business and operational risk management

Principle 15: General business risk

The FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialize. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

<u>Principle 16</u>: Custody and investment risks

The FMI should safeguard its own and its participants' assets and minimize the risk of loss on and delay in access to these assets. The FMI's investments should be in instruments with minimal credit, market, and liquidity risks.

<u>Principle 17</u>: Operational risk

The FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI's obligations, including in the event of a wide-scale or major disruption.

G. <u>Access</u>

<u>Principle 18</u>: Access and participation requirements

The FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

<u>Principle 19</u>: Tiered participation arrangements

The FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

<u>Principle 20</u>: FMI links

The FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.

H. <u>Efficiency</u>

<u>Principle 21</u>: Efficiency and effectiveness

The FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

<u>Principle 22</u>: Communication procedures and standards

The FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

I. Transparency

Principle 23: Disclosure of rules, key procedures, and market data

The FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.

Principle 24: Disclosure of market data by trade repositories

The TR should provide timely and accurate data to relevant authorities and the public in line with their respective needs.

REFERENCES

ARTHAPEDIA; *Definition of Financial Market Infrastructure (FMI)*, available at http://www.arthapedia.in/index.php?title=Financial_Market_Infrastructure_(FMI), accessed on 11th March, 2019.

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