



KINGDOM OF BAHRAIN

FINANCIAL SECTOR ASSESSMENT PROGRAM

June 2016

DETAILED ASSESSMENT OF OBSERVANCE ASSESSMENT OF OBSERVANCE OF THE CPMI-IOSCO PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES

This Detailed Assessment of Observance on the Assessment Observance of the CPMI-IOSCO Principles for Financial Market Infrastructures on the Kingdom of Bahrain was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed on June 2016.

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DETAILED ASSESSMENT OF OBSERVANCE

June 2016

ASSESSMENT OF OBSERVANCE OF THE CPMI-IOSCO PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES

Prepared By
**Monetary and Capital
Markets Department**

This Detailed Assessment Report was prepared in the context of a Report on the Observance of Standards and Codes (ROSC) mission in the Kingdom of Bahrain during December 6–20, 2015, led by Tanai Khiaonarong, IMF and overseen by the Monetary and Capital Markets Department, IMF.

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GLOSSARY

ATS	Automated Trading System
BAB	Bahrain Association of Banks
BCP	Business Continuity Plan
BCTS	Bahrain Cheque Truncation System
BD	Bahraini Dinar
BENEFIT	Bahrain Electronic Network for Financial Transactions
BHB	Bahrain Bourse
BKS	Core Banking System of the CBB
BSD	Banking Services Directorate of the CBB
CBB	Central Bank of Bahrain
CCP	Central Counterparty
CMSD	Capital Markets Supervision Directorate
CPMI	Committee on Payments and Market Infrastructures
CSD	Central Securities Depository
CSD-BHB	Central Securities Depository of Bahrain Bourse
DRR	Disaster Recovery Relocation site
DVP	Delivery Versus Payment
EDBO	Executive Director of Banking Operations
EFTS	Near Real-Time Electronic Fund Transfer System
FMI	Financial Market Infrastructure
FSAP	Financial Sector Assessment Program
GCC	Gulf Cooperation Council
IDC	Intraday Credit
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
ITD	Information Technology Directorate
MNSB	Multilateral Net Settlement Batch
NRA	Near Relocation Area
PC	Payments Committee of the CBB
PFMI	Principles for Financial Market Infrastructures
PG	Payment Gateway
POS	Point of Sale
PSS	Payment and Settlement Systems
ROSC	Report on the Observance of Standards and Codes
RTGS	Real Time Gross Settlement
RTGSMBOG	RTGS (Membership) Business Operating Guidelines

RTGSMR	RTGS (Membership) Regulations
SSS	Scripless Securities Settlement
SSSMBOG	SSS (Membership) Business Operating Guidelines
SSSMR	SSS (Membership) Regulations
STP	Straight Through Processing
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TBC	The BENEFIT Company

EXECUTIVE SUMMARY

Major achievements have been made to establish safe and efficient payments and securities settlement systems in Bahrain. Since the Financial Sector Assessment Program (FSAP) of 2005, the Central Bank of Bahrain (CBB) has modernized the financial market infrastructure (FMI) to mitigate potential risks and support the wider economy. In 2007, the real-time gross settlement system and securities settlement system for government securities, which also as a central securities depository, were launched. Central bank intraday credit in the payment system has been fully collateralized. The CBB and Financial Institutions Law was promulgated on September 6th, 2006. Legal provisions on netting and collateral with respect to close-out netting were introduced. A new payment system policy and oversight unit was established. The Near Real-Time Electronic Funds Transfer System went live in the fourth quarter of 2015.

The real-time gross settlement system is highly concentrated and has tight interdependencies with the securities settlement system, making risks management a top priority. Although no major operational disruptions have been reported since 2007, there is a need to continuously identify, monitor, and manage potential risks. Legal risks may arise from legal uncertainty in the event of insolvency of a participant. Credit and liquidity risks may stem from extreme but plausible market conditions. Operational risks may be caused by wide-scale or major disruptions and the failure of critical service providers. Increasing interdependencies at the system, institutional, and environmental levels also present oversight challenges to the authorities.

The formal assessment suggests that most of the principles are broadly observed, and identifies areas to improve for closer alignment with international standards. The real-time gross settlement system observes six principles, broadly observes ten principles, and partly observes two principles. The securities settlement system observes eight principles, broadly observes ten principles, and partly observes two principles. The key findings and recommendations are as follows:

- **Legal basis.** The legal basis is relatively sound, but finality and netting arrangements require greater legal certainty and protection in primary legislation. This would also help strengthen participant-default rules and procedures.
- **Governance.** Governance arrangements are clear and transparent, but gaps remain in the roles and responsibilities of the Board and management, and representation in the Payments Committee. There is room for greater Board involvement in establishing a comprehensive risk management framework for the real-time gross settlement and securities settlement systems, and monitoring risks arising from such operations on a regular basis. Risks need to be reported on a quarterly basis to the Board. A staff succession plan should be in place to ensure that the appropriate experience and skills are available to discharge operational and risks management responsibilities for FMIs. The Payments Committee should be broadened to include representatives from legal, capital markets supervision, financial stability, and retail banking supervision directorates.

- **Comprehensive risk management framework.** Risk management measures are contained in various technical documents, which could be improved with the development of a risk management framework for comprehensively managing legal, credit, liquidity, operational, and other risks. This should include a review of the material risks from other entities as a result of interdependencies to develop appropriate risk-management tools to address potential risks, and fostering of closer cooperation among the relevant Directorates.
- **Credit risk.** Credit risk is managed with the use of high quality collateral, but exposures remain as the current policy is to apply no haircut. The credit risk management framework needs to be reviewed. Haircuts also need to be applied to intraday credit and overnight repos conducted between the central bank and direct members of the real-time gross settlement system.
- **Liquidity risk.** Liquidity risk is well managed under normal conditions, but should be tested against potential stress scenarios. Liquidity risk management could be improved with the measures as follows: (i) stress test of the default of the largest participant and affiliates in the payments and securities settlement systems; (ii) establish and monitor throughput rates; (iii) analyze and report on a regular basis the share of liquidity usage in the real-time gross settlement system from core banking accounts, intraday credit, and incoming payments; and (iv) adopt tools to monitor intraday liquidity flows to assess the sufficiency of liquidity, particularly during a stressed event.
- **Participant default rules and procedures.** There are established participant-default rules and procedures, which would be more effective with greater legal certainty for finality in primary legislation and precise with regular reviews and testing.
- **Operational risk.** Operational risk is well managed, but could be further improved on many fronts. This includes the following: (i) enhance the business continuity plan to ensure that critical information technology systems can resume operations within two hours following wide scale disruptions, and is enabled to complete settlement by the end of the day; (ii) monitor and publicly disclose systems availability against the target of 99 percent; (iii) conduct a comparative risk analysis of the secondary site, which should be located at a geographical distance from the primary site that has a distinct risk profile; (iv) increase the frequency of business continuity testing, including tests between participants and the disaster recovery relocation site; (v) analyze scalable capacity, which should be adequate to handle increasing stress volumes; and (vi) identify and establish oversight expectations for critical service providers located in Bahrain.
- **Access and tiered participation.** Due to high concentration in the payments system, concentration risks should be managed by identifying indirect participants or users responsible for a significant proportion of transactions. Membership to such indirect participants or users could be further considered, but subject to appropriate risk management criteria.

The assessment also suggests that authorities' responsibilities are broadly or partly observed.

The mission recommends the following: (i) establish and publicly disclose clear criteria for identifying FMIs; (ii) enhance the powers and resources for discharging oversight responsibilities by

strengthening the legal basis, separating further oversight and operational duties, staffing vacancies, and developing appropriate succession plans and training programs; (iii) develop a policy document to clearly define and disclose the regulatory, supervisory, and oversight policies of the CBB with respect to all FMIs in Bahrain; (iv) formally adopt the Principles for FMIs by the Board, consistently apply the international standards for all FMIs in a time-bound plan, and identify and establish oversight expectations for critical service providers located in Bahrain; and (v) expand cooperation with overseas authorities to promote the safety and efficiency FMIs.

INTRODUCTION

1. This report contains the assessment of central bank FMIs and the responsibilities of authorities in Bahrain.¹ CBB FMIs includes the RTGS system and the SSS system for government securities, which is also a CSD. The assessment does not cover the payment and securities settlement systems operated by the private sector. The assessment was undertaken in the context of the IMF's Report on the Observance of Standards and Codes (ROSC) mission to Bahrain in December 2015.² The assessors would like to thank the CBB for the excellent cooperation and hospitality.

2. The objective of the assessment has been to identify potential risks related to FMIs that may affect financial stability. While safe and efficient payment and securities settlement systems contribute to maintaining and promoting financial stability and economic growth, they may also concentrate risk. If not properly managed, such FMIs can be sources of financial shocks, such as liquidity dislocations and credit losses, or a major channel through which these shocks are transmitted across domestic and international financial markets.

3. The scope of the assessment includes the RTGS and SSS systems and the CBB, which is the authority responsible for their oversight and supervision. The RTGS system is assessed using 18 of the 24 principles that are generally applicable for payment systems under the CPMI-IOSCO Principles for FMIs. The SSS system and CSD are assessed using 21 of the 24 principles of the new international standards.³ The CBB is also assessed against Responsibilities A to E. As the RTGS and SSS systems are technically integrated, the assessment is presented as one for ease of presentation and also because both FMIs are operated, overseen, and used by participants as one seamlessly integrated system.

4. The methodology for the assessments was derived from the CPMI-IOSCO PFMI Disclosure Framework and Assessment Methodology of December 2012. Prior to the mission, the CBB completed self-assessments for the RTGS and SSS systems and authorities' responsibilities against the PFMI, and the Questionnaire on FMIs in Bahrain. Relevant laws, CBB Annual Reports, CBB Financial Stability Reports, and CBB RTGS and SSS regulations and business operating guidelines were reviewed. The assessors had thorough discussions with CBB officials from various directorates and units and met representatives from commercial banks and Bahrain Bourse (BHB).

¹ Bahrain's payment and securities settlement systems were earlier assessed in the FSAP of 2005, which recommended measures to address legal and financial risks. This included: (i) passing the CBB Law with refinements to provisions on payments and settlements; (ii) requiring that CBB credit in the payment system be fully collateralized; and (iii) strengthening the current legal framework, especially with respect to explicit provisions on assets pledged as collateral and the protection of custodian arrangements in event of bankruptcy.

² The assessors were Tanai Khiaonarong (IMF) and Raymond Bo (Hong Kong Monetary Authority).

³ Due to the particular institutional and structural characteristics of the SSS system, Principle 10 (Physical Deliveries) was assessed as not applicable as all government securities in the CSD/SSS system are in scripless form with no physical delivery.

OVERVIEW OF PAYMENT, CLEARING AND SETTLEMENT LANDSCAPE

A. Description of Landscape

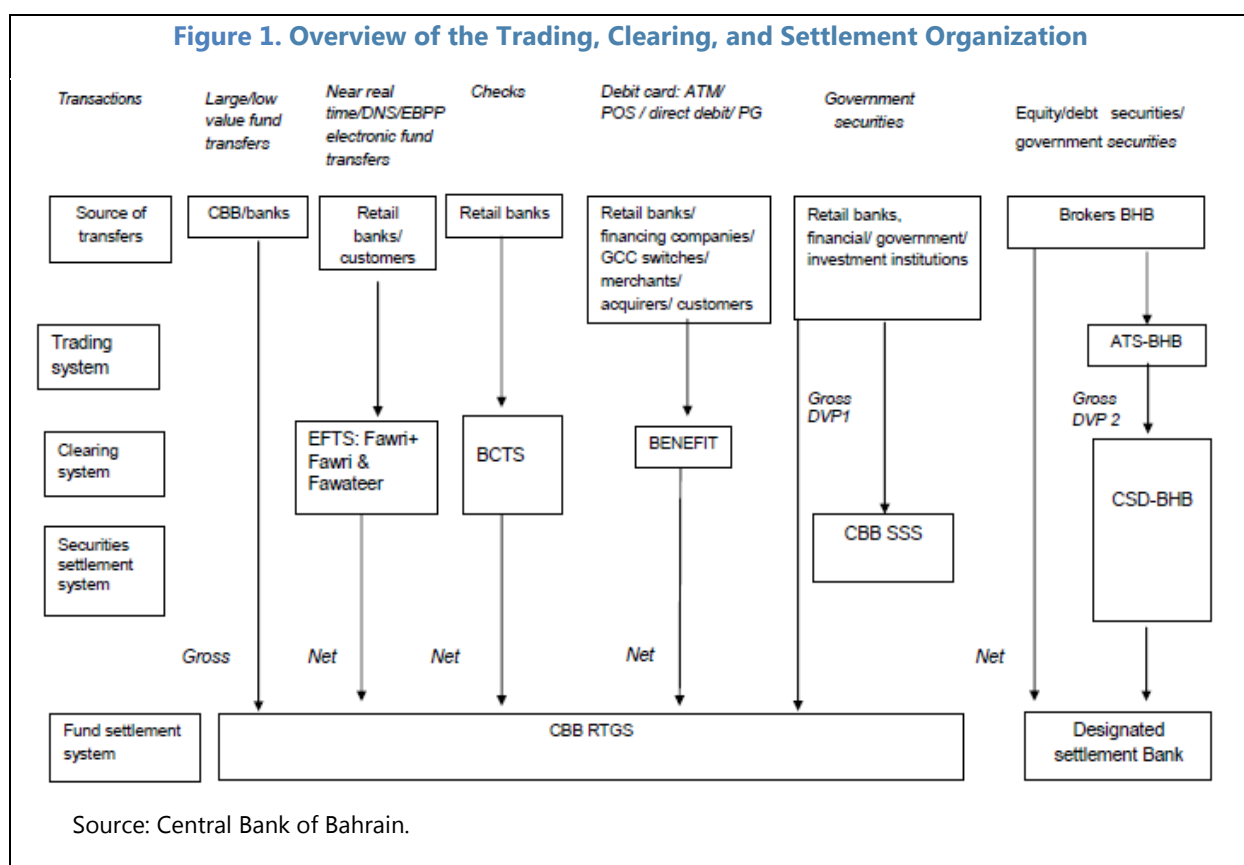
5. There are six FMIs located in Bahrain (Figure 1). As identified by the authorities, this includes four payment systems and two securities settlement systems that function as central securities depositories (CSDs). There are no central counterparties or trade repositories. The FMIs and their key features are as follows:

Payment Systems

- **Real Time Gross Settlement (RTGS) System.** The RTGS system settles high value interbank payments and customer payments individually in real time. Participants include 28 direct members that are licensed retail banks with membership in the Society for Worldwide Interbank Financial Telecommunication (SWIFT) network and the SSS system, and restricted members comprising of clearing entities permitted to submit multilateral net settlement batches (MNSBs) to the RTGS system. Operational hours on business days are from 8:00 a.m., to 2:07 p.m., The RTGS system is integrated with the SSS.
- **Bahrain Cheque Truncation System (BCTS).** The BENEFIT Company (TBC) operates this system to clear checks based on their images. Customers who deposit checks at their banks before 11:30 a.m., on a business day receive check proceeds on the same day by 3:00 p.m.
- **Bahrain Electronic Network for Financial Transactions (BENEFIT).** The TBC also operates BENEFIT, mainly providing debit card based transactions. BENEFIT allows bank customers in Bahrain to make the following types of transactions: (i) cash withdrawals by bank customers in Bahrain and from other Gulf Cooperation Council (GCC) countries at any bank ATM in Bahrain and any other GCC member country (participating in the GCCNET shared ATM services); (ii) debit card transactions at point of sale (POS) terminals in Bahrain and in other GCC member countries (participating in the GCCNET shared POS service); (iii) direct debits; (iv) online e-commerce debit card transactions through the Payment Gateway (PG).
- **Near Real-Time Electronic Fund Transfer System (EFTS).** The EFTS enables a bank or a customer to make account-to-account near real time fund transfers to a customer of another bank within 30 seconds (Fawri+). Two other services are offered, including deferred batch payments (Fawri) and electronic bill presentment and payment (Fawateer), which clear and settle multiple times during the banking hours of a business day. The EFTS was launched on November 5, 2015.

Securities Settlement Systems and Central Securities Depositories

- Scriptless Securities Settlement (SSS) System.** The SSS system is operated by the CBB and settles primary and secondary market government securities transactions (issued by the CBB in scripless form) in real time on DVP 1 basis through its seamless integration with the RTGS system. There are 28 direct participants, including licensed retail banks (both conventional and Islamic), the CBB, and BHB. There are 17 indirect members, comprising of pension funds, insurance companies, international government institutions, local and foreign financial and investment institutions, and wholesale banks. The SSS system also acts as a CSD for government securities issued by the CBB in scripless form. It records the government securities holdings of direct members, and at the aggregate level, those of their customers and holdings of indirect members.
- Central Securities Depository of Bahrain Bourse (CSD-BHB).** The CSD-BHB acts as a centralized depository for dematerialized or immobilized securities (i.e. equity and debt securities). It clears and settles electronically on a DVP 2 basis the securities related transactions (including government securities) traded at the Automated Trading System (ATS) on T+2. Since January 2015, the CBB has provided the allotment of government securities for retail investors through BHB at primary issuances/auctions. The CSD-BHB has also acted as a centralized depository for government securities purchased in the primary market by retail investors through BHB and listed on BHB.



B. Real-Time Gross Settlement System

6. The CBB RTGS system is systemically important and has established arrangements to manage financial and operational risks. Apart from handling large-value interbank and customer payments, it settles the net clearing obligations from the two retail payment systems privately operated by the TBC. As of 2014, the total value of transactions settled was BD 63 billion, which was around 5 times of GDP. The average daily value of RTGS transactions was BD 289 million at end-August 2015. Transactions are processed and settled continuously and irrevocably in real-time. Final settlement of financial obligations between participants is executed by entries to their settlement account held at the CBB. Credit and liquidity risks are managed for participants as transactions are settled (subject to funds availability) on a gross basis, in real time, in central bank money, and with finality. RTGS participants have access to intraday credit (IDC), which is fully collateralized against government securities held in the SSS system and BD deposits. Liquidity management is also facilitated by a gridlock mechanism. To encourage the early submission of payment instructions, RTGS transactions are charged with an ascending fee schedule. Operational disruptions are managed with measures to ensure high system availability, while the disaster recovery relocation (DRR) site or near relocation area (NRA) helps to ensure business continuity.

C. Scripless Securities Settlement System

7. The CBB SSS system serves as the settlement system for government securities as well as a centralized securities depository and is systemically important. The SSS system provides an electronic platform for the settlement of primary and secondary market transactions of government securities. Through its seamless integration with the RTGS system, the SSS system provides the real time settlement of securities transactions on DVP1 basis. It also enables the CBB to provide short-term liquidity to required direct SSS members through collateralized securities repo (IDC, overnight or Islamic 'repo') against eligible collateral. Apart from direct members, there are also indirect SSS members which administer their SSS accounts in offline mode through the CBB. As of 2014, the total value of transactions settled amounted to BD 7.3 billion, which was around 58 percent of GDP. At end-August 2015, scripless securities held in the system amounted to BD 4.2 billion. For the first eight months of 2015, 3,151 DVP1 transactions with a value of BD 9.1 billion were settled in the SSS system, in addition to 17 free-of-payment transactions worth a total of BD 23.9 million. Settlement risk of securities transactions is minimized through the simultaneous transfer of securities in the SSS system against the respective settlement of the money leg in the RTGS system in central bank money. The SSS system has a business continuity plan (BCP) similar to that of the RTGS system. There are no transaction fees in the SSS system and direct SSS members are required to pay an annual membership fee.

D. Regulatory, Supervisory, and Oversight Structure

8. The CBB has oversight and supervisory responsibilities for FMIs. This is part of its duties as the single regulator for the financial services industry in Bahrain. The CBB and Financial Institutions Law of 2006 empowers the central bank to establish one or more clearinghouses and assign its management to a third party, and to issue regulations regarding the clearing and

settlement of checks and other securities (Part 1, Chapter 6, Article 32). The CBB Law, which was promulgated on September 6, 2006 with the issuance of Decree No. 64, established the CBB as the successor to the Bahrain Monetary Authority. The CBB has powers to issue regulations to payment service providers and participants to ensure that they operate in compliance with sound principles. The CBB Law also expanded the range of powers to the CBB, including the regulation of the capital markets, the offering of securities, and close-out netting due to market contract, for example.

9. CBB FMIs are governed by membership regulations and business operating guidelines.

This includes the following: (i) RTGS (Membership) Regulations of 2007, (ii) RTGS (Membership) Business Operating Guidelines of 2007; (iii) SSSS (Membership) Regulations of 2007, and (iv) SSSS (Membership) Business Operating Guidelines of 2007. Regulations establish their management (supervision, governance structure), membership rules, general duties, and miscellaneous provisions. Business operating guidelines provide details such as the types of membership, accounts, transactions, communication procedures and standards, operational hours and sessions, settlement, IDC facility, gridlock resolution and queuing mechanisms, tariffs, and system administration.

10. The CBB also has oversight and supervisory responsibilities over payment and securities settlement services operated by the private sector.

The BCTS and ATM Clearing, which are operated by TBC, are subject to the directives, regulations, terms and conditions imposed by the CBB. The BHB, which operates as a self-regulatory organization, is subject to the approval of the CBB in addition to the provisions of the CBB Law, other relevant laws, CBB regulations (including the CBB Rulebook, regulations, directives and rules), and operating rules of each system. The CBB's supervision of licensed clearing, settlement and central depository systems consists of on-site and off-site supervision. The purpose is to ensure compliance by the licensed clearing, settlement and central depository systems with CBB requirements stipulated in the Clearing, Settlement and Central Depository Module of CBB Rulebook Volume 6.

11. CBB FMI oversight and supervisory functions are organized under two separate directorates.

The Banking Services Directorate (BSD), which reports to the Executive Director of Banking Operations (EDBO), carries out the functions of payment and securities settlement systems operations and oversight. The Payments Committee (PC), which is appointed by the CBB Governor and chaired by the EDBO, is responsible for regulatory and developmental work. The CBB PC comprises of members from the BSD and the Information Technology Directorate (ITD). It can appoint technical committees or invite any person to attend meetings to seek their opinion. The Capital Markets Supervision Directorate (CMSD) oversees and supervises systems relating to non-government securities (markets, securities exchanges, trading, clearing, settlement and depository). The licensing of payment service providers relating to financial institutions and capital markets fall under the CMSD. This includes the BHB CSD. The CMSD's Market Surveillance unit oversees BHB.

12. The CBB has adopted the new international standards and are undergoing discussions to strengthen current oversight arrangements.

As of September 18, 2014, the CBB PC reviewed the roles and responsibilities of the BSD, which highlighted concerns on conflict of interest that may arise from the BKS core banking system performing multiple roles such as operator, user, settlement agent, and overseer in the payment area. Furthermore, the PC decided to adopt PFMI standards for

oversight in order to ensure the safety and efficiency of FMIs. The PC has reviewed a concept paper on future developments in the payment system with recommendation to improve the CBB's current organizational setup for carrying out its policy, oversight and supervision more efficiently. This concept paper covered: (i) the reasons for proposing an improvement to the CBB's current payment system oversight and supervision framework; (ii) the proposal to establish an independent FMI Policy, Oversight and Supervision Unit to improve the CBB's policy, oversight and supervision organizational structure; and (iii) the scope of the oversight and supervision of the proposed unit.

SUMMARY ASSESSMENT OF THE RTGS AND SSS SYSTEMS

A. Observance of the Principles

13. The formal assessment suggests that most of the principles are broadly observed, and identifies areas to improve for closer alignment with international standards. The RTGS system observes six principles, broadly observes ten principles, and partly observes two principles (Table 1). The SSS system observes eight principles, broadly observes ten principles, partly observes two principles, and has one non-applicable principle (Table 2). The issues of concern and other gaps or shortcomings, recommended actions, relevant parties, and timeframe are provided.

General organization (Principles 1–3)

14. The legal basis is relatively sound, but finality and netting arrangements require greater legal certainty and protection in primary legislation. Under the CBB Law, the CBB has statutory responsibility and powers to act as a single regulator to ensure the safety and efficiency of the whole financial system, including FMIs. The CBB is empowered to operate, oversee, and regulate the RTGS and SSS systems. RTGS and SSS membership regulations and business operating guidelines, and the respective directives, describe their operational features, membership, CBB duties, membership rights and obligations, collateral arrangements, and settlement finality. The CBB has disclosed the legal basis to relevant stakeholders and has taken measures to obtain feedback if material changes are made to the governing rules. However, there are potential legal risks. It cannot be ruled out that a transaction settled in the RTGS and SSS systems can be revoked by a court order in the event of insolvency of a participant. Risk management measures to address participant defaults in deferred net settlement systems (BCTS, BENEFIT, and EFTS) also need further protection.⁴ According to international best practices, greater legal certainty could be achieved with the

⁴ There are several types of netting arrangements used in the market that may be relevant to an FMI. Some types of arrangements net payments or other contractual obligations resulting from market trades (or both) on an ongoing basis, while others close-out payments or obligations when an event such as insolvency occurs. There are a number of legal structures for these types of netting arrangements. An FMI may bilaterally net its obligations with each participant, facilitate the bilateral netting of obligations between participants, or provide for the multilateral netting of obligations.

adoption of an explicit law on settlement finality⁵ to empower authorities to designate payment systems and fully protect finality and netting arrangements, and elimination of ‘zero-hour rules’ in insolvency.⁶ Elimination of such rules in insolvency law could also prevent the reversal of payments that appears to have been settled in a payment system. Achieving greater legal certainty for settlement finality and netting arrangements could also be established in central bank law.⁷ The mission recommends the following: (i) seek independent legal opinion on the legal certainty for finality and netting arrangements; and (ii) strengthen the legal underpinnings for payments and securities settlement systems in primary legislation to protect settlement finality and netting arrangements.

15. Governance arrangements are clear and transparent, but gaps remain in the roles and responsibilities of the Board and management, and representation in the PC. The Governor has an obligation to present a report on CBB operations to the Board within three months following the end of each financial year. The Governor receives quarterly reports on the performance of FMI from the EDBO, which is submitted by the BSD. Internal and external auditors carry out audits of RTGS and SSS operations. The PC meets frequently to discuss various issues relating to risk management, business procedures, and other matters. When the PC intends to propose any change to CBB policies relating to FMIs, it carries out relevant studies, surveys, and consultations with stakeholders (participants and operators) and the banking association before formulating regulations and policies which may have a major impact on them. Although governance arrangements are well established, reporting to the Board appears to focus on the RTGS and SSS performance in terms of transaction volume and values. Some senior officials have been assigned to additional duties other than FMI oversight and supervision responsibilities. As of December 20, 2015, the position of Deputy Governor remained vacant, while the CBB Annual Report for 2012 and 2013 has not been publicly disclosed. FMI risks analysis also appears to be limited both in scope and depth. The mission recommends the following: (i) report risks relating to the RTGS/SSS systems on a quarterly basis to the CBB Board. This should cover legal, credit, liquidity, operational, and other related risks; (ii) develop a staff succession plan to ensure that the appropriate experience and mix of skills are available to discharge operational and risks management responsibilities for FMIs; and (iii) broaden membership in the PC to include representatives from legal, capital markets supervision, and financial stability, and retail banking supervision directorates.

16. Risk management measures are contained in various technical documents, which could be improved with the development of a risk management framework for comprehensively

⁵ For example, see EU Settlement Finality Directive. The CBB Financial Stability Reports have discussed the need for an overarching Payment Systems Act for Bahrain since July 2007.

⁶ In the context of payment systems, “zero-hour rules” make all transactions by a bankrupt participant void from the start (“zero hour”) of the day of the bankruptcy (or similar event). In an RTGS system, for example, the effect could be to reverse payments that have apparently already been settled and were thought to be final. In a deferred net settlement system, such a rule could cause the netting of all transactions to be unwound. This could entail a recalculation of all net positions and could cause significant changes to participants’ balances.

⁷ For example, see the Reserve Bank of New Zealand Act.

managing legal, credit, liquidity, operational, and other risks. The broad risk management framework comprises of the CBB Crisis and Incident Management Plan, CBB BCP, and CBB Recovery Strategy document. Risk management policies, procedures and systems are further stated in RTGS and SSS membership regulations, business operating guidelines, and directives. The PC reviews issues and makes recommendations to the Governor and monitors and implements CBB decisions. While the reporting of RTGS and SSS performance with respect to transaction volumes and values to the Governor and through the Financial Stability Report is clear, this is less so for risk-related and oversight issues that could have implications on safeguarding financial stability and public confidence.⁸ The mission recommends the following: (i) develop a comprehensive risk management framework for the RTGS/SSS systems; and (ii) review the material risks to the RTGS/SSS systems from other entities (e.g., EFTS, BHB, GCC, settlement banks, critical service providers) as a result of interdependencies and develop appropriate risk-management tools to address potential risks, and foster closer cooperation among the relevant Directorates

Credit risk, collateral, and liquidity risk (Principles 4–5 and 7)

17. Credit risk is managed with the use of high quality collateral, but exposures remain.

Counterparty credit risk arising from CBB short-term liquidity provisions through IDC/overnight repo in the course of providing payment and securities settlement services is mitigated through the use of high quality local government securities and BD deposits held with the CBB as eligible collateral. However, better protection against potential credit risk can be achieved by adopting a haircut policy for such securities repo transactions. The CBB has an established haircut policy developed in accordance with Basel standards. However, no haircut is applied to such securities repo transactions conducted between the CBB and RTGS members for payment and securities settlement purposes as commonly practiced by central banks in other jurisdictions. The size of IDC/overnight repo conducted was around BD 2.21 billion for the first 9 months of 2015 and generally between BD 1–2 billion annually for 2010–2014). The mission recommends the following: (i) review the credit risk management framework, and (ii) apply appropriate haircuts to IDC and overnight repos conducted between the CBB and RTGS direct members.

18. Collateral of high quality is only accepted for securities repo transactions, but the current policy is to apply no haircut. To better align with the requirements of the PFMI standards and the practices of central banks in other jurisdictions, the CBB should consider applying a conservative haircut, especially since such policies have already been well established by the CBB in accordance with Basel standards. While inactive government securities secondary market activities makes it difficult to employ a meaningful valuation policy, mark-to-market methodology, or concentration limits for the collateral taken, the CBB should consider reviewing these practices periodically as the securities market evolves and develops. The mission recommends the following: (i) review the credit risk management framework, and (ii) apply appropriate haircuts to IDC and overnight repos conducted between the CBB and RTGS direct members.

⁸ CBB Financial Stability Reports have discussed risk issues in payment systems from June 2007 to June 2010, but did not cover them from February 2014 to August 2015. The reports are not publicly available for 2011 to 2013.

19. Liquidity risk is well managed under normal conditions, but should be tested against potential stress scenarios. A sound stress testing program with robust stress scenarios should be put in place to better identify, measure, and monitor potential liquidity risk to the systems, especially during times of market stress such as default of the largest RTGS participant. While current tools such as short-term liquidity provision through automatic IDC/overnight repo, gridlock detection, and queuing of transactions help address temporary liquidity risk and pressures in the payment and securities settlement systems, potential liquidity risk exposure during times of stress is not known without a sound stress testing program with robust stress scenarios. The need is more urgent for the RTGS system given its much bigger transaction value (around BD 63 billion in 2014, almost 5 times of GDP), and greater concentration in activity by the top users of the system (including the top 5 participants, which account for about 70 percent of transaction values). The mission recommends the following: (i) stress test the RTGS/SSS systems, including the default of the largest participant and affiliates; (ii) establish and monitor throughput rates; (iii) analyze and report on a regular basis the share of liquidity usage in the RTGS system from core banking accounts, IDC, and incoming payments; and (iv) adopt tools to monitor intraday liquidity flows to assess the sufficiency of liquidity, particularly during a stressed event.⁹

Settlement (Principles 8–10)

20. RTGS transactions are settled in real time, on a gross basis, and with finality and irrevocability. SSS transactions are based on DVP1, which ensures that securities and funds are settled simultaneously on a gross basis with finality. While finality and irrevocability are established in membership business operating guidelines, greater legal certainty is required in primary legislation. It cannot be ruled out that a transaction settled in the RTGS and SSS systems can be revoked by a court order in the event of insolvency of a participant. The mission recommends the following: (i) seek independent legal opinion on the legal certainty for finality; and (ii) strengthen the legal underpinnings for payments and securities settlement systems in primary legislation to protect settlement finality.

21. Money settlements are conducted in central bank money. The SSS system settles the fund leg of securities transactions in the RTGS system on DVP1 basis or through pre-funded clearing accounts in the BKS core banking system, as the case may be, using central bank money. Comparatively, the CSD-BHB does not use central bank money, which could be considered where practical and available to limit settlement bank risk-related losses.

22. The SSS system has a scripless feature and involves no physical delivery of securities. The SSS system provides settlement and depository services for government securities, which have all been issued in scripless form or dematerialized since June 2007.

⁹ For example, see BCBS (2013) Monitoring Tools for Intraday Liquidity Management, April; Ball A, E Denbee, M Manning, and A Wetherlit (2011) Intraday Liquidity: Risk and Regulation, Financial Stability Paper No. 11, Bank of England, June.

CSDs and exchange-of-value settlement systems (Principles 11–12)

23. The CSD has appropriate rules and procedures for safekeeping and transferring securities, and ensuring the integrity of securities issues. The SSS system serves as a CSD of government securities and records the holdings of direct SSS members, their retail investors (at aggregate level), and for indirect SSS members.

24. Principal risk is minimized by real time settlement of securities transactions based on DVP1 through the seamless integration of the SSS and RTGS systems. Settlement of the securities leg of transactions take place in the SSS system simultaneously upon the settlement of the funding leg in the RTGS system, or through pre-funded clearing accounts in the BKS core banking system in the case of indirect SSS members. This mitigates principal risk of securities transactions.

Default management (Principle 13)

25. There are established participant-default rules and procedures, which would be more effective with greater legal certainty for finality in primary legislation and precise with regular reviews and testing. The RTGS and SSS systems settle funds and securities transactions in real time, on a gross and DVP1 basis, and subject to funds availability. Default procedures would be the suspension or termination of the defaulted member in consultation with the respective supervision directorate. The mission recommends the following: (i) seek independent legal opinion on the legal certainty for finality; (ii) strengthen the legal underpinnings for payments and securities settlement systems in primary legislation to protect settlement finality and netting arrangements; and (iii) improve default procedures through regular reviews and testing with participants and other stakeholders.

General business and operational risk management (Principles 15–17)

26. General business risk is monitored and managed. The CBB is owner and operator of the RTGS and SSS systems, which are managed to cover their operating costs on a not-for-profit basis. The CBB periodically reviews the charges of both systems. Any potential business risk is escalated to the PC with proposals for improvements.

27. Custody risk is minimal and no investment risk is involved. As the RTGS and SSS systems are owned, operated and overseen by the CBB, the funds and securities under custody are subject to the robust accounting practices, safekeeping procedures, and internal control measures of the CBB. This also ensures CBB and other system participants' prompt access to their assets, while eliminating risk exposure arising from the use of custodian banks. There is no investment function or activity associated with the payment and securities settlement systems and hence no investment risk is involved. Collateral consists of government securities and BD deposits.

28. Operational risk is well managed, but could be further improved on many fronts. The mission recommends the following: (i) enhance the BCP to ensure that critical information technology systems can resume operations within two hours following wide scale disruptions. The

plan should be designed to enable the RTGS system to complete settlement by the end of the day of the disruption, even in case of extreme circumstances; (ii) monitor and publicly disclose systems availability against target of 99 percent; (iii) conduct a comparative risk analysis of the secondary site, which should be located at a geographical distance from the primary site that has a distinct risk profile; (iv) increase the frequency of business continuity testing, including tests between participants and the DRR site; (v) analyze scalable capacity, which should be adequate to handle increasing stress volumes and to achieve service level objectives; and (vi) identify and establish oversight expectations for critical service providers located in Bahrain.

Access (Principles 18–20)

29. There are publicly disclosed access and participation requirements for the RTGS and SSS systems. The mission recommends a review of the access and participation requirements regularly to ensure that they remain objective, risk-based, and permit fair and open access to the RTGS and SSS systems.

30. There is no tiered participation arrangement for the RTGS system, but tiered participation arrangement is present in the SSS system. At present only retail banks meeting relevant requirements such as SWIFT capabilities are granted direct RTGS membership, and clearing entities are given restricted RTGS membership while all other financial institutions have no membership in the RTGS system. Meanwhile, retail banks are given direct SSS membership while other financial institutions such as pension funds and wholesale banks are given indirect SSS membership. The mission recommends the following: (i) identify indirect participants/users responsible for a significant proportion of transactions processed by the RTGS system and indirect participants/users whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the RTGS system in order to manage the risks arising from these transactions¹⁰; and (ii) consider providing RTGS membership to such indirect participants/users subject to appropriate risk management criteria.¹¹

31. There is an FMI link between the SSS system and BHB. One of the direct SSS members is BHB, which also performs the role of a CSD by acting as a centralized depository for dematerialized and immobilized securities (i.e., equity and debt securities). Through this arrangement, BHB is able to hold government securities listed on the BHB, including those of retail investors participating in government securities issuances through BHB. Risk implications of this arrangement to the SSS system is low as securities settlement takes place in the SSS system in real time based on DVP1, and BHB is subject to the oversight of the CBB.

¹⁰ For example, see Finan K, E Denbee, A Lasosa, and J Sunderland (2013) Tiering in CHAPS, Quarterly Bulletin, Q4, Bank of England.

¹¹ By international practice, RTGS access could include investment banks, insurance companies and pension funds, financial market CCPs, financial market settlement agents, and retail market settlement agents. See Allsopp P, B Summers, and J Veale (2009) The Evolution of Real-Time Gross Settlement: Access, Liquidity and Credit, and Pricing, World Bank Financial Infrastructure Series, February.

Efficiency (Principles 21–22)

32. The RTGS and SSS systems provide efficient and effective payment, securities settlement, and depository services to system participants and their customers. The RTGS and SSS systems are operated efficiently and effectively, and transaction fee or membership fee schemes are also implemented for economic efficiency and cost recovery purposes. The fee levels are reviewed from time to time.

33. The RTGS and SSS systems are based on internationally accepted communication procedures and standards. SWIFT communication network and messages are used to transmit financial information.

Transparency (Principle 23)

34. RTGS and SSS membership regulations, business operating guidelines, and fee schedules are publicly disclosed. RTGS and SSS membership regulations and business operating guidelines clearly state their functionalities, and the roles and responsibilities of the operator and members. The membership regulations and business operating guidelines are disclosed to participants (as written contractual agreements between members and in the CBB website). Subsequent amendments are communicated to each member. Documentation, training, and testing to facilitate participants' understanding of rules, procedures and system changes are provided by the CBB. The mission recommends the public disclosure of responses to the CPMI-IOSCO Disclosure Framework.

Table 1. Ratings Summary of RTGS System

Assessment category	Principle
Observed	9, 12, 15, 16, 21, 22
Broadly observed	2, 4, 5, 7, 8, 13, 17, 18, 19, 23
Partly observed	1, 3
Not observed	
Not applicable	

Table 2. Ratings Summary of CSD/SSS System

Assessment category	Principle
Observed	9, 11, 12, 15, 16, 20, 21, 22
Broadly observed	2, 4, 5, 7, 8, 13, 17, 18, 19, 23
Partly observed	1, 3
Not observed	
Not applicable	10

B. Recommendations for the RTGS and SSS Systems

List of Prioritized Recommendations				
Principle	Issues of Concern and Other Gaps or Shortcomings	Recommended Action	Relevant Parties	Timeframe /1
1, 8, 13	Legal uncertainty for finality in the event of insolvency and netting arrangements.	<p>Seek independent legal opinion on the legal certainty for finality and netting arrangements.</p> <p>Strengthen the legal underpinnings for payments and securities settlement systems in primary legislation to protect settlement finality and netting arrangements.</p>	CBB	Near-Term
2	Roles and responsibilities of the Board and management, and PC representation.	<p>Report risks relating to the RTGS/SSS systems on a quarterly basis to the CBB Board. This should cover legal, credit, liquidity, operational, and other related risks.</p> <p>Develop a staff succession plan to ensure that the appropriate experience and mix of skills are available to discharge operational and risks management responsibilities for FMIs.</p> <p>Broaden membership in the PC to include representatives from legal, capital markets supervision, and financial stability, and retail banking supervision directorates.</p>	CBB	Immediate
3	Comprehensive risk management framework.	Develop a comprehensive risk management framework for the	CBB	Immediate

List of Prioritized Recommendations				
Principle	Issues of Concern and Other Gaps or Shortcomings	Recommended Action	Relevant Parties	Timeframe /1
		<p>RTGS/SSS systems. This should cover legal, credit, liquidity, and operational risks among others.</p> <p>Review the material risks to the RTGS/SSS systems from other entities (e.g., EFTS, BHB, GCC, settlement banks, critical service providers) as a result of interdependencies, develop appropriate risk-management tools to address potential risks. , and foster closer cooperation among the relevant Directorates.</p>		
4, 5	Credit risk exposure to the CBB from the non-application of haircuts for collateral in its IDC and overnight repos with RTGS direct members.	<p>Review the credit risk management framework.</p> <p>Apply appropriate haircuts to IDC and overnight repos conducted between the CBB and RTGS direct members.</p>	CBB	Immediate
7	Liquidity risk from the high concentration of transaction values across five banks.	<p>Stress test the RTGS/SSS systems, including the default of the largest participant and affiliates.</p> <p>Establish and monitor throughput rates.</p> <p>Analyze and report on a regular basis the share of liquidity usage in the RTGS system from core banking accounts, IDC, and incoming payments.</p> <p>Adopt tools to monitor intraday liquidity flows to assess the sufficiency of liquidity, particularly during a stressed event.</p>	CBB	Near-Term
13	Default procedure reviews and testing	Improve default procedures through regular reviews and testing with participants and other stakeholders.	CBB	Immediate

List of Prioritized Recommendations				
Principle	Issues of Concern and Other Gaps or Shortcomings	Recommended Action	Relevant Parties	Timeframe /1
17	Recovery time objective, systems availability, secondary site location, business continuity testing, scalable capacity, and critical service providers	<p>Enhance the BCP to ensure that critical information technology systems can resume operations within 2 hours following wide scale disruptions. The plan should be designed to enable the RTGS system to complete settlement by the end of the day of the disruption, even in case of extreme circumstances.</p> <p>Monitor and publicly disclose systems availability against target of 99 percent.</p> <p>Conduct a comparative risk analysis of the secondary site, which should be located at a geographical distance from the primary site that has a distinct risk profile.</p> <p>Increase the frequency of business continuity testing, including between participants and the DRR.</p> <p>Analyze scalable capacity, which should be adequate to handle increasing stress volumes and to achieve service level objectives.</p> <p>Identify and establish oversight expectations for critical service providers located in Bahrain.</p>	CBB	Near-Term
18, 19	Participation criteria and identification of large indirect participants/users	<p>Review the access and participation requirements regularly to ensure that they remain objective, risk-based, and permit fair and open access to the RTGS and SSS systems.</p> <p>Identify indirect participants/users responsible for a significant proportion of transactions processed by the RTGS system and indirect participants/users whose transaction volumes or values are large relative to</p>	CBB	Near-Term

List of Prioritized Recommendations				
Principle	Issues of Concern and Other Gaps or Shortcomings	Recommended Action	Relevant Parties	Timeframe /1
		the capacity of the direct participants through which they access the RTGS system in order to manage the risks arising from these transactions. Consider providing RTGS membership to large indirect participants/users subject to risk management criteria.		
23	Disclosure of responses to the CPMI-IOSCO Disclosure Framework.	Disclose publicly responses to the CPMI-IOSCO Disclosure Framework.	CBB	Immediate

1/ "Immediate" is within one year; "near-term" is 1–3 years; "medium-term" is 3–5 years.

SUMMARY ASSESSMENT OF AUTHORITIES' RESPONSIBILITIES

A. Observance of the Responsibilities

35. The assessment suggests that authorities' responsibilities are broadly or partly observed. (Table 3). Three responsibilities are broadly observed, including: (i) oversight powers and resources for FMIs; (ii) policies with respect to FMIs; and (iii) adoption and application of the PFMI. Two responsibilities are partly observed, including: (i) the regulation, supervision, and oversight of FMIs; and (ii) cooperation with other authorities. The issues of concern and other gaps or shortcomings, recommended actions, relevant parties, and timeframe are provided for the authorities.

Regulation, supervision, and oversight of FMIs (Responsibility A)

36. The CBB has identified FMIs in Bahrain, but has not clearly defined their criteria. The CBB supervises and oversees all payment, clearing and settlement systems, including systems it operates. Payment, clearing, and settlement services are considered regulated financial services under the broader definition of regulated services under the CBB Law (Article 39). Any person or entity that wishes to own and/or operate a payment, clearing and settlement system or act as a payment service provider is required to obtain a license and/or authorisation from the CBB. The CBB Rulebook issued under the CBB Law provides the regulatory requirements that the CBB licensees as

well as their approved persons are required for compliance. In addition, the CBB Law (Article 32 b, Article 37) provides powers to the Board of Directors (Board) and the Governor to issue regulations for the implementation of the CBB Law. Since the regulations have a general application, the CBB is obliged to consult with interested parties to obtain their feedback before finalizing any regulation. The CBB Governor is empowered by the CBB law (Article 38) to issue directives to the relevant payment service provider(s), approved persons, or registered persons to ensure the implementation of the CBB Law to achieve the CBB's objectives. The mission recommends the establishment of clearly defined and publicly disclosed criteria to identify FMIs that should be subject to regulation, supervision, and oversight. For example, such criteria could consider the following: (i) number of transactions and values; (ii) type of participants; (iii) markets impacted by the system; (iv) market shares; (v) interconnectedness with other FMIs and financial institutions; and (vi) available alternatives to using the FMI at short notice.

Regulatory, supervisory, and oversight powers and resources (Responsibility B)

37. The CBB is the sole regulator of the financial sector and has powers and resources to carry out its responsibilities in regulating, supervising, and overseeing FMIs. Such powers and resources could be further enhanced to effectively discharge these responsibilities. The mission recommends the following: (i) strengthen the legal basis to protect settlement finality and netting arrangements, and designate FMIs that should be subject to oversight and supervision; (ii) separate oversight and operational duties at the directorate level with clear reporting lines to avoid potential conflicts of interest; (iii) develop a staff succession plan to ensure that the appropriate experience and mix of skills are available to discharge operational and risks management responsibilities for FMIs; (iv) staff the vacant positions in the Payment System Policy and Oversight unit with qualified personnel; and (v) introduce FMI-related training courses under the Bahrain Institute of Banking and Finance.

Disclosure of policies with respect to FMIs (Responsibility C)

38. The CBB publicly discloses its policies with respect to the oversight of payment and settlement systems, which should be further improved. The mission recommends the development of a policy document to clearly define and disclose the regulatory, supervisory, and oversight policies of the CBB with respect to all FMIs in Bahrain. This policy document should contain the following: (i) role of the CBB; (ii) regulatory framework; (iii) oversight objectives; (iv) approach to risk management; (v) oversight approach (risk-based approach, international standards, engagement and monitoring, assessing, and inducing change); (vi) potential conflict of interest; and (vii) cooperation with domestic (where applicable) and overseas regulators.

Application of the principles for FMIs (Responsibility D)

39. The CBB has applied the new international standards and should consider formal adoption by the Board. The mission recommends the following: (i) submit the PFMIs to the CBB Board for formal adoption into the legal and regulatory framework with a time-bound plan; (ii) apply the PFMIs to the RTGS/SSS systems and all private sector FMIs consistently with a time-bound plan,

and monitor follow-up actions; and (iii) identify and establish oversight expectations for critical service providers located in Bahrain.

Cooperation with other authorities (Responsibility E)

40. There is development cooperation with overseas authorities with respect to FMIs, which should be expanded to promote their safety and efficiency. The CBB acts as the single financial regulator in Bahrain. However, overseas cooperation would help monitor and manage potential risks that may arise from cross-border FMI links. There have been developments with respect to cross-border linkages of ATMs across the GCC member states with ongoing plans to develop further links between RTGS systems. Moreover, the CBB is dependent on critical service providers which are located in foreign jurisdictions. The mission recommends the following: (i) strengthen cross-border supervisory cooperation with GCC central banks on FMIs; and (ii) develop cross-border supervisory cooperation with overseas authorities for the oversight of critical service providers.

Table 3. Ratings Summary of Authorities' Responsibilities

Assessment category	Responsibility
Observed	
Broadly observed	B, C, D
Partly observed	A, E
Not observed	
Not applicable	

B. Recommendations for Authorities

List of Prioritized Recommendations				
Responsibility	Issues of Concern and Other Gaps or Shortcomings	Recommended Action	Relevant Parties	Timeframe ¹²
A	Criteria for identifying FMIs.	Establish clearly defined and publicly disclosed criteria to identify FMIs that should be subject to regulation, supervision, and oversight by the authorities.	CBB	Immediate
B	Oversight powers and resources for FMIs.	<p>Strengthen the legal basis to protect settlement finality and netting arrangements, and designate FMIs that should be subject to oversight and supervision.</p> <p>Separate oversight and operational duties at the directorate level with clear reporting lines to avoid potential conflicts of interest.</p> <p>Develop a staff succession plan to ensure that the appropriate experience and skills are available to discharge operational and risks management responsibilities.</p> <p>Staff the vacant positions in the Payment System Policy and Oversight unit with qualified personnel.</p> <p>Introduce FMI-related training courses under the Bahrain Institute of Banking and Finance.</p>	CBB	Near-Term

¹² "Immediate" is within one year; "near-term" is 1-3 years; "medium-term" is 3-5 years.

C	Policies with respect to FMIs.	Develop a policy document to clearly define and disclose the regulatory, supervisory, and oversight policies of the CBB with respect to all FMIs.	CBB	Immediate
D	Adoption and application of the PFMI.	<p>Submit the PFMI to the CBB Board for formal adoption into the legal and regulatory framework with a time-bound plan.</p> <p>Apply the PFMI to the RTGS/SSS systems and all private sector FMIs consistently with a time-bound plan, and monitor follow-up actions.</p> <p>Identify and establish oversight expectations for critical service providers located in Bahrain.</p>	CBB	Near-Term
E	Oversight cooperation with other authorities.	<p>Strengthen cross-border supervisory cooperation with GCC central banks on FMIs.</p> <p>Develop cross-border supervisory cooperation with overseas authorities for the oversight of critical service providers.</p>	CBB	Immediate

DETAILED ASSESSMENT OF THE RTGS AND SSS SYSTEMS

Principle 1. Legal Basis	
An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.	
<p>Key Consideration 1 The legal basis should provide a high degree of certainty for each material aspect of an FMI's activities in all relevant jurisdictions.</p>	<p>Material aspects and relevant jurisdictions</p> <ul style="list-style-type: none"> (i) The CBB Law establishes the legal basis for the RTGS system, empowering the CBB to issue regulations on payment systems, settlement of checks, and other securities (Article 32b). (ii) The RTGS System (Membership) Regulations (RTGSMR) of 2007 provide membership rules for the RTGS system. The rules also describe its operations and management for facilitating on-line, real time settlement of government securities transactions (conventional and Islamic securities) denominated in Bahraini Dinar (BD) on the basis of delivery versus payment (DVP1) received from members. (iii) The RTGS System (Membership) Business Operating Guidelines (RTGSMBOG) of 2007 provides details on the functioning and operations of the RTGS system. (iv) The SSS System (Membership) Regulations (SSSMR) of 2007 provide membership rules for the SSS system. The rules also describe its operations and management for facilitating on-line, real time settlement of government securities transactions (conventional and Islamic securities) denominated in BD, on the basis of delivery vs. payment (DvP1), received from the members. (v) The SSS System (Membership) Business Operating Guidelines (SSSMBOG) of 2007 details the functioning and operations of the SSS system. (vi) Undertakings and standing instructions signed between the CBB and members. (vii) CBB directives and circulars issued to member banks for the efficient, secure, and robust operation of the RTGS and SSS systems and enforcement of the provisions of the CBB Law, RTGSMR, RTGSMBOG, SSSMR, and SSSMBOG.

	<p>The RTGSMR, RTGSMBOG, SSSMR, and SSSMBOG are publicly available in the CBB website.</p> <p>Legal basis for each material aspect</p> <p><i>Provisions on rights and responsibilities</i> The RTGSMR (Chapter IV) and RTGSMBOG (Clauses 5, 6, 7) establish the rights and responsibilities of the CBB and RTGS members.</p> <p>The SSSMR (Chapters II, III and IV) and SSSMBOG (Clauses 5, 6, 7) establish the rights and responsibilities of the CBB and RTGS members.</p> <p><i>Provisions on participation requirements</i> The RTGSMBOG (Chapter 2) and RTGSMR (Clauses 8, 9, 10 and 11 of Chapter III) establish the participation requirements for the RTGS system, including categories of members, the procedure for admission as a member, suspension/termination of membership, and resignation by a member.</p> <p>The SSSMBOG (Chapter 2) and SSSMR (Clauses 8, 9, 10, 13 and 14 of Chapter III) establish the participation requirements for the SSS system, including categories of members, the procedure for admission as a member, suspension/ termination of membership and resignation by a member.</p> <p><i>Provisions on novation arrangements</i> Not applicable. The RTGS and SSS systems settle transactions on a gross basis.</p>
	<p><i>Provisions on legal protection for irrevocability and finality</i> The RTGSMBOG (Chapter 7, Clause 2) ensures the settlement finality and irrevocability of RTGS transactions.</p> <p>The SSSMBOG (Chapter 6, Clause 5) ensures the settlement finality irrevocability of SSS transactions. The SSS system uses the DVP1 model for securities settlement. This settles both the securities leg and funds leg of a transaction on a gross basis, with finality of the transfer of securities from the seller's securities account to the buyer (delivery) occurring at the same time as the respective transfer of funds from the buyer's settlement account to the seller settlement account in the RTGS system (payment).</p> <p>The allotment, coupon/return payment and redemption relating to indirect participants are processed in the offline mode. For example, in the case of allotment, the CBB pays from its settlement account in the RTGS system and the securities are credited to the trade account of the indirect member in the SSS System on DVP1</p>

	<p>basis. The indirect member is required to provide the funds in its call/current account before the allotment date. At the point of settlement in the RTGS system, simultaneously, the respective amount is debited from the account of the indirect member in the BKS core banking system¹³ and credited to the CBB settlement account in the RTGS system.</p>
	<p>Provisions on netting arrangements</p> <p>The RTGS System does not use netting and all transactions are settled individually.</p> <p>The SSS System does not use netting and all transactions are settled individually on DVP1 basis.</p>
	<p>Provisions on collateral arrangements</p> <p>The RTGS system settles each transaction individually in central bank funds on gross terms and no settlements are netted. The primary legal basis for collateral arrangements, particularly for repos or IDC, is provided by RTGSMBOG (Chapters 13, 14, and 15).</p> <p>The SSS system uses a DVP model 1 settlement process. Each transaction is settled individually in central bank funds on gross terms and no settlements are netted. Accordingly, the SSS system does not require collateral to be provided by participants in order to ensure settlement. The primary legal basis for collateral arrangements, particularly for repos or IDC is provided by SSSMBOG (Chapters 12, 13, and 14).</p>
	<p>Provisions on rights and interests in financial instruments</p> <p>IDC is fully collateralized with government securities or BD deposits at the CBB. A member who avails IDC has signed an undertaking and a power of attorney, authorizing the CBB to debit its clearing account at the BKS core banking system and credit its RTGS settlement account to settle the IDC. The RTGSMR (Clause 13 of Chapter III) and RTGSMBOG (Clause 10 of Chapter 13) empowers the CBB to take action to suspend or terminate membership of a member that fails to reverse IDC at the end of the day.</p>
	<p>Provisions on repurchase (repo) operations</p> <p>The SSSMBOG (Clause 1 of Chapter 5; Clauses 1, 8, and 9 of Chapter 6; Chapters 13 and 14) specify the rules for members to carry repo transactions and requires settlement of the repo transactions on a DVP basis.</p>
	<p>Provisions on dematerialization of securities</p>

¹³ The BKS System is the core banking system of the CBB, where the CBB provides banking services to banks and non-bank entities, including the government. The RTGS System is directly linked with the BKS System.

	<p>CBB Law (Article 83b) empowers it to issue electronic securities and permits the use of computer data and electronic files as evidence in disputes related to securities, which are subject to the rules and laws of evidence and electronic transactions (Article 96).</p>
<p>Key Consideration 2 An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.</p>	<p>Applicability of the rules The primary legal basis for the RTGS and SSS systems is made up of the CBB Law, RTGSMR, RTGSMBOG, SSSMR, SSSMBOG, undertakings and standing instructions (which are of contractual nature and signed between the CBB and the members, binding them to the regulations and business operating rules).</p> <p>The RTGSMR (Clause 21 on Miscellaneous Provisions) and SSSMR (Clause 21 on Miscellaneous Provisions) state that the CBB can change/amend them. Accordingly, RTGSMR, RTGSMBOG, SSSMR, and SSSMBOG have been updated and amended from time to time by directives and circulars issued by the CBB under the CBB Law. They provide for the legal and regulatory framework within which the operator and participants are required to operate.</p>
	<p>Consistency of rules and procedures with relevant laws The RTGSMR, RTGSMBOG, SSSMR, SSSMBOG, directives, and circulars issued by the CBB and also signed agreements/power of attorney/ undertakings with members are subject to legal clearance from the CBB Legal Unit and/or the Ministry of Legal Affairs (as the case may be). The CBB always refer to the relevant laws in its directives/regulations/rules that form a part of the legal basis of the RTGS and SSS systems.</p>
<p>Key consideration 3 An FMI should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.</p>	<p>The relevant directives and circular are issued to members. As per Article 38 (c) of the CBB Law, the directives are circulated through the means approved by the Governor of the CBB. Once circulated to the intended addressees, the directives become binding.</p> <p>The CBB usually consults the participants before issuing a directive in order to get member comments and suggestions and at the same time help members prepare for the required infrastructure/modifications and internal procedures.</p>
<p>Key Consideration 4 An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not</p>	<p>Enforceability of rules, procedures and contracts The RTGSMR (Chapter 1, Section 2) provides that regulations shall be binding on all RTGS members. The RTGSMR (Chapter 3, Section 13) provide that the CBB may take such steps as it deems necessary including issuing of warning or censure to the member, restricting the use of the RTGS system by the member, and suspension or termination of its membership in the event that the membership has failed to comply with or violated any of the provisions of the regulations of the RTGSMBOG, as amended from</p>

<p>be voided, reversed, or subject to stays.</p>	<p>time to time. This also includes regulations, directives, circulars, orders, notices, instructions and press releases, as may be issued by the CBB in this regard from time to time. Resolutions, directives or decisions of the CBB or of any of its officials, duly authorized in this behalf of the Standing Committee, are also covered. The RTGS system operates only in Bahrain. In the Bahraini jurisdiction, the RTGSMR, RTGSMBOG, regulations, directives are enforceable, as they are issued using wide powers of the CBB under the CBB Law.</p> <p>The SSSMR (Chapter 1, Clause 2) provides that the regulations shall be binding on all the members of the SSS system. The SSSMR (Chapter 3, Clause 13) provide that the CBB may take such steps as it deems necessary including issuing of warning or censure to the member, restricting the use of the SSS system by the member and suspension or termination of its membership in the event that the membership has failed to comply with or violated any of the provisions of the regulations of the SSSMBOG, as amended from time to time and also with such regulations, directives, circular, order, notices, instructions and press releases, as may be issued by the CBB in this regard from time to time including the resolutions, directives or decisions of the CBB or of any of its officials, duly authorized in this behalf of the Standing Committee. The SSS system operates only in Bahrain. All the securities that are issued in, transferred, settled in the SSS system are local government securities issued by the CBB on behalf of the Government of Bahrain. In the Bahraini jurisdiction, the SSSMR, SSSMBOG, regulations, and directives are enforceable, as they are issued using wide powers of the CBB under the CBB Law.</p>
	<p>Degree of certainty for rules and procedures</p> <p>The RTGSMBOG protect the irrevocability and finality of payment and settlement. There have been no precedents for any actions taken by the RTGS system in accordance with its RTGSMR and RTGSMBOG where transactions have been voided, reversed, or subjected to stay orders.</p> <p>The SSSMBOG protect the irrevocability and finality of payment and settlement. Up to August, 2015, there have been no precedent cases that any actions taken by the SSS system in accordance with its SSSMR and SSSMBOG have been voided, reversed, or subjected to stay orders.</p>
<p>Key Consideration 5 An FMI conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.</p>	<p>Not applicable.</p>

Key Conclusions for Principle 1	<p>The legal basis is relatively sound, but finality and netting arrangements require greater legal certainty in primary legislation. The legal basis of the RTGS and SSS systems is clear and enforceable within the jurisdiction of Bahrain, by the CBB as the sole regulator of the financial system and with its wide powers in the CBB Law. Under the CBB Law, the CBB is empowered to operate, oversee, and regulate the RTGS and SSS systems. The RTGSMR, RTGSMBOG, SSSMR, SSSMBOG, and the respective directives describe the operations of the system; membership; duties of the CBB; duties, rights and obligations of members; collateral arrangements; and settlement finality. The CBB has disclosed the legal basis to relevant stakeholders and has also taken measures to obtain feedback if material changes are made to the rules governing the RTGS and SSS systems. Wherever relevant, it has taken measures to educate bank customers (via press releases, brochures).</p> <p>However, it cannot be ruled out that a transaction settled in the RTGS and SSS systems can be revoked by a court order in the event of insolvency of a participant.</p>
Assessment of Principle 1	Partly Observed
Recommendations and comments	Strengthen the legal underpinnings for payments and securities settlement systems in primary legislation to protect settlement finality and netting arrangements.

<p>Principle 2. Governance</p> <p>An 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.</p>	
<p>Key Consideration 1</p> <p>An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations.</p>	<p>CBB Law (Articles 3 and 4) provide for the CBB’s objectives, powers and duties which include, among other things, liaising with the Ministry of Finance and other relevant official bodies for the purpose of drawing and implementing appropriate monetary policies to achieve the Kingdom’s general economic goals, maintaining the stability of the Bahraini currency and the monetary system, and taking appropriate measures to counter adverse local, regional or international economic conditions. CBB Law (Article 3) states its objectives, including: (i) set and implement monetary, credit and other financial sector policies; (ii) provide effective central banking services to the government and financial sector; (iii) develop the financial sector and enhance confidence therein; and (iv) protect the interests of depositors and customers of financial institutions, and enhance the Kingdom’s credibility as an international financial centre.</p>

	<p>The duties of the CBB which are relevant for FMIs include: (i) regulate, develop and license the services stated in Article 39 of the CBB law, including FMIs; (ii) exercise regulatory control over institutions that provide such services; (iii) facilitate and encourage innovation in the FMIs in the financial services industry; and (iv) safeguard the legitimate interests of customers of licensees against risks associated with the financial services.</p> <p>In pursuit of the CBB's objective of ensuring the continued soundness and stability of financial institutions and markets, the Financial Stability Directorate (FSD), conducts regular surveillance of the financial system. The identified areas of concerns and issues in their research and analysis are presented in the Financial Stability Report to the CBB management.</p> <p>The CBB Law empowers the CBB to act as the single regulator of financial services. As per Article 4 of the CBB Law, the CBB has a duty and power to regulate, oversee and develop all financial services (including FMIs); and institutions licensed to provide those services and maintain financial stability. It is also a duty of the CBB to safeguard the legitimate interests of licensed FMIs' customers against risks associated with the financial services industry.</p> <p>Since the CBB Law empowers the CBB to establish and operate an FMI (Article 32) and regulate an FMI as a licensed service (Article 39), it is a duty and responsibility of the CBB to develop and regulate FMIs. As a statutory function under Article 32, the CBB implemented the RTGS and SSS systems. Having considered RTGS and SSS as systemically important payment and settlement systems in Bahrain, the CBB has focused on following international standards, minimizing settlement risks, increasing efficiency of large value interbank bank payments and scripless government securities transaction, meeting stakeholder needs, and safeguarding customer interest.</p> <p>Any person/entity intending to be an FMI is required to obtain a license from the CBB. The CBB Law empowers the CBB to issue the necessary regulations and directives, and to take enforcement measures if a licensee violates the provisions of the CBB Law.</p>
<p>Key Consideration 2 An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant</p>	<p>Governance arrangements The RTGS and SSS systems are owned and operated by the CBB. CBB Law (Article 2) provides for the CBB as follows: (i) to be a public corporate entity; (ii) to have an independent budget, prepared on a commercial basis, and conduct its business according to commercial banking principles; and (iii) to perform its duties independently without being subject to the government</p>

<p>authorities, participants, and, at a more general level, the public.</p>	<p>administrative and financial regulations, and provisions of any other law, which imposes prior controls on its business.</p> <p>CBB Law (Article 5) stipulate that the CBB should have a Board of Directors (Board), comprising of 7 Directors, appointed by a Royal Decree for a renewable term of 4 years. According to Article 8, the Board should supervise the affairs of the CBB, lay down the CBB policies, and exercise powers necessary to achieve the statutory objectives of the CBB. There is an Audit Committee comprising of 3 Board members, for which one represents the Ministry of Finance.</p> <p>The day-to-day management of the CBB is entrusted to the Governor, with ministerial rank, and who is directly accountable to the Board. The Governor is appointed by a Royal Decree for a renewable 5 year term. The Governor may be supported by one or more Deputy Governors (Article 10).</p> <p>The Governor is obliged to present a report to the Board within 3 months, following the end of each financial year, on the CBB's operations, together with a copy of the audited financial accounts of the CBB and the external auditor's report (Article 36). In addition, the CBB's financial operations are subject to review by the National Audit Bureau (Article 2). The technical employee assigned by the National Audit Bureau to audit the accounts of the CBB must be adequately qualified and specialized in the banking business. The internal audit reports on the financial accounts every quarter to the Audit Committee. The Audit Committee then reports to the Board.</p> <p>CBB Law (Article 73) requires the CBB to present regular reports on the operations of the CBB to the Minister of Finance, who is responsible to the parliament for his oversight responsibilities with respect to the activities of the CBB.</p> <p>In addition to the above mechanisms, the CBB also ensures effective internal governance of the organization and its operations through a system of internal committees, supported by documented policies and procedures, particularly the operational manuals of each directorate (which includes a staff code of conduct).</p> <p>Finally, an internal audit and quality assurance, reporting directly to the Audit Committee, provides assurance on internal systems and controls. Internal audit and quality assurance reports on its administrative matters to the Governor.</p>
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	<p>The Governor is responsible for implementing CBB policies and carry out the day-to-day management of the CBB. The Governor has powers (Articles 37 and 38) to issue directives, regulations and resolutions for the implementation of the CBB Law (except such regulations and resolutions which the law clearly states are the responsibility of the Board).</p> <p>The Payment and Settlement Section of the BSD operates the RTGS System. The Monetary Management Section of the BSD operates the SSS System. The RTGS and SSS operations are overseen by the Payment System Policy and Oversight Section of the BSD. The Head of Payment and Settlement Section and Head of Monetary Management Section report to the Director of BSD. The BSD comes under the purview of the EDBO (in charge of Banking Services, Reserve Management, and Currency Issue). The Executive Director is part of the CBB management and reports to the Governor.</p> <p>The BSD reports the performance of the FMIs, including the RTGS and SSS systems, on a quarterly basis to the EDBO and then the Governor. The section of the CBB Annual Report on the projects and activities contains performance of the FMIs. The Financial Stability Report also contains a section on the payments and settlements systems. The CBB Annual Report and the Financial Stability Report are available to the public in the CBB website.</p> <p>The prudential supervision of members (licensees) of the RTGS and SSS systems is carried out by the CBB directorates in charge of supervising retail banks and Islamic financial institutions (and subject to different executive directors).</p> <p>The ITD provides the IT infrastructure, including SWIFT, for the RTGS and SSS systems.</p> <p>The PC is responsible for the implementation of regulations and development of payment and settlement systems. The PC is appointed by the CBB Governor, chaired by the EDBO, and is represented by the following members: (i) Director of BSD; (ii) Director of ITD; (iii) Head of Payment and Settlement of BSD; (iv) Head of IT Planning of ITD; and (v) Project Manager, Payment Systems. The PC's responsibilities include:</p> <ul style="list-style-type: none"> • advising the CBB on policies, strategies, reforms/new initiatives on developing PSS in line with international standards of the Bank for International Settlements;
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- implementing and following up the regulations and measures on developing the PSS;
- following up with the implementation of projects according to technical specifications and the specified timeline;
- carrying out its functions by conducting meetings with the related parties;
- consulting the relevant stakeholders to promote co-operation and consensus building;
- forming working groups (technical and operational) to enable the implementation of PSS projects;
- ensuring adequate training is provided to the banking sector on new PSS;
- preparing the high level progress reports of the projects for the senior management of the CBB during each phase of the project; and
- inviting any other party related to the matters discussed in the meetings.

The PC meets frequently to continuously review risks and efficiency issues as well as steps for further improvement of FMIs. If it seeks to study any particular issue that has an impact on stakeholders of a particular FMI, it can (i) advise the Payment System Policy and Oversight Section to conduct a study, survey, consultation or an inspection and report to the Committee; (ii) appoint a committee representing stakeholders to study and report or support in implementing any proposed move/project; or (iii) invite relevant stakeholders to make a presentation to the PC.

The PC consults the relevant stakeholders and proposes new projects for the coming year to the Governor and monitors the progress of project implementation. It also makes recommendations on policy or any other issues relating to FMIs, including the RTGS and SSS Systems.

As per Chapter II of the RTGSMR and SSSMR, the RTGS and SSS Standing Committee, which consists of representatives of the BSD, ITD and members, meet to discuss on issues and propose any corrective action, if necessary.

The internal auditor and the external auditor annually review the internal controls of the RTGS and SSS systems as a part of the BSD audit. They also review IT applications, including access controls,

	<p>segregation of duties, upgrades, and other areas as part of the ITD audit. The annual internal audit reports are submitted to the Audit Committee while the annual external audit reports are submitted to the Governor.</p>
	<p>Disclosure of governance arrangements</p> <p>CBB Law (Chapter 1) deals with the appointment, powers and duties of the Board of Directors, the Governor and Deputy Governor. The powers, duties and composition of the Standing Committee for the RTGS and SSS systems are clearly laid down in the RTGSMR and SSSMR. The CBB Law, RTGSMR, SSSMR are publicly available in the CBB website. CBB governance arrangements of the CBB are established in the CBB Law.</p>
<p>Key Consideration 3</p> <p>The roles and responsibilities of an FMI's board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.</p>	<p>Roles and responsibilities of the board</p> <p>CBB Law (Articles 6, 7, 8 and 9) state the conditions that Directors are required to meet to hold office, requirements regarding the proceedings of the Board, the powers of the Board, and the conditions under which Board membership may be terminated.</p> <p>CBB Law (Article 8) clearly lays down the powers and responsibilities of the Board stating that "The Board shall supervise the affairs of the Central Bank, lay down its policies and shall exercise all powers necessary to achieve the objectives of the Central Bank as set out in the provisions of this law (the CBB Law)." Article 8 further lays down other powers and responsibilities of the Board.</p> <p>CBB Law (Article 7) deals with the meetings and proceedings of the Board, including a provision that states that: "any member who has a personal interest in any transaction of which the CBB is a party must declare such interest and may not attend the meeting in which the transaction is discussed [Article 7(c)]".</p> <p>CBB Law (Article 6) specifies the conditions that a member has to satisfy. A member should be experienced in the financial services industry and should not hold a position or hold more than 5 percent of the capital of, or voting rights in, any licensee. In addition, a member should not have been declared bankrupt or have any conviction of a crime involving dishonesty.</p> <p>CBB Law (Article 8) stipulates that the board has powers to supervise the affairs of the CBB and lay down policies to achieve the objectives of the CBB. The board's functions do not explicitly refer to functions relating to the payment and settlement area and they are covered under the functions relating to the broader definition of regulated financial services.</p>

	<p>The Board meets every quarter.</p>
	<p>Review of performance</p> <p>The Governor is obliged to present a report to the Board within 3 months following the end of each financial year, on the CBB's operations, together with a copy of the audited accounts of the CBB and the external auditor's report (Article 36). In addition, the CBB's financial operations are subject to review by the National Audit Bureau (Article 2).</p> <p>CBB Law (Article 173) requires the CBB to present regular reports on the operations of the CBB to the Minister of Finance, who is responsible to the parliament for his oversight responsibilities with respect to the activities of the CBB.</p> <p>CBB Law (Article 173b) states: "Without prejudice to the autonomy of the Central Bank in performing its duties and authority pursuant to this law, the Minister shall monitor the Central Bank's adherence to the provisions of this law and the general economic policy of the Kingdom, and the extent of its effectiveness and efficiency in performing its duties. The Minister may request at any time from the external auditor to expand the scope of its audit in relation to any matter relating to the activity of the Central Bank or to investigate any matter within that scope".</p> <p>Article 173(c) states: "Should the Minister find any conflict between the activities of the Central Bank and the provisions of the law or the general economic policy of the Kingdom, or if he finds that the Central Bank is not performing its duties efficiently and effectively, he must object to that and inform the Board. If the Board insists on its opinion, it shall present the matter again to the Minister together with its justifications within a period not exceeding thirty days. The Minister shall in such a case present the conflict to the Cabinet to resolve it by an order issued within a maximum period of thirty days from the date of it being presented to it".</p> <p>In addition to the above mechanisms, the CBB also ensures effective internal governance of the organization and its operations through a system of internal committees, supported by documented policies and procedures, particularly the operational manuals of each directorate (including a staff code of conduct).</p>

	<p>Finally, internal audit and quality assurance, reporting directly to the Audit Committee who then report to the Board.</p> <p>The BSD sends a daily/monthly/quarterly report on the statistics of the RTGS and SSS systems and other FMIs overseen by the BSD to the EDBO. The latter submits a quarterly report on the performance of the FMIs operated and overseen by the CBB to the Governor. This contains performance of FMIs, including transaction volumes and values.</p>
<p>Key Consideration 4 The board should contain suitable members with the appropriate skills and incentives to fulfill its multiple roles. This typically requires the inclusion of non-executive board member(s).</p>	<p>CBB Law (Article 5) specifies that the CBB should have a Board, comprising of 7 Directors (including a representative of the Ministry of Finance), appointed by Royal Decree for a renewable term of 4 years. With the exception of the Governor, all others are non-executive Board members.</p> <p>CBB Law (Article 6) lays down the conditions for membership of the Board and stipulates that a member should be experienced in the financial services industry.</p> <p>In order to ensure that the Board is able to properly fulfil its obligations, CBB Law (Article 7d) states that the Board may seek the assistance of experts and shall invite to its meetings, for consultation without voting rights, any persons whose opinion it wishes to hear on a particular matter.</p>
<p>Key Consideration 5 The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.</p>	<p>Roles and responsibilities of management</p> <p>CBB Law (Article 10) specifies the roles and responsibilities of the Governor and the Deputy Governor(s). Article 10(a) provides that "The Central Bank shall have a Governor of ministerial rank, who shall be responsible for implementing its policies and assume the day-to-day management of its affairs and that the Governor shall be directly accountable to the Board, who shall determine his monthly remunerations".</p> <p>CBB Law (Article 10g) states that "The Governor shall appoint the officials of the Central Bank in accordance with the financial and administrative regulations related to the staff of the Central Bank and shall observe the Bank's requirements of effective operation". The Governor is responsible for daily operations of the CBB. The CBB management team comprises the Governor and 4 executive directors (appointed by the Governor, with the approval of the CBB Board of Directors).</p> <p>The CBB management team, organized as directorates, is in charge of operational activities. The roles and responsibilities of the management, including the executive directors, are clearly stated</p>

	<p>in the operational manual of each directorate, approved by the Governor.</p> <p>The procedures, roles, responsibilities and standards (in addition to the detailed code of conduct set by the CBB) of staff (including director) relating to their day-to-day operations are documented in the BSD Operational Manual. These code of conduct (available in the CBB intranet for staff reference and guidance) include: ethical and professional behaviour; maintaining confidentiality; restrictions on accepting any gifts from organizations in contravention of the CBB staff code of conduct etc.</p> <p>The BSD Operational Manual is usually reviewed once a year, during the fourth quarter and a new version is issued by end January, if necessary.</p> <p>Experience, skills and integrity As the CBB publicly disclosed in its official website, its management has strong academic credentials and experience relevant to the CBB's operations.</p>
<p>Key Consideration 6 The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.</p>	<p>Risk management framework The Board of Directors is responsible to supervise the affairs of the CBB, lay down policies and exercise its powers to achieve the CBB statutory objectives. One of the main objectives is to eliminate risks and ensure monetary and financial system stability (of financial institutions and markets as a financial centre). Accordingly, risk management is an integral part of the general management of tasks and day-to-day operations, particularly reserve management (carried out by the Reserve Management Directorate). The internal auditor and the external auditor annually review the internal controls of the RTGS and SSS systems as a part of the BSD audit. Additionally, they review IT applications, including access controls, segregation of duties, upgrades etc. as a part of the ITD audit. The internal audit findings are reported to the BSD and ITD for their comments and then reported to the Audit Committee.</p> <p>The external auditor reports are submitted to the Governor and are reviewed by the Audit Committee.</p> <p>The potential vulnerabilities in the area of operational risks are identified and addressed in the CBB Crisis and Incident Management Plan, the CBB BCP, and the CBB Recovery Strategy document. The CBB's BCP establishes the risk management framework for critical operations of the CBB, which include ensuring the operation of the RTGS and SSS systems in the event of wide scale operational disruptions. The BCP is tested once a year.</p>

	<p>Authority and independence of risk management and audit functions</p> <p>Under the CBB Law, the Governor, with the approval of the Board, appoints the Chief Internal Auditor and four executive directors. The Chief Internal Auditor and external auditor conduct an audit of the RTGS and SSS systems annually as part of its audit of BSD and ITD and reports directly to the Audit Committee and Governor respectively. The Financial Stability Directorate assesses risks in the payment system and publishes results in the Financial Stability Report.</p> <p>CBB Law (Chapter 7, Articles 33 to 36) refers to the budgeting,, auditing, and approval of CBB accounts.</p>
<p>Key Consideration 7</p> <p>The board should ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.</p>	<p>Identification and consideration of stakeholder interests</p> <p>CBB Law (Article 37) empowers the CBB to issue regulations and resolutions. The CBB consults with interested parties and consider their comments or views before finalizing any such regulations. CBB Law (Article 37d) requires that draft regulations and resolutions be publicized through any suitable means to ensure that the addressees are aware of such regulations and are able to comment on them. Such consultations include reasonable deadlines for receiving comments from the addressees. Such regulations and resolutions become valid after they are published in the Official Gazette and may also be published through any other media, including electronic means, to ensure proper circulation. Consultations are also conducted for changes to the CBB Rulebook.</p> <p>RTGSMR and RTGSMBOG provide for accountability and transparency to members of the RTGS System. SSSMR and SSSMBOG provide for accountability and transparency to members of the SSS system.</p> <p>The Governor has powers under Article 38 of the CBB to issue the necessary directives to ensure the implementation of the CBB Law and any CBB regulations to achieve the objectives of the CBB. Accordingly, the CBB circulates a copy of its directives through the means approved by the Governor to the relevant licensees. Once a directive is circulated to the licensees, the directive become binding.</p> <p>As per Chapter II of the RTGSMR ad Chapter II of the SSSMR, the RTGS and SSS Standing Committee, which consists of representatives of the BSD, ITD and members, meet to discuss on issues and propose any corrective action, if necessary.</p>

	<p>The Director of the ITD acts as a chairman of the SWIFT Closed User Group (CUG), that represent RTGS and SSS member banks convene regular meetings (twice a year and when necessary) to discuss issues if any.</p> <p>Disclosure CBB Law (Article 37) obliges the CBB to consult with interested parties and consider their comments or views before finalizing any regulations and resolutions that have general application (where applicable). Consultation documents are available on the CBB’s website and include both the comments from interested parties and responses from the CBB.</p> <p>Though the CBB is not obliged to consult the members on proposed directives (under Article 38), the CBB, as the operator, provides a reasonable time and opportunity for RTGS and SSS members to express their views and comments on directives on any proposed changes to the RTGSMR and SSSMR.</p> <p>The CBB consults stakeholders (participants and operators) of the payment systems and the Bahrain Association of Banks (BAB) before formulating regulations, policies and regulations on issues which have a major impact on them. In addition, the CBB calls for meetings and/or makes press releases to announce major decisions or new developments/ implementations of payment system projects to the public. The CBB participates as an observer in the board of directors of TBC.</p>
Key conclusions for Principle 2	<p>Governance arrangements are clear, accountable, and transparent, but gaps remain in risk analysis and reporting to the Governor, and representation in the PC.</p> <p>Under the CBB Law, the CBB has statutory responsibility and powers to act as a single regulator to ensure the safety and efficiency of the whole financial system including the FMIs (as one of the regulated financial services). Internal and external auditors carry out audits of the operation of the RTGS and SSS Systems. The PC meets frequently to discuss various issues relating to risk management, business procedures, and other matters. When the PC intends to propose any change to the CBB policies relating to a PFMI, it carries out relevant studies, surveys and consultations among the stakeholders in advance to obtain their feedback. The CBB consults stakeholders (participants and operators) of the payment systems and the BAB before formulating regulations and policies which may have a major impact on them. In addition, the CBB calls for meetings and/or makes press releases to announce major decisions or new developments or implementations of payment system projects to the public.</p>

	Although governance arrangements are well established, reporting to the Governor appears to largely focus on the performance of the RTGS and SSS systems in terms of transaction volume and values. Risks analysis appears to be limited both in scope and depth. The analysis of potential risks, and progress in mitigating them, should be reported on a quarterly basis at regular meetings of the Board.
Assessment of Principle 2	Broadly Observed
Recommendations and comments	Report risks relating to the RTGS and SSS systems on a quarterly basis to the Governor. Develop a staff succession plan to ensure that the appropriate experience and mix of skills are available to discharge operational and risks management responsibilities for FMIs. Broaden membership in the PC to include representatives from legal, capital markets supervision, financial stability, and retail banking supervision directorates.

Principle 3. Framework for the Comprehensive Management of Risks

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

<p>Key Consideration 1 An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.</p>	<p>Risks that arise in or are borne by the FMI</p> <p>The CBB has operational, regulatory, oversight, and supervisory roles with respect to the RTGS and SSS systems. The CBB Law provides the required legal provision to perform these statutory roles. The regulations, directives, and operating rules of the RTGS and SSS systems provide for managing potential risks (credit, liquidity, operational, IT, etc.). Under the RTGSMR (Clause 15 of Chapter IV) and SSSMR (Clause 15 of Chapter IV), the CBB endeavors to ensure the proper operation, control, maintenance, and security of the RTGS and SSS systems, respectively.</p> <p>Irrevocability and finality of RTGS transactions are assured by the RTGSMBOG (Clause 2 of Chapter 7). Any insolvent member as a CBB licensee is immediately required to cease RTGS operations and make any payments (as a regulated service) unless otherwise agreed in writing by the CBB (CBB Law, Article 134).</p> <p>Fully collateralized IDC and repos in the RTGS system against securities holdings with the SSS system are provided by the CBB.</p> <p>The settlement of net clearing obligations (BENEFIT and BCTS MNSB files), which are non-RTGS members, are made against special deposits or balances from their CBB clearing accounts, which helps prevent liquidity pressures for RTGS members.</p>
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	<p>Time block pricing is enforced, where payments submitted late in the day are charged a higher processing fee than those sent earlier. This aims to discourage participants from relying on incoming payments for making outgoing settlements towards the end of the day.</p> <p>The RTGSMBOG and RTGSR provide measures for operational risk management. These potential operational risks are identified and managed as an integral part of operations, with the required IT infrastructure, contingency arrangements and BCP. In addition, the CBB has also directed members to manage their risks in participating in the RTGS system.</p> <p>Risk management policies, procedures and systems</p> <p>Risk management policies, procedures and systems come under the broad framework of the following:</p> <ul style="list-style-type: none"> • The CBB Law, that provides the required legal provision for the CBB to play all its statutory roles; • CBB regulations, directives, guidelines, circulars and operating rules of the RTGS and SSS systems for managing potential risks (credit, liquidity, operational, IT etc.); • The PC that continuously identifies, measures, monitors, proposes measures to manage risk, and follows up on risk management measures; and • The management of operational and IT risks, within the broad framework of the CBB Crisis and Incident Management Plan, the CBB BCP, and the CBB Recovery Strategy Documents to continue RTGS and SSS operations in a disruption or wide scale disaster. <p>RTGS and SSS operations are entrusted to the BSD. Accordingly, the management of potential risks for both FMIs is done as a part of the risk management framework of the BSD. The practices and standards relating to day to day operations are set out in the BSD Operational Manual and it is mandatory for the operators to comply with them.</p> <p>The Operational Manual is usually reviewed once a year and submitted to the EDBO and then to the Governor, for approval.</p> <p>The Payment and Settlement Section and the Payment System Policy and Oversight Section of the BSD monitor the RTGS System. This real-time monitoring helps to (i) identify if transactions are settling smoothly or facing a gridlock; (ii) invoke gridlock</p>
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	<p>resolution mechanisms to settle queued transactions or take appropriate action to handle any settlement issues, if required; and (iii) view queued transactions, IDC usage, rejected messages, etc.</p> <p>The PC, appointed by the Governor with a term of reference, is responsible for continuously assessing, identifying, measuring, monitoring, proposing risk management measures, monitoring of their progress. The PC meets regularly and is chaired by the EDBO and represented by the following members.</p> <p>The IT Steering Committee, chaired by the Executive Director of Corporate Services, reviews the upgrading and improvements for RTGS and SSS related IT infrastructure and business continuity within its broad responsibilities.</p> <p>The BCP Committee, chaired by the Director of ITD, reviews the BCP plan and makes necessary recommendations.</p> <p>The day to day risk management of RTGS and SSS operations come under the regular risk management activities of the BSD and ITD, and is subject to internal and external annual audit reviews.</p> <hr/> <p>Review of risk management policies, procedures and systems</p> <p>The PC reviews, issues, and makes recommendations to the Governor and implements and monitors CBB decisions. The PC and BSD consult members of the RTGS system before issuing a directive or regulation to obtain their comments and suggestions. The PC also helps members prepare the required infrastructure, modifications, and internal procedures.</p> <p>The practices and standards relating to day to day operations are set out in the BSD Operational Manual and it is mandatory for the operators to comply with them. The Operational Manual is usually reviewed once a year and submitted to the EDBO and then to the Governor, for approval.</p> <p>The Financial Stability Directorate (FSD) of the CBB conducts regular financial sector surveillance, also covering the payments and settlement area, keeping a close watch on developments in individual institutions and the financial system as a whole. The FSD submits a semi-annual Financial Stability Report (FSR) covering recent trends, findings, assessments on identified areas of concern which require supervisory and policy attention to the senior management, including the Governor. The FSR is available in the CBB website.</p>
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<p>Key Consideration 2 An FMI should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the FMI.</p>	<p>The RTGSMR, RTGSMBOG, SSSMR, and other directives, specifically require members to have risk management measures. Participants who fail to meet these requirements are subject to penalties.</p> <p>Time-block pricing (2 settlement time bands specified by the CBB in the RTGS system) is used as an incentive to encourage the early submission of payment orders in the day to the RTGS system. Transaction fees are BD 0.400 per transaction settled from 8:00 a.m. to 1:00 p.m., and increase to BD 0.550 per transaction settled from 1:00 p.m. onwards.</p> <p>RTGS members have an online enquiry facility where they can view their payments, manage their liquidity, and take action when their payments are queued (via re-sequencing of payments and/or taking a repo). As a further incentive for monitoring RTGS payments and a deterrent to reduce rejected/cancelled payments, there is a BD 10 penalty for every such payment.</p> <p>Respective members receive an online alert and a SWIFT alert in the case of insufficient funds to settle a net settlement file. RTGS members are encouraged to monitor their payments and take immediate action when required. Additionally, the alert (online and SWIFT) could be sent for all activities in the RTGS and SSS systems to all respective members as required.</p> <p>To encourage members to settle their transactions early, an extension of RTGS-SSS Systems operating hours is granted on the request of a RTGS member by charging a fee of BD 50 per 15 minutes, with a maximum extension of 1 hour.</p> <p>The RTGSMBOG establishes that in the case of frequent recurrence of the reversal/repayment of the outstanding IDC by a member with credit support from the CBB, the member may also be liable for suspension from the RTGS membership. The RTGSMR further provides a list of circumstances where the CBB can suspend/terminate the membership of an RTGS member if the member failed to comply with or violated any of the provisions of the RTGSMR or RTGSMBOG.</p> <p>The fund leg of SSS transactions is given priority in the RTGS system against other fund transfers.</p>
<p>Key Consideration 3 An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks,</p>	<p>Material risks The PC regularly reviews the material risks that the RTGS and SSS systems bears as well as those which could pose on members as well as their customers and investors. The Payments System Policy and Oversight Section collects data on a regular basis and</p>

<p>liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.</p>	<p>conducts surveys to study or assess a particular area of concern and report its findings to the PC.</p> <p>The RTGS system settles its members' payments and fund legs of the government securities related transactions (initiated in the SSS system) in real time and on a gross settlement basis. Settling of an SSS transaction in the RTGS System does not result in any material risk to the RTGS system or its members, as it is the fund leg of the DVP1 transaction.</p> <p>Having recognized the interdependency (i.e. any operational disruptions in the RTGS system could cause inconvenience as well as liquidity and settlement risks to the SSS system and vice versa) the CBB has given equal importance to operational risk management of both FMIs. Any extension of operating hours is usually granted to both RTGS and SSS systems.</p> <p>The CBB provides IDC and repo facilities for RTGS members to manage liquidity. In addition, multilateral net settlement files (MNSB) from the BCTS and BENEFIT are settled in the RTGS system once a day, at 2:00 p.m. and 9:00 a.m., respectively. All BCTS direct participants are members of the RTGS system. The CBB acts as a settlement bank for the indirect participant that is not a member of the RTGS System. The said indirect participant is a licensed retail bank and has an account in the BKS core banking system. The CBB covers its exposure by a deposit placed by the respective indirect participant at the CBB. Such an arrangement is covered by an agreement and the BCTS Directive. In addition, the BCTS does not allow the said indirect participant to exceed the limit imposed by the CBB (equal to the value of its deposit at the CBB) in its check clearing obligations. Therefore, the RTGS system or members do not face any material risks from MNSB files of the BCTS.</p> <p>The RTGS system accommodates a maximum time extension of one hour on the request of participating banks forwarded by the TBC, only for replying to checks, by charging a BD 100 per 15 minutes to such a bank that requested the time extension.</p> <p>The obligations and claims of RTGS members that participate in BENEFIT are settled when the MNSB files of BENEFIT are settled at the RTGS system. Non-RTGS member balances are settled by the CBB in the RTGS system against their balances in their clearing accounts in the BKS core banking system. Since the net clearing obligations of these non-RTGS members are small in value and they are also licensees that maintain balances in their accounts in the BKS core banking system, the credit risk that the CBB bears is minimal. A penalty is imposed on failure of such non-RTGS members in maintaining adequate funds in their clearing accounts</p>
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	<p>in the BKS core banking system. Accordingly, there is no material risk to members of the RTGS system.</p> <p>Furthermore, the RTGS System provides a web browser monitoring facility for member banks to monitor their position online.</p> <p>Regular audits are conducted by the internal auditor and external auditor.</p> <p>Risk management tools</p> <p>The RTGSMR, RTGSMBOG, SSSMR, SSSMBOG and directives provide tools for managing risks. They also provide the business procedures, technical requirements and standards for IT equipment, SWIFT communication, message delivery, etc.</p> <p>The RTGSMR specifies CBB and member duties (Clause 15 of Chapter IV), obligations (Clause 12 of Chapter III) and liabilities (Clause 13 of Chapter III).</p> <p>The RTGSMR (Clause 15 of Chapter IV) and SSSMR (Clause 15 of Chapter IV) establishes that the CBB endeavors to ensure the proper operation, control, maintenance and security of the RTGS and SSS systems, respectively.</p> <p>The RTGSMBOG (Clause 6 and 7 of Chapter 18) and SSSMBOG (Chapter 23) prescribe that members have adequate arrangements in the primary and back-up facility of the RTGS and SSS systems, respectively, with adequate qualified staff, computer facilities, telecommunication facilities arrangements for authentication and security devices and payment system gateway.</p> <p>Since the RTGS and SSS systems are implemented over the SWIFT IP Network, members are required to have a payment system gateway (SWIFT related hardware, software, networking, security and other products) to participate in and have a disaster recovery system for the RTGS system under RTGSMR (Clause 12a) and SSSMR (Clause 12a of Chapter III).</p> <p>The RTGSMBOG (Clause 7) and SSSMBOG (Clause 7 of Chapter 1) require members to have a redundant set of the SWIFT Alliance hardware, software, networking and other products at a remote location (other than the primary site) to meet disaster recovery requirements, as per its Information System (IS) security policy and information system (IS) audit policy. Each member will need to take daily system/data back-up, as per its back-up and recovery policy and restore the same on the disaster recovery system off-line/on-line.</p>
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	<p>The RTGSMBOG (Clauses 4 and 5 of Chapter 18) and SSSMBOG (Clauses 4, 5 and 6 of Chapter 23) require RTGS and SSS members to have the disaster recovery and back-up facility for their payment system gateway with minimal failures and test the same from time to time. In addition, the back-up facility must ensure system availability with an uptime of about 99 percent.</p> <p>The RTGSMR (Clause 18) and SSSMR (Clause 18) empower the CBB to conduct an inspection of the premises of a member to determine whether internal controls and procedures relating to the security of and access to the payment system gateway and to the disaster recovery system, are adequate. If any deficiency in the internal controls and procedures are found, the CBB can direct the member to take immediate steps to rectify the deficiency and inform the CBB in writing of having done so within ten days of the receipt of such direction.</p> <p>The RTGSMR (Clause 13 of Chapter III) and SSSMR (Clause 13 of Chapter III) provide for the CBB to suspend or terminate a member in the following events: (i) failure to comply with or violation of any of its provisions as amended from time to time and also with such regulations, directives; (ii) suspension of RTGS or SSS membership; or (iii) failure to reverse IDC (for RTGS system).</p> <p>The framework for management of risks in the CBB providing IDC and repo in the RTGS against securities holdings at the SSS system and BD deposits at the CBB are provided under the RTGSMR, RTGSMBOG, SSSMR, SSSMBOG, and written undertakings of members. Under the RTGSMBOG (Clause 10 of Chapter 13), the amount of credit provided by the CBB to any member to settle an IDC will be recovered by the CBB along with the penalty/fee, if any, levied by the CBB, from the respective member's RTGS settlement account the next business day through transactions with the highest priority. The member's inability to repay IDC without the help from the CBB will be seriously considered by the CBB and the CBB can suspend such a member from the RTGS membership considering such frequent failures.</p>
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<p>Key Consideration 4 An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information needed for purposes of resolution planning.</p>	<p>Scenarios that may prevent an FMI from providing critical operations and services Providing of critical operation and services, including those of the RTGS System, come within the broad framework of the CBB Crisis and Incident Management Plan, the CBB BCP and the CBB Recovery Strategy Documents to continue RTGS operations in a disruption/wide scale disaster.</p> <p>The CBB BCP has identified disasters that require the movement of the RTGS and SSS operations to the NRA or DRR sites from the primary site.</p> <p>Recovery and orderly wind-down plans Since the RTGS system is operated by the CBB, a full range of options for orderly wind-down is not applicable. It has the powers and resources to provide RTGS (one of its critical services) as a going concern, even though its pricing policy is aimed at recovering maintenance costs, instead of aiming at profits. If the CBB decides to outsource its operations to any licensee, it will consider the winding up process.</p>
<p>Key Conclusions for Principle 3</p>	<p>The broad risk management framework comprises of the CBB Crisis and Incident Management Plan, CBB BCP, and CBB Recovery Strategy document. Risk management policies, procedures and systems are further stated in RTGS and SSS membership regulations, business operating guidelines, and directives. The PC reviews issues and makes recommendations to the Governor and monitors and implements CBB decisions.</p> <p>While the reporting of the performance of the RTGS and SSS systems with respect to transaction volumes and values to the Governor and through the Financial Stability Report is clear, this is less so for risk-related and oversight issues that could have implications on safeguarding financial stability and public confidence.</p>
<p>Assessment of Principle 3</p>	<p>Partly Observed</p>
<p>Recommendations and comments</p>	<p>Develop a comprehensive risk management framework for the RTGS and SSS systems. This should cover legal, credit, liquidity, and operational risks among others. Review the material risks to the RTGS and SSS systems from other entities (e.g., TBC, BHB, GCC, settlement banks, critical service providers) as a result of interdependencies, develop appropriate risk-management tools to address potential risks, and foster closer cooperation among the relevant Directorates. Report risks relating to the RTGS/SSS systems on a quarterly basis to the CBB Board, and improve the analysis of FMI risks in the Financial Stability Report.</p>

Principle 4. Credit Risk

An 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.

Key Consideration 1

An FMI should establish a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing, and settlement processes. Credit exposure may arise from current exposures, potential future exposures, or both.

The RTGS and SSS systems are not CCPs and do not guarantee payments. The CBB is also not counterparty to the payment or securities transactions settled on the RTGS or SSS systems. So the CBB is not exposed to credit risk in this perspective. However, by providing short-term funding through IDC/overnight repo to RTGS members, the CBB is exposed to potential credit risk. Based on its existing credit risk management framework, the CBB manages such risk by accepting only high quality government securities and BD deposits kept with the CBB as collateral for such IDC/overnight repo. Credit risk issues arising from the payment and securities settlement operations are considered by the PC, among other things, during the PC's meeting from time to time.

Key Consideration 2

An FMI should identify sources of credit risk, routinely measure and monitor credit exposures, and use appropriate risk-management tools to control these risks.

The major source of credit risk originates from the provision of short-term liquidity by the CBB to direct RTGS member(s) through securities repo (IDC or overnight). When securities repo is conducted, the CBB takes the face value of collateral equivalent in value to the size of funding provided.

Potential credit risk of counterparty default is also mitigated since direct RTGS members, which are retail banks, are under the supervision of the CBB. Under CBB Law (Article 58) all licensee must notify the CBB immediately of any matter that may affect its financial position or limit its ability to meet its obligations, failure of which will result in fine or other penalty. The CBB Law also provides for the CBB to assume the administration of a licensed bank likely to become insolvent, and any insolvent licensed bank is required to immediately cease making payments using the RTGS/SSS systems unless with the CBB's written agreement.

<p>Key Consideration 3 A payment system or SSS should cover its current and, where they exist, potential future exposures to each participant fully with a high degree of confidence using collateral and other equivalent financial resources (see Principle 5 on collateral). In the case of a DNS payment system or DNS SSS in which there is no settlement guarantee but where its participants face credit exposures arising from its payment, clearing, and settlement processes, such an FMI should maintain, at a minimum, sufficient resources to cover the exposures of the two participants and their affiliates that would create the largest aggregate credit exposure in the system.</p>	<p>Coverage of exposures to each participant The CBB RTGS system covers its potential credit exposures associated with the provision of short-term liquidity via securities repo by requiring such repo to be fully collateralized using assets of high credit quality (i.e. eligible government securities in the SSS system and outstanding BD deposits at the CBB). However, the CBB just takes the face value of collateral equivalent in value to the size of funding provided, without applying any collateral.</p>
<p>Key consideration 4 A CCP should cover its current and potential future exposures to each participant fully with a high degree of confidence using margin and other prefunded financial resources (see Principle 5 on collateral and Principle 6 on margin). 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 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 for 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</p>	<p>Coverage of current and potential future exposures to each participant Not applicable</p> <p>Risk profile and systemic importance in multiple jurisdictions Not applicable</p> <p>Additional financial resources Not applicable</p>

<p>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 for the CCP in extreme but plausible market conditions. In all cases, a CCP should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount of total financial resources it maintains.</p>	<p>Supporting rationale and governance arrangements Not applicable</p>
<p>Key Consideration 5 A CCP should determine the amount and regularly test the</p>	<p>Stress testing Not applicable</p>

<p>sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions through rigorous stress testing. A CCP should have clear procedures to report the results of its stress tests to appropriate decision makers at the CCP and to use these results to evaluate the adequacy of and adjust its total financial resources. Stress tests should be performed daily using standard and predetermined parameters and assumptions. On at least a monthly basis, a CCP should perform a comprehensive and thorough analysis of stress testing scenarios, models, and underlying parameters and assumptions used to ensure they are appropriate for determining the CCP's required level of default protection in light of current and evolving market conditions. A CCP should perform this analysis of stress testing more frequently when the products cleared or markets served display high volatility, become less liquid, or when the size or concentration of positions held by a CCP's participants increases significantly. A full validation of a CCP's risk-management model should be performed at least annually.</p>	<p>Review and validation Not applicable</p>
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<p>Key Consideration 6 In conducting stress testing, a CCP should consider the effect of a wide range of relevant stress scenarios in terms of both defaulters' positions and possible price changes in liquidation periods. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions.</p>	<p>Not applicable</p>
<p>Key Consideration 7 An FMI should establish explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI. These rules and procedures should address how potentially uncovered credit losses would be allocated, including the repayment of any funds an FMI may borrow from liquidity providers. These rules and procedures should also indicate the FMI's process to replenish any financial resources that the FMI may employ during a stress event, so that the FMI can continue to operate in a safe and sound manner.</p>	<p>Allocation of credit losses In accordance with existing documentation such as membership regulation, operating guidelines and contractual agreement covering securities repo transactions between the CBB and its counterparty, the CBB will take possession of the collateral if the counterparty bank is unable to repay the loan when due. This will protect or minimize the amount of credit losses by the CBB.</p> <p>Replenishment of financial resources</p>
<p>Key Conclusions for Principle 4</p>	<p>By providing short-term funding to RTGS members through IDC or overnight repo, the CBB is exposed to counterparty credit risk. This is mitigated largely by taking the face value of eligible collateral equivalent in value to the size of funding provided, without applying any haircut even though the CBB already has an established haircut policy developed based on Basel standards for other purposes.</p>
<p>Assessment of Principle 4</p>	<p>Broadly Observed</p>

Recommendations and Comments	As the CBB already has an established haircut policy based on Basel standards and given the sizeable amount of such securities repo transactions conducted, the CBB may wish to be better align with the PFMI standards and consider applying a haircut for such IDC/overnight repo transactions. The CBB may also review its credit exposure framework related to payment and securities settlement operations to better protect itself from potential credit risk.
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Principle 5. Collateral	
An FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.	
<p>Key Consideration 1</p> <p>An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks.</p>	<p>The CBB provides fully collateralized IDC only to direct RTGS members against eligible collaterals (i.e. tradable government securities and outstanding BD deposits placed with the CBB). The CBB's current policy is to apply no haircut to the collateral taken. Similar policy is applied to Islamic 'repo' (ISIL) which are usually 1-week repo transactions conducted against Sukuk al-Ijara (tradable sale and lease back securities that represent assets owned by the government, issued on a monthly basis with a 6-month maturity).</p>
<p>Key Consideration 2</p> <p>An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.</p>	<p>Valuation practices</p> <p>According to the operating guideline of the RTGS system, the CBB can value tradable government securities and BD deposits (accepted as collateral for IDC) at face value.</p> <p>Due to the inactive secondary market for government securities, the CBB currently accepts the face value of collateral and is not applying any mark-to-market or valuation methodology.</p> <p>Haircutting practices</p> <p>In line with the RTGS system operating guidelines, the CBB can accept BD deposits or government securities as collateral for IDC/overnight repo at face value, with or without any haircut as decided by the CBB. Currently, no haircut is applied for government securities.</p>
<p>Key Consideration 3</p> <p>In order to reduce the need for pro-cyclical adjustments, an FMI should establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions, to the extent practicable and prudent.</p>	<p>The CBB has already established an elaborate haircut and valuation policy in line with Basel requirements, but currently the CBB does not apply any haircut when conducting IDC/overnight repo transactions with direct SSS members to facilitate RTGS payments.</p>

<p>Key Consideration 4 An FMI should avoid concentrated holdings of certain assets where this would significantly impair the ability to liquidate such assets quickly without significant adverse price effects.</p>	<p>While the CBB only accepts high quality and liquid tradable government securities and BD deposits, the CBB has not imposed any limit on concentrated holdings of any type of securities it takes as collateral.</p>
<p>Key Consideration 5 An FMI that accepts cross-border collateral should mitigate the risks associated with its use and ensure that the collateral can be used in a timely manner.</p>	<p>Not applicable. The CBB does not accept cross-border collateral.</p>
<p>Key Consideration 6 An FMI should use a collateral management system that is well-designed and operationally flexible.</p>	<p>Collateral management system design The seamless integration between the RTGS and SSS systems provides the channel through which collateralized lending can be conducted by the CBB to provide short-term liquidity to direct RTGS members if needed.</p> <p>Besides tradable government securities, eligible collateral also consists of outstanding BD deposits placed at the CBB which can be used for IDC are 'swept in' IDC account in the RTGS system at the beginning of the day via an interface according to the standing instruction of the RTGS member.</p> <p>The RTGS system automatically attempt to reverse any IDC, availed of by the RTGS member, against the incoming credits to the member's Settlement Account, during the course of the RTGS business day. Such system feature helps to ensure that IDC or other securities repo are repurchased as soon as funding are available to the RTGS members which have sought short-term funding from the CBB.</p> <p>Operational flexibility The aforementioned features of the collateral management system is performed automatically, using parameters set by the CBB and relevant standing instructions from RTGS members to the CBB. This minimizes the requirement for manpower and manual intervention.</p>
<p>Key Conclusions for Principle 5</p>	<p>The CBB currently does not apply haircuts to collateral taken from the provision of short-term liquidity through IDC or overnight repo, a practice which is in line with its operating guideline for the RTGS system. The amount of collateral taken is based on the face value of the asset, with no daily mark-to-market or any concentration limits.</p>

	In addition, the RTGS system automatically attempt to reverse any IDC, availed of by the RTGS member, against the incoming credits to the member's Settlement Account, during the course of the RTGS business day.
Assessment of Principle 5	Broadly Observed
Recommendations and Comments	<p>The CBB is recommended to apply haircut to the collateral taken when providing short-term liquidity to RTGS members through IDC or overnight repo.</p> <p>The CBB may also consider its mark-to-market practices and valuation methodology in future when the secondary market for government securities expands and activities turn robust. Similarly, concentration limits for collateral may be considered in future if there is a broader range of eligible collaterals for such securities repo transactions.</p>

Principle 7. Liquidity Risk	
<p>An FMI should effectively measure, monitor, and manage its liquidity risk. An 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.</p>	
<p>Key Consideration 1 An FMI should have a robust framework to manage its liquidity risks from its participants, settlement banks, nostro agents, custodian banks, liquidity providers, and other entities.</p>	<p>There is a potential for liquidity risk to arise in a RTGS environment as it settles each transaction individually. To manage such liquidity risk, the CBB provides fully collateralized IDC/overnight repo for direct members. In addition, the RTGS system has a gridlock detection and resolution mechanism (bilateral and multilateral) which is triggered by the system every 30 minutes for settling queued payment transactions. Gridlock can also be triggered manually when the need arises.</p> <p>To reduce liquidity risk resulting from late submission of payments, the CBB has introduced time block pricing where payments submitted late in the day are charged a higher processing fee than those sent early. Furthermore, to encourage banks to better manage their liquidity and monitor their payments online, the CBB has imposed penalties on rejected and cancelled payments.</p> <p>The SSS system settles transactions on DVP1 basis (i.e., the fund leg of each securities transaction is settled trade by trade in the RTGS system). Accordingly, settlement is on gross basis which requires sufficient liquidity for each individual transaction to be settled. For this purpose, the CBB provides short-term liquidity to</p>

	<p>direct SSS members through collateralized intraday/overnight securities repo.</p>
<p>Key Consideration 2 An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.</p>	<p>The RTGS and SSS systems settle transactions in real time subject to funds availability. Various system features such as the following are in place to facilitate the monitoring and settlement of payment transactions:</p> <ul style="list-style-type: none"> • queuing of payment transactions in case participants have insufficient funds in its settlement account and the ability to cancel/re-sequence a queued payment; • gridlock detection mechanism and ongoing monitoring by CBB staff; • provision of short-term liquidity by the CBB through collateralized securities repo; • provision of online enquiry functions and system alerts for RTGS members to monitor and manage their payment flows; and • time block pricing to encourage early input of payment instructions into the RTGS system, and penalty charges as a deterrent to reduce rejected/cancelled payments <p>Staff of the Payment and Settlement Section of the BSD monitors the RTGS system. Staff of the Monetary Management of the CBB monitors transactions and the smooth operation of the SSS system. Direct members have online access to the status of their transactions, including queued transactions, through the SWIFTNet Browser and interactive services.</p>
<p>Key Consideration 3 A payment system or SSS, including one employing a DNS mechanism, should maintain sufficient liquid resources in all relevant currencies to effect same-day settlement, and where appropriate intraday or 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</p>	<p>The RTGS and SSS systems have various system tools and measures to ensure sufficient liquidity is generally available for same-day settlement of transactions. However, at present there is no stress test program with viable stress scenarios in place, which makes it difficult to be certain with a high degree of confidence that there is still adequate liquidity for same-day settlement under extreme but plausible market conditions.</p>

<p>and its affiliates that would generate the largest aggregate payment obligation in extreme but plausible market conditions.</p>	
<p>Key Consideration 4 A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time 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 payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.</p>	<p>Sufficient liquid resources Not applicable</p> <p>Risk profile and systemic importance in multiple jurisdictions Not applicable</p>

<p>Key Consideration 5 For the purpose of meeting its minimum liquid resource requirement, an FMI's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.</p>	<p>Size and composition of qualifying liquid resources The RTGS and SSS systems are owned and operated by the CBB. Any liquidity need from these two systems to pay for the obligations arising from day to day business will be met by the CBB. As for participant's liquidity needs to settle payments or securities transactions of the RTGS and SSS systems, the CBB also provides short-term liquidity to direct RTGS members through collateralized lending in the form of IDC/overnight repo.</p>
	<p>Availability and coverage of qualifying liquid resources The RTGS and SSS systems are owned and operated by the CBB. Any liquidity need from these two systems to pay for the obligations arising from day to day business will be met by the CBB. As for participant's liquidity needs to settle payments or securities transactions of the RTGS and SSS systems, the CBB also provides short-term liquidity to direct RTGS members through collateralized lending in the form of IDC/overnight repo.</p>
<p>Key Consideration 6 An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even</p>	<p>Size and composition of supplemental liquid resources Not applicable. The RTGS and SSS systems are owned and operated by the CBB. Any liquidity need from these two systems to pay for the obligations arising from day to day business will be met by the CBB. As for participant's liquidity needs to settle payments or securities transactions of the RTGS and SSS systems, the CBB also provides short-term liquidity to direct RTGS members through collateralized lending in the form of IDC/overnight repo.</p>

<p>if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.</p>	<p>Availability of supplemental liquid resources Not applicable. The RTGS and SSS systems are owned and operated by the CBB. Any liquidity need from these two systems to pay for the obligations arising from day to day business will be met by the CBB. As for participant's liquidity needs to settle payments or securities transactions of the RTGS and SSS systems, the CBB also provides short-term liquidity to direct RTGS members through collateralized lending in the form of IDC/overnight repo.</p>
<p>Key consideration 7 An FMI should obtain a high degree of confidence, through rigorous due diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.</p>	<p>Use of liquidity providers Not applicable. The RTGS and SSS systems are owned and operated by the CBB. Any liquidity need from these two systems to pay for the obligations arising from day to day business will be met by the CBB. As for participant's liquidity needs to settle payments or securities transactions of the RTGS and SSS systems, the CBB also provides short-term liquidity to direct RTGS members through collateralized lending in the form of IDC/overnight repo.</p> <p>Reliability of liquidity providers Not applicable. The RTGS and SSS systems are owned and operated by the CBB. Any liquidity need from these two systems to pay for the obligations arising from day to day business will be met by the CBB. As for participant's liquidity needs to settle payments or securities transactions of the RTGS and SSS systems, the CBB also provides short-term liquidity to direct RTGS members through collateralized lending in the form of IDC/overnight repo.</p>
<p>Key consideration 8 An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.</p>	<p>The RTGS and SSS Systems are owned and operated by the CBB.</p>

<p>Key Consideration 9 An FMI should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. An FMI should have clear procedures to report the results of its stress tests to appropriate decision makers at the FMI and to use these results to evaluate the adequacy of and adjust its liquidity risk-management framework. In conducting stress testing, an FMI should consider a wide range of relevant scenarios. Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the FMI, include all entities that might pose material liquidity risks to the FMI (such as settlement banks, nostro agents, custodian banks, liquidity providers, and linked FMIs), and where appropriate, cover a multiday period. In all cases, an FMI should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.</p>	<p>Stress test program While the CBB stands ready to provide liquidity to the RTGS and SSS systems in accordance with existing rules, regulations and procedures, there is not yet a sound stress test program for the purpose of liquidity risk management.</p>
	<p>Stress test scenarios While the CBB stands ready to provide liquidity to the RTGS and SSS systems in accordance with existing rules, regulations and procedures, there is not yet any stress test program with robust stress scenarios for the purpose of liquidity risk management.</p>
<p>Key consideration 10 An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default</p>	<p>Review and validation There is not yet a sound stress test program with robust stress scenarios for ongoing review and validation.</p> <p>Same day settlement The RTGS system is owned and operated by the CBB and settles transactions on a gross basis and in real-time during system operating hours. Various system tools and measures are in place to facilitate RTGS members to monitor and manage their payment flows in order to facilitate same day settlement of payment transactions.</p>

<p>among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.</p>	<p>Furthermore, the CBB has ensured settlement of customer transactions that have been initiated at banks before 12:00 p.m. to be credited to the respective customer's account as and when the transaction settles in the RTGS or before 3:00 p.m. In the case of BCTS (the net clearing obligations settle in the RTGS System), presenting banks are required to credit check proceeds to the presenting customer by 3:00 p.m.</p>
<p>Key Conclusions for Principle 7</p>	<p>Replenishment of liquidity resources The CBB imposed transaction fees on RTGS participants and membership fees on SSS participants in part to recover operational and maintenance charges of the CBB for these systems.</p> <p>The CBB, as the central bank as well as owner and operator of the RTGS and SSS systems, stands ready to provide liquidity in accordance with existing rules, regulations, and procedures to ensure sufficient liquidity in the systems. However, no analysis has been performed to assess potential liquidity risk and whether there will be sufficient liquidity under stress scenarios such as the default of a major participant and its affiliates. A sound stress test program with robust stress scenarios is not yet available for the RTGS and SSS systems.</p>
<p>Assessment of Principle 7</p>	<p>Broadly Observed</p>
<p>Recommendations and comments</p>	<p>Stress test the RTGS/SSS systems, including the default of the largest participant and affiliates. Establish and monitor throughput rates. Analyze and report on a regular basis the share of liquidity usage in the RTGS system from core banking accounts, IDC, and incoming payments. Adopt tools to monitor intraday liquidity flows to assess the sufficiency of liquidity, particularly during a stressed event.</p>

<p>Principle 8. Settlement Finality</p>	
<p>An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.</p>	
<p>Key Consideration 1 An FMI's rules and procedures should clearly define the point at which settlement is final.</p>	<p>Point of settlement finality The RTGSMBOG (Chapter 7) states: 'On settlement, the settlement of an RTGS payment transaction will be final and irrevocable'. Payments are settled according to their priority and any queued payments with insufficient funds are cancelled by the RTGS system at the activity cutoff. Members have the option to cancel/re-sequence a queued payment (Chapter 16 of the RTGSMBOG. The RTGSMBOG (Clause 3 of Chapter 8) provides members with the option to re-sequence or cancel a queued payment</p> <p>The SSSMBOG (Clause 5 of Chapter 6) defines the point of settlement finality of securities transactions, which states: 'The SSS</p>

	<p>system will adopt the DVP1 model for securities settlement under the Online Payment Mode [for example, the system settles transfer instructions both for the securities and funds on a trade-by-trade (gross) basis, with final (unconditional) transfer of securities from the seller to the buyer (delivery) occurring at the same time as the final transfer of funds from the buyer to the seller (payment)]. The SSSMR (Clause 12 of Chapter III) defines member obligations to continuously track the settlement of transactions and the need to take necessary action for immediate settlement.</p>
	<p>Finality in the case of links</p> <p>The RTGS system is linked to the SSS system and the BKS core banking system. Under the DVP1 mechanism, the transfers for both securities and funds are settled on a gross basis, with final (irrevocable and unconditional) transfer of securities from the seller to the buyer (delivery) occurring at the same time as final transfer of funds from the buyer to the seller (payment).</p> <p>In the case of settlement of non-RTGS members' net clearing obligations in the two retail payment systems in the RTGS System, the CBB settles from its accounts, with finality, the non-RTGS members' net clearing obligations. The link between the RTGS and the BKS core banking system assures the immediate simultaneous debiting from the clearing account of the non-RTGS member in the BKS core banking system and crediting to the CBB's settlement account in the RTGS system, at the point of MNSB file settlement in the RTGS system.</p>
<p>Key Consideration 2 An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.</p>	<p>Final settlement on the value date</p> <p>The RTGSMBOG (Chapter 6) states: 'The RTGS System will process same-day-value and forward-dated transactions during the operating hours of the RTGS System (i.e. during the relevant operating sessions). Forward-dated/future-dated transactions received will be stored in the RTGS System database and the RTGS System will process such transactions on their respective value dates'.</p> <p>As per the CBB directives issued regarding the RTGS pricing and BCTS, a maximum extension of 1 hour is granted at a charge, for extending the operating hours of the RTGS and SSS systems to accommodate any request from an RTGS member, the TBC, or BCTS participant.</p> <p>As per Clause 2 of the Directive on Customer Transactions in the RTGS system of 2012, banks are required to credit customer payments settled in the RTGS system to the respective customers' accounts as and when they receive the payments in the RTGS system or, in any event, no later than 3:00 p.m. on the same business day.</p>

	<p>Securities transactions are settled continuously on a gross basis during the business hours of the RTGS and SSS systems on the value date. The SSSMBOG (Clause 12 of Chapter 12) describes how real time settlement happens when a SSS member account has sufficient securities holdings.</p> <p>Intraday or real-time final settlement</p> <p>The RTGSMBOG (Chapter 7) states: 'On settlement, the settlement of an RTGS payment transaction will be final and irrevocable'. Payments are settled in real time, according to their priority and any queued payments due to insufficient funds are cancelled by the RTGS system at the relevant activity cutoff (Clause 3 of Chapter 8 of the RTGSMBOG).</p> <p>The SSSMBOG (Clause 12 of Chapter 12) explains the process of real time settlement when the SSS member account has sufficient securities holdings. The sellers' securities relevant to transactions are earmarked in the SSS system and the securities transaction will be processed for final settlement in the RTGS system. Upon receiving the confirmation of payment from the RTGS system, the SSS system immediately settles the securities leg (the seller's securities account is debited and the buyer's securities account is credited). The seller and the buyer immediately receive a settlement advice from the SSS system.</p>
<p>Key Consideration 3 An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.</p>	<p>Payments are settled in real time, according to their priority and any queued payments due to insufficient funds are cancelled by the RTGS System at the relevant activity cutoff. Members have the option to cancel/re-sequence a queued payment (Clause 3 of Chapter 8 of the RTGSMBOG).</p> <p>The SSSMBOG (Clauses 1–3 of Chapter 19) describes the point at which unsettled securities transactions cannot be revoked by a participant as follows:</p> <ul style="list-style-type: none"> • "The members will be allowed to cancel matched transactions pending for availability of securities and future-dated matched SSS transactions (including the closing leg of Inter-bank and Islamic repo transactions) before the transaction settlement date. The completion of the cancellation transaction will result in the status of the transaction being updated to "Cancelled" and no further processing will be allowed for this transaction.' • 'Both the members have to separately submit cancellation requests to the SSS system, which will process the request only if the cancellation requests are matched successfully. Any

	<p>unmatched cancellation requests will be cancelled at system cut-off.'</p> <ul style="list-style-type: none"> • Transactions that have been submitted for funds settlement cannot be cancelled. If the payment leg has been queued and subsequently cancelled by the RTGS system, this will result in a cancellation of the securities transaction.
Key conclusions for Principle 8	<p>RTGS transactions are settled in real time and on a gross basis and are final and irrevocable once they are settled. Any queued payments due to insufficient funds are cancelled by the RTGS System at the relevant activity cutoff. Members have the option to cancel/re-sequence a queued payment.</p> <p>SSS transactions are settled on DVP1, which ensures the settlement of securities and funds simultaneously on a gross basis with finality. Matched transactions pending settlement cannot be cancelled unilaterally and can only be cancelled by both parties involved in the transaction sending the relevant cancellation requests to the SSS system that need to be matched. Any unmatched cancellation requests will be cancelled by the SSS system at the cut-off time on the value date and no further processing is possible for this transaction. Transactions that have been submitted for funds settlement cannot be cancelled. If the payment leg has been queued and subsequently cancelled by the RTGS system, this will result in a cancellation of the securities transaction.</p> <p>While finality and irrevocability are established in membership business operating guidelines, greater legal certainty is required in primary legislation. It cannot be ruled out that a transaction settled in the RTGS and SSS systems can be revoked by a court order in the event of insolvency of a participant.</p>
Assessment of Principle 8	Broadly Observed
Recommendations and Comments	Seek independent legal opinion on the legal certainty for finality. Strengthen the legal underpinnings for payments and securities settlement systems in primary legislation to protect settlement finality.

Principle 9. Money Settlements

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

<p>Key Consideration 1 An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.</p>	<p>Money settlements are conducted in central bank money only and in BD. RTGS members hold settlement accounts in the RTGS System. The fund leg of securities transactions is settled in the RTGS system (direct members having RTGS accounts) and in the BKS core banking system (indirect members) system using central bank money (pre-funded by the indirect member).</p>
<p>Key Consideration 2 If central bank money is not used, an FMI should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.</p>	<p>Not applicable</p>
<p>Key Consideration 3 If an FMI settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, an FMI should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalization, access to liquidity, and operational reliability. An FMI should also monitor and manage the concentration of credit and liquidity exposures to its commercial settlement banks.</p>	<p>Not applicable</p>
<p>Key Consideration 4 If an FMI conducts money settlements on its own books, it should minimize and strictly control its credit and liquidity risks.</p>	<p>Not applicable</p>
<p>Key Consideration 5 An FMI's legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally intraday, in order to</p>	<p>Not applicable</p>

enable the FMI and its participants to manage credit and liquidity risks.	
Key Conclusions for Principle 9	Money settlements are conducted in central bank money. The SSS system settles the fund leg of securities transactions in the RTGS system on DVP1 basis or through pre-funded clearing accounts in the BKS core banking system, as the case may be, using central bank money.
Assessment of Principle 9	Observed
Recommendations and Comments	None

Principle 10. Physical Deliveries	
An 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.	
Key Consideration 1 An FMI's rules should clearly state its obligations with respect to the delivery of physical instruments or commodities.	Not applicable. The SSS System is a scripless securities settlement system and does not deal with physical securities.
Key Consideration 2 An FMI should identify, monitor, and manage the risks and costs associated with the storage and delivery of physical instruments or commodities.	Not applicable
Key Conclusions for Principle 10	The SSS System is a scripless securities settlement system and does not deal with physical securities.
Assessment of Principle 10	Not Applicable
Recommendations and comments	None

Principle 11: Central Securities Depositories

A 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. A CSD should maintain securities in an immobilized or dematerialized form for their transfer by book entry.

Key Consideration 1

A CSD should have appropriate rules, procedures, and controls, including robust accounting practices, to safeguard the rights of securities issuers and holders, prevent the unauthorized creation or deletion of securities, and conduct periodic and at least daily reconciliation of securities issues it maintains.

Safeguarding the rights of securities issuers and holders

The CBB issues government securities in scripless form in the SSS system. The SSS system also performs as an electronic depository, facilitating recording the ownership and transfer of government securities among members. The holdings of direct members (including the CBB and BHB) and indirect members are recorded in the SSS system.

The SSS system provides depository services for government securities holdings of retail investors at two levels as follows:

- *Aggregate level in the SSS system.* The securities holdings are reflected in the customer accounts and non-resident accounts of direct members that act as agents or trustees for their customers' government securities holdings in the SSS system. The CBB directives ensure the legal and beneficial ownership of government securities by customers; and
- *Customer level in the CSD-BHB.* The CSD-BHB acts as a centralized depository for government securities purchased in the primary market, by retail investors via BHB and listed at BHB. Retail investors have the beneficial ownership for government securities.

The CBB as a direct member of the SSS system has a trade account and an IDC account.

Direct members of the SSS system are provided with a trade account and an IDC account for holding their proprietary securities for trade settlement and for IDC with the CBB respectively. In addition, they are provided with a customer account and a non-resident account to hold the securities owned by their resident customers and non-resident customers. Each direct SSS member are required to submit customer holding information to the CBB on a regular basis, and they are provided with intraday or day-end statements showing the activities and latest position of their SSS accounts.

Since January 2015, the CBB provides an allotment of government securities for retail investors through BHB at each primary issuance/auction in an attempt to promote the capital market in Bahrain. As a direct SSS member, BHB can hold on behalf the brokers (and their retail customers) the government securities allotted to successful retail investors who participated

	<p>in the primary issuances through BHB. The CBB has record on the aggregate amount of securities holdings held by the BHB on behalf of the brokers and their customers, while detailed holdings information will be contained in the records of the BHB and the relevant brokers.</p> <p>Indirect SSS members only have a trade account in the SSS system for their proprietary securities. As indirect members do not have online access to their accounts, they have to administer their SSS accounts through the CBB. Day-end statements are provided by the CBB to each indirect SSS members.</p> <p>The SSS system has a database function for outstanding securities and creation of new securities issues. The system will handle securities that have matured automatically. An internal operational manual provides the detail of responsibilities of relevant staff handling the creation of new securities issues in the system.</p> <p>Annual audits carried out by the internal auditor and the external auditor cover security, member administration, application controls, change control, problem management, back-up and recovery, service level agreement monitoring and period end processing, transaction processing, change management, security protocols, data system operations and disaster recovery planning.</p> <p>The BHB operates as a self-regulatory organization (SROs) subject to the approval of the CBB, in addition to the provisions of the CBB law, other relevant laws, CBB regulations (including the CBB Rulebook, regulations, directives, and rules), and operating rules of each system, as approved by the CBB.</p>
	<p>Prevention of the unauthorized creation or deletion of securities</p> <p>The SSS system has a database function for outstanding securities and creation of new securities issues, and the system handles securities that have matured automatically. CBB's internal operational manual details the responsibilities of relevant staff handling the creation of new securities issues in the system. These ensure the proper creation or deletion of securities in the SSS system. Besides, all securities transactions processed by the SSS system have to be matched and are subject to validity checks, and SSS members are provided with end-of-day/intraday statements for information and reconciliation.</p>

	<p>Periodic reconciliation of securities issues</p> <p>The SSS system sends end-of-day statements (MT535, MT536, MT537) to the CBB and direct members for information and reconciliation. Direct members can also download reports directly from the SSS system web browser. The end-of-day statements for indirect SSS members are provided via the CBB. The CBB can also request for statements on behalf of indirect members.</p>
<p>Key Consideration 2</p> <p>A CSD should prohibit overdrafts and debit balances in securities accounts.</p>	<p>The SSSMBOG and SSSMR specify that the SSS system does not allow overdrafts and debit balances in securities accounts. If a member has insufficient securities in its securities account to deliver securities in respect of a transaction, the transaction is placed in a securities queue. Any transaction which remains queued by the system cut-off time is automatically cancelled by the system.</p>
<p>Key consideration 3</p> <p>A CSD should maintain securities in an immobilized or dematerialized form for their transfer by book entry. Where appropriate, a CSD should provide incentives to immobilize or dematerialize securities.</p>	<p>The SSS system maintains securities in scripless form for their transfer by book entry. Since the SSS system was introduced in June 2007, the CBB started issuing all conventional and Islamic government securities in scripless form. All securities which were issued before 2007 were dematerialized.</p>
<p>Key Consideration 4</p> <p>A CSD should protect assets against custody risk through appropriate rules and procedures consistent with its legal framework.</p>	<p>The CBB has issued membership regulations and operating guidelines for the SSS system (SSSMR and SSSMBOG) which set out the rules and procedures for SSS operations and activities, besides entering into contractual agreements with SSS members for the use of SSS services. In-house operational manual covering CSD operations of the SSS system has also been provided to CBB staff operating the SSS system. At day end, the SSS system provides all members with statements for all custody accounts that have holdings and/or transactional activity for information and verification.</p>
<p>Key Consideration 5</p> <p>A CSD should employ a robust system that ensures segregation between the CSD's own assets and the securities of its participants and segregation among the securities of participants. Where supported by the legal framework, the CSD should also support operationally the segregation of securities belonging to a participant's customers on the participant's</p>	<p>The SSS system maintains custody accounts of direct and indirect members, including that of the CBB and BHB.</p> <p>As per the CBB directive issued in 2012, the CBB provides an allotment of government securities at their primary issuance/auction for retail investors through direct member banks and BHB. This is aimed to promote active participation in the government securities market. Government securities are listed at BHB. Retail investors are allowed to buy tradable government securities in the primary market via BHB through brokers. The BHB buys securities in the primary market and records the beneficial ownership of retail investors at the CSD and facilitates trading in the secondary market at the ATS.</p>

books and facilitate the transfer of customer holdings.	<p>SSS direct members have online access to their trade and IDC accounts for holding their proprietary securities for trade settlement and for IDC with the CBB, respectively. In addition, they are provided with a customer account and a non-resident account to hold the securities owned by their resident customers and non-resident customers (as an agent or trustee). Each direct SSS member are required to submit customer holding information to the CBB on a regular basis, and they are provided with intraday or day-end statements showing the activities and latest position of their SSS accounts.</p> <p>Indirect SSS members only have a trade account in the SSS system for their proprietary securities. As indirect members do not have online access to their accounts, they have to administer their SSS accounts through the CBB. Day-end statements are provided by the CBB to each indirect SSS members.</p>
<p>Key Consideration 6 A CSD should identify, measure, monitor, and manage its risks from other activities that it may perform; additional tools may be necessary in order to address these risks.</p>	<p>Besides safekeeping the securities of SSS members and their customers, the SSS system only provides settlement services for securities transactions in the secondary market as well as the primary market.</p> <p>Since the SSS system does not guarantee settlement (not a CCP) nor offer overdraft to its participants, there is little credit, liquidity or market risk arising from such operations. The more relevant type of risk may be operational risk and that is mitigated through measures such as the provision of rules, procedures, and internal operational manuals as well as periodic enhancements to system software and hardware.</p>
Key conclusions for Principle 11	The CBB issues government securities in scripless form in the SSS system. The SSS system also performs the role of an electronic depository for recording the ownership of securities by members and transfer of government securities among members in book entry form. The relevant SSS system regulations and operating rules minimize and manage risks ensuring the integrity of securities holdings and transferring in book entry form. The SSS system's role as a CSD is also performed in a manner consistent with the selected RSSS market wide recommendations particularly with respect to trade confirmation, settlement cycles, and protection of customers' securities (PFMI, Annex C).
Assessment of Principle 11	Observed
Recommendations and Comments	None

Principle 12. Exchange-of-value Settlement Systems	
<p>If an 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.</p>	
<p>Key Consideration 1 An FMI that is an exchange-of-value settlement system should eliminate principal risk by ensuring that the final settlement of one obligation occurs if and only if the final settlement of the linked obligation also occurs, regardless of whether the FMI settles on a gross or net basis when finality occurs.</p>	<p>The RTGS system and the SSS system has a seamless integration which enables real time, simultaneous settlement of the funding leg of securities transactions in the RTGS system and the securities leg in the SSS system on DVP1 basis. This mechanism also facilitates the conducting of IDC and repo transactions between the CBB and direct members of the SSS system against eligible securities in their SSS system accounts.</p> <p>Under such setup, principal risk regarding securities transactions of direct members of the SSS system is eliminated as both the payment leg in the RTGS system and securities leg in the SSS system are settled simultaneously, subject to the following: (i) the seller having sufficient securities in his securities account in the SSS System for immediate delivery; and (ii) the buyer has sufficient funds in the settlement account in the RTGS system to pay for the securities.</p> <p>If the seller or buyer (or both) have insufficient securities or funds to complete the settlement process, the respective transaction will be held in a queue pending settlement. The SSS system will cancel unmatched current value-dated transactions by the cut off time.</p> <p>In the case of indirect SSS members, real time DVP1 settlement of the securities leg securities in the SSS system will take place simultaneously against settlement of the funding leg through pre-funded clearing accounts in the CBB's BKS core banking system.</p>
<p>Key conclusions for Principle 12</p>	<p>Principal risk is eliminated by real time DVP1 settlement of securities transactions with the simultaneous settlement of the securities leg in the SSS system on the one hand and settlement of the funding leg in the RTGS system on the other. For indirect SSS members, settlement of the funding leg is through pre-funded clearing accounts in the BKS core banking system.</p>
<p>Assessment of Principle 12</p>	<p>Observed</p>
<p>Recommendations and Comments</p>	<p>None</p>

Principle 13. Participant-default Rules and Procedures	
<p>An 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.</p>	
<p>Key Consideration 1 An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations in the event of a participant default and that address the replenishment of resources following a default.</p>	<p>Participant default rules and procedures Since the RTGS system settles transactions in real time, on a gross basis, subject to availability of funds. Similarly, the SSS system settles securities transactions on a DVP1 basis in real time and on a gross basis.</p> <p>The CBB provides a fully collateralized IDC facility and a gridlock detection and resolution mechanism to help settlement of transactions rather than them being queued for a long time or cancelled at the respective activity cutoff.</p> <p>In the case of a default of an IDC in the RTGS system, a member can take an overnight repo to settle the IDC. The BSD, in consultation with the respective supervision directorates of the CBB, will handle any issues related to a defaulted member (CBB licensee).</p> <p>If a member defaults due to an insolvency event or a failure to meet its obligation in the RTGS or SSS system, the CBB, as the operator of the RTGS and SSS systems, has the authority to suspend/terminate the member under the RTGSMR (Clause 13 of Chapter III) and SSSMR, respectively.</p> <p>The RTGSMR (Clause 13 of Chapter III) and SSSMR (Clause 13 of Chapter III) empowers the CBB to suspend or terminate a member on its failure to comply with, or their violation of, any of the membership regulations or directives as amended from time to time. In addition, RTGSMR (Clause 13 of Chapter III) states that a member will continue to be solely liable and responsible for the following: (i) contents of the messages or files sent by it, even if it subsequently resigns or is suspended, or its membership has been terminated; and (ii) customers transactions executed in the RTGS system.</p> <p>Use of financial resources According to the RTGSMBOG, RTGSMR, SSSMBOG, and SSSMR the CBB is not obliged to meet obligations on behalf of a participant that has defaulted its settlement obligations.</p>

Key Consideration 2 An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.	The RTGSMBOG (Clause 12 of Chapter 18) and the SSSMBOG and SSSMR provide powers for the operator of the RTGS and SSS systems to call for an explanation and provide an action plan for preventing such defaults in future, or to suspend or terminate a member. The CBB can take appropriate discretionary procedures.
Key Consideration 3 An FMI should publicly disclose key aspects of its default rules and procedures.	The rights of the CBB to suspend or terminate is stated in the RTGSMBOG, RTGSMR, SSSMBOG, and SSSMR, which are publically available in the CBB website.
Key Consideration 4 An FMI should involve its participants and other stakeholders in the testing and review of the FMI's default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.	Since the RTGS system settles transactions in real time, on a gross basis, and subject to funds availability, there is no likelihood for members to face a problem of defaulting of transactions in the RTGS System. Since the SSS system settles its transaction in real time on DVP1 basis, default procedures would be basically the suspension or termination of the member that defaulted. Since the defaulted member is a licensed bank, the operator of the SSS system works on the instruction given by the respective supervision directorate.
Key Conclusions for Principle 13	The RTGS and SSS systems settle funds and securities transactions in real time, on a gross and DVP1 basis, and subject to funds availability. Default procedures would be the suspension or termination of the defaulted member in consultation with the respective supervision directorate.
Assessment of Principle 13	Broadly Observed
Recommendations and comments	Seek independent legal opinion on the legal certainty for finality and netting arrangements. Strengthen the legal underpinnings for payments and securities settlement systems in primary legislation to protect settlement finality and netting arrangements. Improve default procedures through regular reviews and testing with participants and other stakeholders.

Principle 15. General Business Risk

An 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.

Key Consideration 1 An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of	The CBB manages the RTGS and SSS systems to cover its operating costs and periodically reviews the charges for both systems. Any potential business risk is escalated to the PC with proposals for improvements. In coordination with the ITD, the BSD takes measures to reduce risk particularly to improve control systems and procedures.
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business strategy, negative cash flows, or unexpected and excessively large operating expenses.	
<p>Key Consideration 2</p> <p>An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time required achieving a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.</p>	Not applicable
<p>Key Consideration 3</p> <p>An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.</p>	<p>Recovery or orderly wind-down plan</p> <p>Not applicable</p> <hr/> <p>Resources</p> <p>Not applicable</p>
<p>Key Consideration 4</p> <p>Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of</p>	Not applicable

scenarios, including in adverse market conditions.	
Key Consideration 5 An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.	Not applicable
Key Conclusions for Principle 15	The CBB is owner and operator of the RTGS and SSS systems, which are managed to cover their operating costs on a not-for-profit basis. The CBB periodically reviews the charges of both systems. Any potential business risk is escalated to the PC with proposals for improvements.
Assessment of Principle 15	Observed
Recommendations and Comments	None

Principle 16. Custody and Investment Risks

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

Key Consideration 1 An FMI should hold its own and its participants' assets at supervised and regulated entities that have robust accounting practices, safekeeping procedures, and internal controls that fully protect these assets.	The CBB provides payment and securities settlement services on the basis of Article 39 of the CBB Law. The RTGS and SSS systems are owned and operated by the CBB. This means that the assets under custody are subject to the robust accounting practices, safekeeping procedures and internal controls (e.g., annual internal and external audits) of the CBB.
Key Consideration 2 An FMI should have prompt access to its assets and the assets provided by participants, when required.	By safekeeping funds and securities in the RTGS and SSS systems respectively, both of which are owned and operated by the CBB, such arrangements offer the CBB and all system participants prompt access to their assets.
Key Consideration 3 An FMI should evaluate and understand its exposures to its custodian banks, taking into account the full scope of its relationships with each.	Not applicable. Both RTGS and SSS systems are owned and operated by the CBB and no custodian banks are used.

Key Consideration 4 An FMI's investment strategy should be consistent with its overall risk-management strategy and fully disclosed to its participants, and investments should be secured by, or be claims on, high-quality obligors. These investments should allow for quick liquidation with little, if any, adverse price effect.	Investment strategy Not applicable. The RTGS and SSS systems do not have any investment capabilities or activities, and the BSD only operates the systems without any investment responsibilities.
	Risk characteristics of investments Not applicable
Key Conclusions for Principle 16	Both the RTGS and SSS Systems are owned and operated by the CBB and thus provides the central bank and system participants with safe custody and prompt access to their assets, benefitting from the CBB's sound accounting practices, robust safekeeping, and operational procedures as well as other internal controls. The RTGS and SSS systems have no investment capabilities, while the BSD only operates the RTGS and SSS systems without any investment function. Therefore, no investment risk is involved.
Assessment of Principle 16	Observed
Recommendations and Comments	None

Principle 17. Operational Risk

An 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 fulfillment of the FMI's obligations, including in the event of a wide-scale or major disruption.

Key Consideration 1 An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.	Identification of operational risk Potential operational risks are identified in the CBB Crisis and Incident Management Plan, the CBB BCP, and the CBB Recovery Strategy document. The RTGSMR (Clause 15 of Chapter IV) and the SSSMR (Clause 15 of Chapter IV) establish that the CBB endeavors to ensure the proper operation, control, maintenance and security of the RTGS and SSS systems, respectively. The RTGSMBOG, RTGSMR, SSSMBOG, and SSSMR refer to operational risks and risk management measures in respect of software, hardware, SWIFT gateway, the web monitoring link, telecommunication network, databases, archiving system and security. The operational risk of the RTGS system is identified as system integrated with the SSS system at the business and technical level. The operational risk of the RTGS system at the business level is
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	<p>identified as a function of the BSD, while IT infrastructure is identified as a function of the ITD.</p> <p>Staff of the Payment and Settlement Section, and the Monetary Management Section, under the BSD monitor and report operational issues which have a potential to create disruptions to the Help Desk (e-mail distribution group).</p> <p>The RTGSMBOG (Clauses 6 and 7 of Chapter 18) and the SSSMBOG (Clauses 6 and 7 of Chapter 18) prescribe that members should have adequate arrangements in the primary and back-up facility of the RTGS and SSS systems, respectively, with adequate qualified staff, computer facilities, telecommunication facilities arrangements for authentication and security devices, and payment system gateway.</p> <p>The potential single points of failure of the RTGS and SSS systems were identified as part of the pre-launch independent security review. Online replication is part of system design, and procedures are clearly outlined in the RTGS manual. Live runs are not conducted at the DRR, but alternate tests are conducted on an annual basis to ensure data and application caters for any eventuality.</p>
	<p>Management of operational risk</p> <p>Potential operational risks are managed by the BSD and ITD as an integral part of their day to day operations.</p> <p>Risk management for the RTGS and SSS systems involves complying with policies and procedures that deal with the proper operation, control, maintenance and security. This pertains to the operations and maintenance of its gateway for transactions and disaster recovery system.</p> <p>Internal operational risks are identified and managed by operating procedures and controls stated in the BSD and ITD operational manuals. CBB internal and external auditors annually review the internal controls of the RTGS system as part of the BSD audit and reviews IT applications. This includes access controls, segregation of duties, and upgrades as part of the ITD audit. The annual internal audit reports are submitted to the Audit Committee while the annual external audit reports are submitted to the Governor.</p> <p>The BSD and ITD conduct tests with members relating to any SWIFT patch or system changes before the implementation of any changes or new development in the RTGS system.</p>

	<p>The BCP plan gives the identified execution teams, tools and measures to be implemented in case work needs to resume at the DRR or NRA.</p> <p>The DRR is a full-fledged DR site and data is replicated in real-time from the main site to the back-up center. The DRR has the same configuration as the primary site.</p> <p>The RTGSMR specifies the measures that members should take to ensure business continuity. Since the RTGS system is implemented over the SWIFT IP Network, it is required for all members to have a payment system gateway (SWIFT related hardware, software, networking, security, and other products) and a disaster recovery system for the payment system gateway (RTGSMR, Clause 12a). Since the availability of the gateway is vital for the smooth operations of the RTGS system, each member is required (RTGSMR, Clause 16) to ensure that the disaster recovery system address the following:</p> <ul style="list-style-type: none"> • operation, control, and maintenance to ensure security; • business resumption and recovery measures are provided to ensure the continuity of operations; • upgrades to provide adequate capacity to handle RTGS transactions and to ensure maximum systems availability; • adherence to CBB and SWIFT security guidelines; and • action is taken immediately in accordance with SWIFT procedures in the event of any breach of security. <p>Each RTGS and SSS member is required to take daily system and data back-up as per its Back-up and Recovery Policy, and to restore the same on the Disaster Recovery System off-line/on-line.</p> <p>The RTGSMBOG (Clauses 4 and 5 of Chapter 18) and the SSSMBOG (Clauses 4 and 5 of Chapter 18) require RTGS and SSS members to have a disaster recovery/back-up facility for its payment system gateway with minimal failures and test the same from time to time. In addition, the back-up facility must ensure system availability with an uptime of around 99 percent.</p> <p>The RTGSMR (Clause 18) and the SSSMR (Clause 18) empower the CBB to inspect the premises of a member to determine whether internal controls and procedures, relating to the security of and access to the payment system gateway and to the disaster</p>
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	<p>recovery system, are adequate. If any deficiency in the internal controls and procedures are found, the CBB can direct the member to take immediate steps to rectify the deficiency and inform the CBB, in writing, of having done so within 10 days of the receipt of such direction.</p> <p>To minimize message errors sent by members, the RTGS and SSS systems perform verification checks on every message against specified criteria before acceptance. Accordingly, the systems eliminate any duplication of messages.</p> <p>Policies, processes and controls Potential risks are assessed and addressed as follows: (i) continuous improvements of the system infrastructure (software, hardware, SWIFT gateway, the web monitoring link, telecommunication network, databases, archiving system), security controls, service level agreements, maintenance, and BCP testing; and (ii) continuous improvement of internal control systems where operational risk incidents are recorded and are used monthly for the calculation of RTGS system availability. Changes to the RTGS and SSS systems are audited on a regular basis by internal and external auditors.</p>
<p>Key Consideration 2 An FMI's board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI's operational risk-management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.</p>	<p>Roles, responsibilities and framework The operational risk management of the RTGS system is under the responsibility of the BSD and ITD, which covers includes maintenance and improvement and upgrading of the IT infrastructure. Internal controls of the RTGS and SSS systems are established in the BSD and ITD Operating Manual.</p> <p>The internal auditor and the external auditor review the internal control procedures of the RTGS system on an annual basis as part of the BSD audit. IT applications, including access controls, segregation of duties, and upgrades are reviewed as part of the ITD audit. Annual internal audit reports are submitted to the Audit Committee, while the annual external audit reports are submitted to the Governor.</p> <p>Under the CBB Law, the Governor, with the approval of the Board, appoints the Chief Internal Auditor and four executive directors. The Chief Internal Auditor and external auditor conduct an annual audit of the RTGS and SSS systems as part of its audit of BSD and ITD and reports directly to the Audit Committee and Governor respectively.</p>

	<p>Review, audit and testing</p> <p>The performance of software and technical infrastructure of the RTGS and SSS systems, including SWIFT connectivity, is monitored and upgraded, where necessary. The system is audited and tested, particularly when there is an upgrade of software (including changes related to SWIFT) or hardware. In 2015, the hardware infrastructure of the RTGS system was upgraded to improve the speed of settlement of transactions.</p> <p>The BSD reports on risks and makes recommendations to the EDBO.</p>
<p>Key Consideration 3</p> <p>An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.</p>	<p>The objective of RTGS and SSS systems is safety and efficiency. The RTGS system's targeted system availability is 99 percent during operating hours and recovery time objective (RTO) is two hours and 30 minutes.</p> <p>The servers, firewalls and storages relating to the RTGS system are configured in pairs (a failure of a single component will not result in an outage). Network connections are not shared. Vital data at the production system is stored at the production site as well as in the DRR (in real time). The data-commit-rollback mechanism avoids loss of transactions due to server or a storage failure.</p> <p>The RTGS and SSS systems are monitored by the BSD and ITD. The helpdesk attends to member enquiries. Incidents that prevent the RTGS and SSS systems from functioning are reported to the EDBO and the PC. The Payment Policy and Oversight Section monitors RTGS system availability, which is stated in the vendor service level agreement.</p>
<p>Key Consideration 4</p> <p>An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.</p>	<p>RTGS and SSS capacity utilization are reviewed and enhanced to improve transaction processing speed. This considers the hardware and processing speed (which depends on a number of factors such as equipment, memory, processors, MQ server and the RTGS and SSS application). The RTGS and SSS hardware infrastructure was upgraded and tested in May 2015. The ITD and BSD conducted a study on the ability of the new RTGS and SSS hardware infrastructure in handling a high number of payments. This study covered RTGS transactions from January to April 2015.</p> <p>The RTGS system capacity has been improved to settle around 44 transactions per minute. This provides adequate capacity with the current level of transactions, which were around 12 transactions per minute in 2014. Since going live, the number of RTGS transactions settled per day peaked at 8,778 on October 27, 2015.</p>

<p>Key Consideration 5 An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.</p>	<p>Physical Security The RTGS and SSS systems are operated from the CBB head office, which has high physical access controls. The areas allocated for RTGS and SSS operations in the BSD and ITD computer room are secured with physical security systems such as alarm systems, closed-circuit television, card access systems, as well as 24-hour armed police patrols, to restrict access into the computer rooms.</p> <p>IT Policies and procedures protect RTGS and SSS information. The RTGS and SSS systems use SWIFT where transactions are authenticated and encrypted. Audit logs are monitored on a regular basis. The CBB has a set of comprehensive building and information security policies to address potential risks.</p>
<p>Key Consideration 6 An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.</p>	<p>Information Security The RTGS and SSS systems are not exposed to the Internet or the internal network of CBB and utilize SWIFT, which provides access to a Secure Internet Protocol Network and data security in the transmission of messages via public key infrastructure. All RTGS and SSS messages are digitally signed and encrypted. In order to ensure data integrity, cyclic redundancy check is performed during the continuous data replication to the DR site.</p> <p>Objectives of business continuity plan The CBB has one primary site (head office), NRA, and DRR. The CBB has a BCP approved by the Governor. It addresses a widespread and prolonged disruption to CBB operations including the RTGS system infrastructure and critical services, which could result in difficulties in conducting operations at the primary site. The maximum tolerable downtime objective is three hours. The RTO is 2 hours and 30 minutes.</p> <p>Design of business continuity plan The CBB Business Continuity Management System (BCMS) describes the measures that the BSD and ITD should take to ensure RTGS and SSS business continuity.</p> <p>The BCP disseminates the required information through a call tree. The BCP covers the potential outage of CBB operations, including the RTGS system considering scenarios such as head office building outage, computer hardware failure, and physical disasters.</p> <p>The BCP is updated whenever changes are required. The RTGS and SSS system business hours are from 8:00 a.m., to 2:07 p.m., the BCP can ensure the completion of transactions within the day in case of a widespread disaster.</p>

	<p>Secondary site</p> <p>The CBB has trained the relevant officers of the teams (Incident Management Team, Emergency Response Team, and Damage Assessment Restoration and Salvage Team) and equipped its NRA and DRR site to ensure the efficient and timely resumption of interrupted operations at the primary site.</p> <ul style="list-style-type: none"> • <i>Near Relocation Area (NRA)</i>. It is a site having the necessary infrastructure (close to the primary site) for relocation of operations and relevant officers in an event the primary site is unavailable. • <i>Disaster Recovery Relocation (DRR)</i>. In an event the primary site is unavailable, CBB operations, including RTGS and SSS operations, and officers are moved to the DRR where a complete recovery environment is available. The RTGS and SSS DRR is a ‘warm’ backup of their production environments. The DRR will be activated in the event of a disaster. Vital data are replicated online to the DRR. RTGS and SSS operations can resume with data remaining intact up to the point of system failure. The time required to recover operations through the secondary site is around 2 hours and 30 minutes.
	<p>Review and testing</p> <p>The NRA and DRR sites are tested once a year. The BCP is reviewed as and when required.</p> <p>Risks to the FMI’s own operations</p> <p>As the CBB recognizes RTGS and SSS system failures would have a significant bearing on member bank operations, they are monitored during business hours. The helpdesk attends to member inquiries. Incidents are reported to senior management. The systems, as well as SWIFT Network availability, are overseen by the IT network administrator.</p> <p>The ITD Director acts as the chairman of the SWIFT Closed User Group (CUG), which represents RTGS and SSS member banks. The CUG regularly convenes two meetings per year, or when necessary, to discuss issues, if any.</p> <p>Risks posed to other FMIs</p> <p>The operational risk of the RTGS and SSS as 2 integrated systems, is identified and managed at the business and technical level.</p>

Key Conclusions for Principle 17	<p>The CBB operational risk management framework encompasses the RTGS and SSS systems, and comprises of the Crisis and Incident Management Plan, the BCP, and the Recovery Strategy document. Operational risks are identified and managed as part of critical operations. RTGS and SSS membership regulations and business operating guidelines prescribe the CBB's as well as members' arrangements in the primary and back-up facilities. This includes sufficient and qualified staff, computer facilities, telecommunication facilities arrangements for authentication and security devices, and the payment system gateway.</p> <p>The CBB has a NRA and DRR site, which is located nearly 20 kilometers from the primary site, to ensure the timely resumption of interrupted operations. The recovery time objective is two hours and 30 minutes. The disaster recovery site is tested once a year.</p>
Assessment of Principle 17	Broadly Observed
Recommendations and Comments	<p>Enhance the BCP to ensure that critical information technology systems can resume operations within 2 hours following wide scale disruptions. The plan should be designed to enable the RTGS system to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. Monitor and publicly disclose systems availability against target of 99 percent. Conduct a comparative risk analysis of the secondary site, which should be located at a geographical distance from the primary site that has a distinct risk profile. Increase the frequency of business continuity testing, including tests between participants and the DRR site. Analyze scalable capacity, which should be adequate to handle increasing stress volumes and to achieve service level objectives. Identify and establish oversight expectations for critical service providers located in Bahrain.</p>

Principle 18. Access and Participation Requirements	
An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.	
<p>Key Consideration 1 An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.</p>	<p>Participation criteria and requirements At present, RTGS membership is generally provided to all retail banks (conventional and Islamic) provided they fulfill the primary eligibility requirements (i.e. their participation in government securities transactions and have accounts in the BKS core banking system). TBC (operator of BCTS, BENEFIT, and EFTS) is given access for submission of MNSBs to the RTGS for settlement, while other corporations and financial institutions (e.g., wholesale banks) are not granted RTGS membership (even though their balance sheet assets may be much larger than those of the retail banks) as they are not permitted to provide any payment services in Bahrain.</p> <p>Participation criteria and requirements of the SSS system are also defined in the SSS system membership regulation and operating</p>

	<p>guidelines (SSSMBOG, SSSMR (Chapter III)), which are made available on the CBB website. Both conventional as well as Islamic retail banks are eligible to be members of the SSS system, subject to fulfilling the primary eligibility requirement (i.e. SWIFT membership and have accounts in the BKS core banking system).</p>
	<p>Access to trade repositories Not applicable</p>
<p>Key Consideration 2 An FMI's participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavor to set requirements that have the least-restrictive impact on access that circumstances permit.</p>	<p>Justification and rationale of participation criteria The primary membership requirements is to be a retail bank (licensed by the CBB to provide payment services to customers), holding of an account in the BKS core banking system to become members of the RTGS system to minimize risks, dealings with the CBB, and catering to customer payment needs.</p> <p>In addition, RTGS participation requirements have permitted only licensed retail banks that have SWIFT membership with the required infrastructure to become a direct member of the RTGS system to eliminate operational risks and ensure the safety, efficiency, and robustness of the RTGS system.</p> <p>In order to ensure the safety, efficiency and robustness of the SSS system, the membership requirements permit only retail banks (licensed by the CBB and participate in government securities transactions) and having membership in SWIFT as well as other required infrastructure (operational capacity to make online transactions) to become a direct member of the SSS system. The off-line participation of indirect members is limited only to primary market transactions in the SSS system through the CBB.</p> <p>Least restrictive access Any entity that meets the RTGS and SSS membership criteria laid down in the relevant membership regulations and operating guidelines are eligible to become an RTGS/SSS member.</p> <p>Disclosure of criteria The criteria for participation, suspension and termination of RTGS system membership are defined in the RTGS membership regulations and the SSS membership regulations, both of which are publicly disclosed in the CBB official website.</p>
<p>Key Consideration 3 An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating</p>	<p>Monitoring compliance The CBB is the sole financial regulator in Bahrain and direct members are licensees. The respective supervision directorates conduct prudential supervision on various aspects, including their financial conditions and risk management framework.</p>

the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.	Suspension and orderly exit The criteria for suspension and termination of the RTGS system membership are defined in the RTGS membership regulations and the SSS membership regulations which are published in the CBB website.
Key Conclusions for Principle 18	The RTGS and SSS systems access and participation requirements are publicly disclosed. Such requirements need to be reviewed on a regular basis to ensure that they remain objective, fair, and provide risk-based criteria and open access to these systems.
Assessment of Principle 18	Broadly Observed
Recommendations and Comments	The CBB should review the access and participation requirements regularly to ensure that they remain objective, risk-based, and permit fair and open access to the RTGS and SSS systems.

Principle 19. Tiered Participation Requirements

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

Key Consideration 1 An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.	<p>Tiered participation arrangements</p> <p>At the end of August, 2015, there were 28 direct members (including the CBB) in the RTGS system. All these direct members are licensed retail banks that fulfilled the membership requirements. TBC (operator of BCTS, BENEFIT, EFTS) is eligible to submit MNSBs only to the RTGS System for Settlement. There is no category for indirect members.</p> <p>At the end of August, 2015 there were 28 direct members and 17 indirect members. Direct members of the SSS system include the CBB, BHB and licensed retail banks (20 conventional retail banks and 6 Islamic retail banks) that meet the membership requirements to carry out online primary market as well as secondary market transactions. On the other hand, indirect SSS members do not have online access to their SSS accounts and administer their accounts via the CBB.</p>
	<p>Risks to the FMI</p> <p>There are no material risks to the RTGS system as transactions are settled among direct members, subject to the availability of funds in their RTGS settlement accounts.</p> <p>Deferred settlement of MNSB files of 3 retail payment systems (i.e. BCTS, BENEFIT and EFTS) in the RTGS system would not exert risks for RTGS members as the CBB settles net clearing obligations of a few non-RTGS members of the BCTS and BENEFIT, against special</p>

	<p>deposits or balances at the clearing accounts of such non-RTGS members at the CBB, minimizing liquidity risk.</p> <p>As financial institutions other than retail banks (e.g., pension funds, wholesale banks, etc.) are not given RTGS membership, their interbank payments will have to go through the RTGS system via a direct RTGS member. At the moment there is no analysis on the total size of such payments by non-RTGS members going through the RTGS system, thus making it hard to assess whether material risks exist and how to mitigate such risks.</p> <p>There are no material risks to the SSS system as transactions of direct members are settled on DVP1 basis. The CBB is the only direct member having a relationship with indirect members to settle transactions relating to primary market activities in the RTGS and SSS systems. Since the CBB acts on behalf of indirect members, subject to funds availability in their call/current accounts in the BKS core banking system and securities trading accounts in the SSS system, there are no potential risks of dependencies for the respective indirect member or the SSS system.</p>
<p>Key Consideration 2 An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.</p>	<p>The CBB has not yet analyzed and evaluated the extent such other financial institutions is making or receiving interbank payments through the RTGS system through direct RTGS members, and the potential risk to the RTGS system.</p> <p>In the SSS system, such other financial institutions are given indirect SSS membership and will administer their accounts offline through the CBB. Hence the potential risk will likely be much lower compared to the case of the RTGS system.</p>
<p>Key consideration 3 An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the FMI in order to manage the risks arising from these transactions.</p>	<p>Currently, the CBB has not yet conducted analysis to (a) identify any significant indirect participants as well as the transaction volume and value of these entities; and (b) the resultant risks and how to manage such risks, especially in the case of the RTGS system.</p>
<p>Key consideration 4 An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.</p>	<p>The PC meets regularly to discuss and consider issues related to the RTGS and SSS systems.</p>

Key conclusions for Principle 19	<p>There is no tiered participation in the RTGS system. All are direct members and they are licensed retail banks that have fulfill membership requirements. There is no category for indirect members. The 3 retail payment systems (BCTS, BENEFIT and EFTS) are given access to submit MNSB files to the RTGS system for settlement purpose only.</p> <p>While it is the understanding of CBB officials that clearing obligations of non-RTGS members are not large, in line with the requirements of the PFMI principles, the CBB should analyze the usage of RTGS system by non-RTGS members, and consider granting RTGS membership to such entities.</p> <p>On the other hand, tiered participation arrangements exist in the SSS system. As the CBB is the only direct member dealing with the indirect members in administering the accounts of the indirect SSS members, the potential risk of dependencies in the SSS system is expected to be much more benign.</p>
Assessment of Principle 19	Broadly Observed
Recommendations and Comments	Identify indirect participants/users responsible for a significant proportion of transactions processed by the RTGS system and indirect participants/users whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the RTGS system in order to manage the risks arising from these transactions. Consider providing RTGS membership to large indirect participants/users subject to appropriate risk management criteria.

Principle 20. Financial Market Infrastructure Links

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

<p>Key Consideration 1</p> <p>Before entering into a link arrangement and on an ongoing basis once the link is established, an FMI should identify, monitor, and manage all potential sources of risk arising from the link arrangement. Link arrangements should be designed such that each FMI is able to observe the other principles in this report.</p>	<p>BHB is a direct SSS member with proprietary and customer accounts in the SSS system. This enables the BHB to hold government securities listed on the BHB, including those of retail investors who participate in government securities issuances through BHB. Because the BHB also performs the role of a CSD by acting as a centralized depository for dematerialized and immobilized securities (i.e., equity and debt securities), hence this direct SSS membership should be considered an FMI link.</p> <p>Risk exposure is minimal as securities transactions are settled in the SSS system in real time on DVP1 basis. BHB is also subject to the CBB oversight through the CMSD.</p>
<p>Key Consideration 2</p> <p>A link should have a well-founded legal basis, in all relevant jurisdictions, that supports its</p>	<p>The FMI link between the SSS system and BHB was set up in Bahrain in accordance with local laws.</p>

design and provides adequate protection to the FMIs involved in the link.	
Key consideration 3 Linked CSDs should measure, monitor, and manage the credit and liquidity risks arising from each other. Any credit extensions between CSDs should be covered fully with high quality collateral and be subject to limits.	As settlement on the SSS system is on real time DVP1 basis and the CBB is not counterparty to any of the transactions settled on the SSS system, potential credit risk to the SSS system arising from the FMI link is minimal. Any credit extension by the CBB to BHB as a direct SSS member will be in the form of IDC/overnight repo and fully collateralized using eligible collateral.
Key Consideration 4 Provisional transfers of securities between linked CSDs should be prohibited or, at a minimum, the retransfer of provisionally transferred securities should be prohibited prior to the transfer becoming final.	The SSS system settles in real time on DVP1 basis, and this FMI link between the SSS system and BHB does not allow any provisional transfer of securities.
Key Consideration 5 An investor CSD should only establish a link with an issuer CSD if the arrangement provides a high level of protection for the rights of the investor CSD's participants.	From the perspective of BHB clients, this FMI link enables BHB to hold in the SSS system those government securities listed on the BHB, including those held by retail investors who participated in government issuances through BHB. Since the SSS system is owned and operated by the CBB and settles on real time DVP1 basis, the FMI link offers a higher level of protection.
Key Consideration 6 An investor CSD that uses an intermediary to operate a link with an issuer CSD should measure, monitor, and manage the additional risks (including custody, credit, legal, and operational risks) arising from the use of the intermediary.	Not applicable
Key Consideration 7 Before entering into a link with another CCP, a CCP should identify and manage the potential spill-over effects from the default of the linked CCP. If a link has three or more CCPs, each CCP should identify, assess, and manage the risks of the collective link arrangement.	Not applicable

Key Consideration 8 Each CCP in a CCP link arrangement should be able to cover, at least on a daily basis, its current and potential future exposures to the linked CCP and its participants, if any, fully with a high degree of confidence without reducing the CCP's ability to fulfill its obligations to its own participants at any time.	Not applicable
Key Consideration 9 A TR should carefully assess the additional operational risks related to its links to ensure the scalability and reliability of IT and related resources.	Not applicable
Key Conclusions for Principle 20	An FMI link exists between the SSS system and BHB, as the BHB also performs the role of a CSD by acting as a centralized depository for dematerialized or immobilized securities (i.e. equity and debt securities). Risk exposure of this arrangement to the SSS system is low since securities transactions are settled on the SSS system in real time on DVP1 basis, and BHB is subject to the CBB oversight.
Assessment of Principle 20	Observed
Recommendations and Comments	The CBB is recommended to continue to monitor, identify and manage link-related risks to the SSS system, especially if and when new FMI links for the SSS System is established going forward.

Principle 21. Efficiency and Effectiveness

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

Key Consideration 1 An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.	<p>The RTGS system was implemented with a seamless integration with the SSS system, following international standards and practices, to enable banks (and their customers) to carry out payment and securities related transactions safely and efficiently on a real time basis using central bank money. The RTGS system uses the SWIFT IP Network as the communication backbone, which is an accepted communication standard used internationally.</p> <p>The RTGS system settles payment transactions in real time subject to funds availability. In an event that a member has insufficient funds in its settlement account, transactions are queued. Such queued transactions are settled on a first-in-first-out basis or based on priorities assigned by the member.</p>
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	<p>The CBB provides a fully collateralized IDC facility (against eligible government securities in the SSS system and BD deposits at the CBB) and a gridlock detection and resolution mechanism to help streamline the settlement of payment transactions to prevent them from being queued for a long time or cancelled at the respective system cutoff. RTGS members are also provided with various tools and alerts so that they can monitor their payments and better manage their liquidity throughout the day.</p> <p>To enhance payment efficiency within the RTGS system and minimize the risk of failed payment transactions, time-block pricing is used as an incentive to encourage the early submission of payment instructions in the day to the RTGS system.</p> <p>The SSS system also uses the SWIFT IP Network as the communication backbone and is seamlessly integrated with the RTGS system to facilitate real time DVP1 settlement for securities transactions. This provides for secure and paperless securities settlement. The integration with the RTGS system has eliminated inefficient manual processes and the respective operational risks. Direct members can submit all of their transactions online, and enquiry and monitoring facility is provided for participants to monitor their position online and manage their accounts in real time.</p>
<p>Key Consideration 2 An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.</p>	<p>The RTGS and SSS systems have a defined system availability goal of 99 percent and recovery time objective (RTO) of 2.5 hours during operating hours to ensure the smooth and immediate execution of transactions. Time-block pricing is used as an incentive to encourage members' early submission of payment instructions in the day to the RTGS System.</p>
<p>Key Consideration 3 An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.</p>	<p>The CBB PC reviews from time to time, among other things, the efficiency and effectiveness of the RTGS and SSS Systems. Before recommending the Governor on any measures relevant to efficiency and effectiveness, the PC generally carries out the actions as follows: (i) direct the Payment System Policy and Oversight Section to conduct studies and surveys on the areas of concerns; and (ii) consults with the relevant stakeholders.</p> <p>To promote economic efficiency and stability when providing RTGS and SSS services, the CBB imposes charges on RTGS members (in the form of transaction fee) and SSS members (in the form of a membership fee) to recover operating cost. The fee level is reviewed periodically with the last change made in 2013.</p>

Key Conclusions for Principle 21	The RTGS and SSS systems provide efficient and effective payment, securities settlement and depository services to system participants and their customers.
Assessment of Principle 21	Observed
Recommendations and Comments	None

Principle 22. Communication Procedures and Standards	
An 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.	
<p>Key Consideration 1</p> <p>An FMI should use, or at a minimum accommodate, internationally accepted communication procedures and standards.</p>	<p>Communication procedures</p> <p>The RTGS and SSS systems operate over a SWIFT IP Network via the SWIFT Alliance Gateway Server at the CBB through the Closed User Group (CUG). The SWIFT Alliance Access Server at the CBB supports the SWIFT FIN service (V Copy topology for securities transaction messages) and FIN Y-Copy Service (RTGS payment transaction messages).</p> <p>Direct members use the SWIFT computer based terminal (CBT), SWIFT IP network and SWIFT Alliance suite for the following: online creation, transmission, confirmation and cancellation of messages; making enquiries; queue management; report downloading; and user administration.</p> <p>Transaction messages and any other messages are sent by direct members over SWIFTNet to the RTGS and SSS systems through the CUG. Similarly, all the messages/notifications, including the settlement notifications, sent by the RTGS and SSS systems to the members, go through SWIFTNet and the CUG.</p> <p>All messages in the RTGS and SSS systems are SWIFT, as defined in the functional specifications.</p> <p>Direct members have online access to get information and send queries to the RTGS and SSS systems through SWIFTNet Browse and INterActive services, provided by SWIFT.</p> <p>RTGS and SSS systems operators of the CBB perform enquiry, queue management, database maintenance and system parameter maintenance functions via their web browsers.</p> <p>Every direct member is required to exchange its SWIFT RMA with the CBB and other direct members in accordance with the terms and conditions, as determined by the CBB and the relevant SWIFT procedures.</p>

	<p>Communication standards</p> <p>The RTGS and SSS systems operate over a SWIFT IP Network via the SWIFT Alliance gateway server at the CBB through the CUG.</p> <p>In order to use FIN messaging services/INterAct through the CUG and browse services, the messages and the instructions are interpreted according to SWIFT standards, RTGS and SSS systems specific conventions, as set out in the SWIFT Standards Handbooks and the RTGS and SSS functional specifications (i.e. detailed business requirements for design and development of the RTGS and SSS systems, as agreed between the CBB and the solution provider).</p> <p>Securities in the SSS system are identified by an International Securities Identification Number.</p>
Key Conclusions for Principle 22	The RTGS and SSS systems are based on internationally accepted communication procedures and standards. SWIFT communication network and messages are used to transmit financial information.
Assessment of Principle 22	Observed
Recommendations and comments	None

<p>Principle 23. Disclosure of Rules, Key Procedures and Market Data</p> <p>An 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 and fees and other material costs they incur by participant in the FMI. All relevant rules and key procedures should be publicly disclosed.</p>	
<p>Key Consideration 1</p> <p>An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.</p>	<p>Rules and procedures</p> <p>The RTGSMR, RTGSMBOG, SSSMR, and SSSMBOG clearly state the functionalities of the systems, and the roles and responsibilities of the operator and members.</p> <p>Disclosure</p> <p>The RTGSMR, RTGSMBOG, SSSMR, and SSSMBOG are fully disclosed to participants (as written agreements between members and in the CBB website). The subsequent amendments made to these membership regulations and business operating guidelines in the form of directives are communicated to each member.</p>
<p>Key Consideration 2</p> <p>An FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the FMI.</p>	<p>The RTGSMR, RTGSMBOG, SSSMR, SSSMBOG, and subsequent amendments specify clearly the system's design and operations, as well as the rights and obligations of participants.</p>

<p>Key Consideration 3 An FMI should provide all necessary and appropriate documentation and training to facilitate participants' understanding of the FMI's rules and procedures and the risks they face from participating in the FMI.</p>	<p>The CBB provides the necessary and appropriate documentation, training, and testing to facilitate participants' understanding of the RTGS and SSS regulations, guidelines and procedures subject to the following: (i) application by an entity to join the RTGS and SSS systems; (ii) changes of the system rules or functionalities by the CBB; (iii) changes by SWIFT which have an impact on the RTGS and SSS systems; and (iv) changes to the RTGS system.</p>
<p>Key Consideration 4 An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes.</p>	<p>The CBB introduced the current RTGS membership fees and the time-block pricing policy with the approval of the Board, in 2013, by issuing a directive. The PC consulted members before issuing this directive in order to get their comments and suggestions.</p> <p>The CBB charges only the annual membership fees in the SSS System. There are no transaction fees.</p>
<p>Key Consideration 5 An FMI should complete regularly and disclose publicly responses to the CPSS-IOSCO Disclosure framework for FMIs. An FMI also should, at a minimum, disclose basic data on transaction volumes and values.</p>	<p>According to the new version of the BSD operational manual, the Payment System Policy and Oversight division is required to assess FMIs, including the RTGS System, against the PFMIs.</p> <p>Basic data on transaction volumes are disclosed in the CBB Annual Report and the Financial Stability Report.</p>
<p>Key Conclusions for Principle 23</p>	<p>RTGS and SSS membership regulations and business operating guidelines clearly state their functionalities, and the roles and responsibilities of the operator and members. The membership regulations and business operating guidelines are disclosed to participants (as written contractual agreements between members and in the CBB website). Subsequent amendments are communicated to each member. Documentation, training, and testing to facilitate participants' understanding of rules, procedures and system changes are provided by the CBB.</p>
<p>Assessment of Principle 23</p>	<p>Broadly Observed</p>
<p>Recommendations and Comments</p>	<p>Disclose publicly responses to the CPMI-IOSCO Disclosure Framework.</p>

DETAILED ASSESSMENT OF AUTHORITIES' RESPONSIBILITIES

Responsibility A: Regulation, Supervision, and Oversight of Financial Market Infrastructures	
FMI should be subject to appropriate and effective regulation, supervision, and oversight by a central bank, market regulator, or other relevant authority.	
<p>Key Consideration 1 Authorities should clearly define and publicly disclose the criteria used to identify FMIs that should be subject to regulation, supervision, and oversight.</p>	<p>The CBB Law (Article 39) provides the broader definition of regulated services, which includes FMIs (payment, clearing and settlement services). These regulated financial services and the respective licensees that provide such services, are defined in the following regulations:</p> <ul style="list-style-type: none"> • Regulation No. 1 of 2007 'Pertaining to the CBB Regulated Services' published on 27th December, 2007 by the CBB in the official gazette; and • Resolution No. 9 of 2010 and Resolution No. 43 of 2010 that amended Regulation No. 1 of 2007. <p>The regulated entities include:</p> <ul style="list-style-type: none"> • payment, clearing, and settlement systems; • IT and technical services that process card payment transactions, payment switch; • markets or exchanges to facilitate the buying, selling, and exchanging of securities or futures contracts; and • arrangement or trading in securities, clearing and settlement of securities transactions and depositing of securities with a licensed depository.
<p>Key Consideration 2 FMIs that have been identified using these criteria should be regulated, supervised, and overseen by a central bank, market regulator, or other relevant authority.</p>	<p>The Payment System Policy and Oversight Section of the BSD of the CBB oversees and supervises the CBB RTGS and SSS systems, and retail payment, clearing and settlement systems such as the privately operated BCTS and BENEFIT.</p> <p>The CMSD is responsible for the oversight and supervision of private securities (such as markets, securities exchanges, trading, clearing, settlement and depository).</p>
<p>Key Conclusions for Responsibility A</p>	<p>The CBB has not defined and publicly disclosed criteria to identify FMIs that should be subject to regulation, supervision, and oversight by the authorities.</p>
<p>Assessment of Responsibility A</p>	<p>Partly Observed</p>
<p>Recommendations and Comments</p>	<p>Establish clearly defined and publicly disclosed criteria to identify FMIs that should be subject to regulation, supervision, and oversight by the authorities.</p>

Responsibility B. Regulatory, Supervisory, and Oversight Powers and Resources	
Central banks, market regulators, and other relevant authorities should have the powers and resources to carry out effectively their responsibilities in regulating, supervising, and overseeing FMIs.	
<p>Key Consideration 1 Authorities should have powers or other authority consistent with their relevant responsibilities, including the ability to obtain timely information and to induce change or enforce corrective action.</p>	<p>Powers or other authority consistent with relevant responsibilities</p> <p>As the sole regulator of the financial system, the CBB is empowered with the following responsibilities: (i) licensing, regulating, supervising, and overseeing all FMIs; (ii) obtaining timely information from licensees; and (iii) inducing change or enforcing any corrective action.</p> <p>The CBB Law (Article 32b) establishes the legal basis for the CBB to issue regulations on payment systems, settlement of checks and other securities.</p>
	<p>Powers to obtain timely information</p> <p>The CBB Law (Article 111) empowers it to demand, by written notice given to a licensed FMI, any information, documents, statistics, yearly reports, or any other periodical reports that the CBB requires. The licensed FMI is required to provide the information within the specified period and immediately inform the CBB of any major changes in such reports.</p>
	<p>Powers to induce change or enforce corrective action</p> <p>The CBB Law (Article 4) establishes its duty and powers to: (i) regulate, develop and license the regulated services, including FMIs; (ii) exercise regulatory control over institutions that provide such services; and (iii) facilitate and encourage innovation in the FMIs in the financial services industry.</p>
<p>Key Consideration 2 Authorities should have sufficient resources to fulfill their regulatory, supervisory, and oversight responsibilities.</p>	<p>Resources</p> <p>The BSD and CMSD are jointly responsible for the oversight and supervision of FMIs.</p> <ul style="list-style-type: none"> The BSD is organized into four sections (with staff numbers as of September 30, 2015), including: (i) Payment and Settlement Section (four staff), which operates the RTGS and BKS core banking systems, effects central bank payments, and monitors and facilitates net clearing obligations from the BCTS and BENEFIT; (ii) Monetary Management Section (three staff), which operates the SSS system, and handles government debt issuance and money market transactions between participants and the CBB; (iii) Payment System Policy and Oversight Section

	<p>(two staff)¹⁴, which oversees, monitors, and supervises the RTGS and SSS systems; the system-wide important retail payment, clearing and settlement systems (including the BCTS and BENEFIT operated by TBC; and (iv) Monetary Policy Section (one staff), which is responsible for the standing facilities (BD repos, BD secured loans, and BD deposits); and payment instruments;</p> <ul style="list-style-type: none"> The CMSD Market Surveillance unit oversees BHB, and is staffed with four officials (including one head, one superintendent, and two analysts)
	<p>Legal protections The CBB Law (Article 175a) provides the necessary legal protection to staff to fulfill their regulatory, supervisory, and oversight responsibilities.</p>
Key Conclusions for Responsibility B	The CBB is the sole regulator of the financial sector and has powers and resources to carry out its responsibilities in regulating, supervising, and overseeing FMIs. Such powers and resources could be further enhanced to effectively discharge these responsibilities.
Assessment of Responsibility B	Broadly Observed
Recommendations and Comments	Strengthen the legal basis to protect settlement finality and netting arrangements, and designate FMIs that should be subject to oversight and supervision. Separate oversight and operational duties at the directorate level with clear reporting lines to avoid potential conflicts of interest. Staff the vacant positions in the Payment System Policy and Oversight unit with qualified personnel. Introduce FMI-related training courses under the Bahrain Institute of Banking and Finance.

Responsibility C. Disclosure of Policies with Respect to Financial Market Infrastructures	
Central banks, market regulators, and other relevant authorities should clearly define and disclose their regulatory, supervisory, and oversight policies with respect to FMIs.	
Key Consideration 1 Authorities should clearly define their policies with respect to FMIs, which include the authorities' objectives, roles, and regulations.	The CBB's role to provide payment and settlement services as well as to oversee and regulate FMIs are defined in the CBB Law, the Rulebook issued by the CBB under the CBB Law, as well as various directives/rules/regulations announced by the CBB from time to time.

¹⁴ As of September 30, 2015, the Head of the Payment System Policy and Oversight Section and one officer under the same unit remained vacant. Additionally, there was one officer vacancy in the Monetary Policy Section.

Key Consideration 2 Authorities should publicly disclose their relevant policies with respect to the regulation, supervision, and oversight of FMIs.	In terms of publicly disclosing its policies with respect to the regulation, supervision, and oversight of FMIs, the CBB publishes all relevant laws (e.g., the CBB Law), directives/resolutions/rules and regulations, as well as the Rulebook issued by the CBB under the CBB Law on its website.
Key Conclusions for Responsibility C	The CBB publicly discloses its policies with respect to the oversight of payment and settlement systems. The CBB's role to provide payment and settlement services and to oversee FMIs are defined in the CBB Law, the Rulebook issued by the CBB under the CBB Law, and the relevant directives, rules, regulations announced by the CBB from time to time. These are published in the CBB website and disclosed to RTGS/SSS members.
Assessment of Responsibility C	Broadly Observed
Recommendations and Comments	Develop a policy document to clearly define and disclose the regulatory, supervisory, and oversight policies of the CBB with respect to all FMIs.

Responsibility D. Application of the Principles for Financial Market Infrastructures

Central banks, market regulators, and other relevant authorities should adopt the CPSS-IOSCO Principles for financial market infrastructures and apply them consistently.

Key Consideration 1 Authorities should adopt the CPSS-IOSCO Principles for financial market infrastructures.	The CBB uses the CPMI-IOSCO PFMI, but has not yet made a formal declaration.
Key consideration 2 Authorities should ensure that these principles are, at a minimum, applied to all systemically important payment systems, CSDs, SSSs, CCPs, and TRs.	The PFMI have been applied to the RTGS and SSS systems, and the BCTS.
Key Consideration 3 Authorities should apply these principles consistently within and across jurisdictions, including across borders, and to each type of FMI covered by the principles.	The PFMI have been applied to FMIs located within Bahrain.

Key Conclusions for Responsibility D	The CBB has applied the CPMI-IOSCO PFMIIs and should consider formal adoption.
Assessment of Responsibility D	Broadly Observed
Recommendations and Comments	Submit the PFMIIs to the Governor for formal adoption into the legal and regulatory framework with a time-bound plan. Apply the PFMIIs to the RTGS/SSS systems and all relevant private sector FMIs consistently with a time-bound plan, and monitor follow-up actions. Identify and establish oversight expectations for critical service providers located in Bahrain.

Responsibility E. Cooperation with Other Authorities	
Central banks, market regulators, and other relevant authorities should cooperate with each other, both domestically and internationally, as appropriate, in promoting the safety and efficiency of FMIs.	
<p>Key consideration 1</p> <p>Relevant authorities should cooperate with each other, both domestically and internationally, to foster efficient and effective communication and consultation in order to support each other in fulfilling their respective mandates with respect to FMIs. Such cooperation needs to be effective in normal circumstances and should be adequately flexible to facilitate effective communication, consultation, or coordination, as appropriate, during periods of market stress, crisis situations, and the potential recovery, wind-down, or resolution of an FMI.</p>	<p>The CBB is the sole regulator of FMIs in Bahrain. The BSD has FMI oversight and supervisory responsibilities over CBB FMIs, BCTS, BENEFIT, and EFTS. The CMSD has responsibilities over CSD-BHB. The CBB consults stakeholders, including operators, participants, and the BAB before implementing any policies, regulations and directives which make a material impact.</p> <p>The CBB also participates as an observer in the BENEFIT company's board of directors. BENEFIT is part of the GCC Net, which includes ATM inter-linkages across GCC member states. This includes ATM networks operated by the Qatar and Saudi Arabian central banks, and the private sector in Bahrain, Kuwait, Oman, and the United Arab Emirates.</p> <p>The CBB cooperates with other GCC central banks in the GCC Payments Committee. Ongoing projects include the development of RTGS system linkages.</p>
<p>Key consideration 2</p> <p>If an authority has identified an actual or proposed operation of a cross-border or multicurrency FMI in its jurisdiction, the authority should, as soon as it is practicable, inform other relevant authorities that may have an interest in the FMI's observance of the CPSS-IOSCO Principles for financial market infrastructures.</p>	<p>GCCNET is an arrangement between GCC countries to link their switches to provide shared card payment services. Intra-GCC payments relating to shared payment services are routed through the respective switches, including BENEFIT. In this case, each GCC member country oversees their national switch according to the rules, regulations, and standards adopted by the GCC Governors' Committee. The GCC Governors' Committee of Monetary Agencies and Central Banks and the GCC Payments Committee meet regularly and address cross border regulations, standards, and issues. There is also a technical committee to handle any technology related issues. The GCC Governors' Committee and GCC Payments Committee have already taken measures for all member countries to assess their RTGS and SSS systems and adopt PFMI standards. CBB, as</p>

	a GCC member central bank, is involved in all aspects of cross border payment system linkages.
<p>Key Consideration 3 Cooperation may take a variety of forms. The form, degree of formalization and intensity of cooperation should promote the efficiency and effectiveness of the cooperation, and should be appropriate to the nature and scope of each authority's responsibility for the supervision or oversight of the FMI and commensurate with the FMI's systemic importance in the cooperating authorities' various jurisdictions. Cooperative arrangements should be managed to ensure the efficiency and effectiveness of the cooperation with respect to the number of authorities participating in such arrangements.</p>	<p>Forms of cooperation See Key Consideration 2.</p>
	<p>Efficiency and effectiveness of cooperation See Key Consideration 2.</p>
<p>Key consideration 4 For an FMI where cooperative arrangements are appropriate, at least one authority should accept responsibility for establishing efficient and effective cooperation among all relevant authorities. In international cooperative arrangements where no other authority accepts this responsibility, the presumption is the authority or authorities with primary responsibility in the FMI's home jurisdiction should accept this responsibility.</p>	See Key Consideration 2.
<p>Key consideration 5 At least one authority should ensure that the FMI is periodically assessed against the principles and should, in developing these assessments, consult with other authorities that conduct the supervision or oversight</p>	See Key Consideration 2.

of the FMI and for which the FMI is systemically important.	
<p>Key consideration 6 When assessing an FMI's payment and settlement arrangements and its related liquidity risk-management procedures in any currency for which the FMI's settlements are systemically important against the principles, the authority or authorities with primary responsibility with respect to the FMI should consider the views of the central banks of issue. If a central bank of issue is required under its responsibilities to conduct its own assessment of these arrangements and procedures, the central bank should consider the views of the authority or authorities with primary responsibility with respect to the FMI.</p>	See Key Consideration 2.
<p>Key consideration 7 Relevant authorities should provide advance notification, where practicable and otherwise as soon as possible thereafter, regarding pending material regulatory changes and adverse events with respect to the FMI that may significantly affect another authority's regulatory, supervisory, or oversight interests.</p>	See Key Consideration 2.
<p>Key consideration 8 Relevant authorities should coordinate to ensure timely access to trade data recorded in a TR.</p>	Not applicable
<p>Key consideration 9 Each authority maintains its discretion to discourage the use of an FMI or the provision of services to such an FMI if, in the authority's judgment, the FMI is not prudently designed or managed or the principles are not adequately</p>	See Key Consideration 2.

<p>observed. An authority exercising such discretion should provide a clear rationale for the action taken both to the FMI and to the authority or authorities with primary responsibility for the supervision or oversight of the FMI.</p>	
<p>Key consideration 10 Cooperative arrangements between authorities in no way prejudice the statutory or legal or other powers of each participating authority, nor do these arrangements constrain in any way an authority's powers to fulfill its statutory or legislative mandate or its discretion to act in accordance with those powers.</p>	<p>See Key Consideration 2.</p>
<p>Key Conclusions for Responsibility E</p>	<p>There is development cooperation with overseas authorities with respect to FMIs, which should be expanded to promote their safety and efficiency. The CBB acts as the single financial regulator in Bahrain. However, overseas cooperation would help monitor and manage potential risks that may arise from cross-border FMI links. There have been developments with respect to cross-border linkages of ATMs across the GCC member states with ongoing plans to develop further links between RTGS systems. Moreover, the CBB is dependent on critical service providers which are located in foreign jurisdictions.</p>
<p>Assessment of Responsibility E</p>	<p>Partly Observed</p>
<p>Recommendations and comments</p>	<p>Strengthen cross-border supervisory cooperation with GCC central banks on FMIs. Develop cross-border supervisory cooperation with overseas authorities for the oversight of critical service providers.</p>

AUTHORITIES' RESPONSE

41. The CBB takes this opportunity to express its gratitude to the IMF for carrying out an assessment of the RTGS and SSS systems on the observance of the CPMI-IOSCO PFMI under the ROSC mission. The in-depth assessment carried out by the IMF team of assessors provides many valuable insights to identify areas which require further improvement, particularly the risk management framework for the systemically important RTGS and SSS systems. The CBB is committed to follow PFMI in its systems and will continue to work towards implementing the IMF's recommendations.

42. The CBB also wishes to state that, it has a few reservations about the assessment and recommendations on the following areas, where they do not reflect circumstances specific to Bahrain, particularly, the measures in place to observe the PFMI or fulfill the regulatory, supervisory and oversight responsibilities for FMI under the legal and single regulatory framework distinct to Bahrain.

43. Under Principles 1, 8, 13 and Authorities Responsibility B, it was stated that the legal risks relating to finality and netting could arise from legal uncertainty in the event of insolvency of a participant. In the context of Bahrain, a licensee cannot be insolvent/bankrupt without the knowledge of the CBB. It can either be under administration or in liquidation. In the case of liquidation, an RTGS transaction which has already settled cannot be cancelled/revoked/undone. There are also measures to address any potential counterparty default, including: (i) all RTGS members are retail banks supervised by the CBB; (ii) there is a requirement (under Article 58 of the CBB Law) for all licensees to notify the CBB immediately of any matter that may affect its financial position or limit its ability to meet its obligations; and (iii) any licensed bank likely to become insolvent is required to immediately cease making payments in the RTGS and SSS systems unless the CBB's permits the bank in writing.

44. Under Governance, it has stated that governance arrangements are clear and transparent, but gaps remain in the roles and responsibilities of the Board and management, and representation in the Payments Committee. Recommendations under Principles 2, 3 and Authorities Responsibility D requires: (i) reporting of risks on a quarterly basis to the Board; and (ii) formally adopt PMFI standards by the Board. According to Article 8(2) of the CBB Law, the Board is responsible for setting the overall policies relating to the financial sector. Accordingly, the adoption of the PFMI standards does not require the formal adoption by the Board. It could be done with the approval of the Governor. The periodic risk reporting also has to be made to the Governor.

45. The recommendation under Principle 17 and Authorities Responsibility D also requires the CBB to identify and establish oversight expectations for critical service providers located in Bahrain. All critical service providers located in Bahrain are licensed, regulated, supervised and overseen by the CBB. The oversight expectations of the FMI's owned/operated by critical service providers are already established in the Directives, MOUs and agreements entered between service

providers and the CBB. The risk of interdependencies relating to such critical service providers are managed accordingly.

46. The assessment refers to high concentration in the payments system under Principles 18 as well as 19 and recommends to identify and manage concentration risks by identifying indirect participants responsible for a significant proportion of transactions relative to the capacity of the direct participants through which they access the RTGS system. Indirect participants of the SSS system and other financial institutions (not licensed as retail banks) that make payments through RTGS members are not allowed by the CBB to provide BD payment services (except credit/e-money cards) in Bahrain. For example, wholesale banks are not allowed to provide any BD payment services in Bahrain. They basically provide investment and merchant banking services and banking services in foreign currency to non-residents and banks in Bahrain. Their operations in the domestic market are limited to residents of Bahrain with transactions or initial balance having a minimum amount of BD 7 million.

47. The recommendation under the Authorities Responsibility A requires the CBB to define and publicly disclosed criteria to identify FMIs that should be subject to regulation, supervision, and oversight by the authorities. Currently, all FMI service providers are licensed by the CBB as per the publicly disclosed criteria in the CBB Rulebook. Each FMI operated by such licensees is subjected to regulation, supervision and oversight, according to the Rule Book, respective Directives, MOUs and agreements.

48. The CBB currently applies the PFMI in its oversight and is in the process of developing a policy document to publicly disclose the regulatory, supervisory, and oversight policies of the CBB with respect to all FMIs.