RISK MANAGEMENT

As Bank Mandiri is committed to realizing good governance, Bank Mandiri applies risk management proactively to achieve sound and sustainable financial and operational growth and maintain an optimal risk-adjusted return based on the desired risk appetite.

The risk management is regulated in the bank risk management policy developed by referring to Bank Indonesia Regulation (PBI), Financial Services Authority Regulation (POJK), Basel rules and International best practices. The policy is regularly reviewed to anticipate the changes in business conditions, regulations, and the Bank's internal conditions.

To anticipate the next wave of the COVID-19 pandemic and macroeconomic fluctuations in 2021, Bank Mandiri and its Subsidiaries has performed stress testing regularly based on the macroeconomic scenario presented by the Office of Chief Economist. Further, a credit risk sensitivity analysis was performed to identify the potential impact of the rise in coal prices in the second half of 2021 on borrowers and the Bank's credit portfolio and the impact of LIBOR reference rate transition borrowers in the Wholesale segment.

In 2021, Bank Mandiri made an update on its Recovery Plan and Recovery Options to prevent, recover, or remedy the Bank's financial conditions and business continuity in the event of financial stress, as regulated in OJK Regulation No.14/POJK.03/2017 on a Recovery Plan for Systemic Banks. This Recovery Plan consists of a whole-entity analysis of the Bank's and its Subsidiaries' business lines, including crises (reverse stress testing) that may happen to the Bank unexpectedly or a market-wide shock that may endanger the Bank's business (point of non-viability).

The Bank's risk management is regulated by a risk management policy that is based on Bank Indonesia Regulation, Financial Services Authority Regulation (POJK), the Third Basel Accord (Basel III), and international best practices. This policy is reviewed periodically to anticipate changes in business conditions, regulations, and the Bank's internal conditions.

THE BANK'S RISK MANAGEMENT SYSTEM

In the implementation of risk management, Bank Mandiri strives to comply with and adheres to the prevailing laws and regulations in Indonesia such as:

1. Financial Services Authority Regulation (OJK Regulation) No. 4/POJK.03/2016 dated January 26, 2016, on Assessment of Commercial Bank Soundness Level.
2. OJK Regulation No. 18/POJK.03/2016 dated Mach 16, 2016 on Implementation of Risk Management for Commercial Banks
3. OJK Regulation No. 55/POJK.03/2016 dated December 9, 2016, on Implementation of Governance for Commercial Banks.
4. OJK Regulation No. 17/POJK.03/2014 dated November 18, 2014, on Integrated Risk Management for Financial Conglomerates.
5. OJK Regulation No. 18/POJK.03/2014 dated November 18, 2014, on Implementation of Integrated Governance for Financial Conglomerates.
6. OJK Regulation No. 11/POJK.03/2016 dated February 2, 2016, on Minimum Capital Adequacy Requirement for Commercial Banks, which is renewed to OJK Regulation No. 34/POJK.03/2016 on the Amendment to POJK No. 11/POJK.03/2016 on Minimum Capital Adequacy Requirement for Commercial Banks.

RISK MANAGEMENT

7. OJK Regulation No. 38/ POJK.03/2017 dated July 12, 2017, on Implementation of Consolidated Risk Management for Banks Controlling Subsidiaries.
8. OJK Regulation No. 26/ POJK.03/2015 dated December 11, 2015, on Integrated Minimum Capital Adequacy Requirement for Financial Conglomerates.
9. OJK Regulation No. 42/ POJK.03/2015 dated December 23, 2015, on Liquidity Coverage Ratio Requirement for Commercial Banks.
10. OJK Regulation No. 50/ POJK.03/2017 dated July 17, 2017, on Net Stable Funding Ratio Requirement for Commercial Banks.
11. OJK Regulation No. 32 / POJK.03/2018 on Limit on Credit and Funds Provision for Commercial Banks.
12. OJK Regulation No. 11/ POJK.03/ 2019 on Prudent Banking in Asset Securitization Activities for Commercial Banks.
13. Bank Indonesia Circular No. 9/31/DPNP dated 12 December 2007 on Guidelines on The Use of Standard Method for Calculating Minimum Capital Adequacy Requirement for Commercial Banks by Considering Market Risk.
14. Bank Indonesia Regulation No. 23/17/PBI/2021 dated 17 December 2021 on the Third Amendment to Bank Indonesia Regulation No. 20/4/PBI/2018 on Macroprudential Intermediate and Macroprudential Liquidity Buffer Ratio for Conventional Commercial Banks, Sharia Commercial Banks, and Sharia Business Unit.
15. OJK Circular No. 14/ SEOJK.03/2015 dated May 25, 2015, on Implementation of Integrated Risk Management for Financial Conglomerates.
16. OJK Circular No. 34/ SEOJK.03/2016 dated September 1, 2016, on Implementation of Risk Management for Commercial Banks.
17. OJK Circular No. 38/ SEOJK.03/2016 dated September 8, 2016, on Guidelines on The Use of Standard Method for Calculating Minimum Capital Adequacy Requirement for Commercial Banks by Considering Market Risk.
18. OJK Circular No. 13/ SEOJK.03/2017 dated March 17, 2017, on Implementation of Governance for Commercial Banks.
19. OJK Circular No. 43/ SEOJK.03/2017 dated July 19, 2017, on Implementation of Consolidated Risk Management for Banks Controlling Subsidiaries.
20. OJK Circular No. 15/ SEOJK.03/2015 dated May 25, 2015, on Implementation of Integrated Governance for Financial Conglomerates.
21. OJK Circular No. 14/ SEOJK.03/2017 dated March 17, 2017, on Assessment of Commercial Bank Soundness Level.
22. OJK Circular No. 12/ SEOJK.03/2018 dated August 21, 2018, on Implementation of Risk Management and Standardised Approach to Risk Assessment of Interest Rate Risk in Banking Book for Commercial Banks.
23. OJK Circular No. 42/ SEOJK.03/2016 on Guidelines on Weighted Asset Calculation by Risk for Credit Risk Using a Standardised Approach.
24. OJK Circular No. 48/ SEOJK.03/2017 on Guidelines on Derivative Transaction Invoice Calculation and Weighted Asset Calculation by Risk for Credit Risk Using a Standardised Approach.
25. OJK Circular No. 11/ SEOJK.03/2018 concerning Changes to OJK Circular No. 42/SEOJK.03/2016 on Guidelines for Calculation of Risk Calculated Asset for Credit Risk using the Standard Approach.
26. OJK Circular No. 21SEOJK.03/2016 on Calculation of Risk Weighted Asset using the Basic Indicator Approach.EndFragment.
27. OJK Circular No. 6/ SEOJK.03/2020 on Weighted Asset Calculation by Risk for Operational Risk Using a Basic Indicator for Commercial Banks.
28. OJK Regulation No. 14/ POJK.03/2017 dated 7 April 2017 on Recovery Plan of Sistemic Banks.

29. OJK Regulation No. 31/POJK.03/2019 dated 2 December 2019 on the Mandatory Fulfilment of Gearing Ratio for Commercial Banks.
30. OJK Regulation No. 37/POJK.03/2019 dated 19 December 2019 on Transparency and Publication of Bank Reports.
31. Deposits Insurance Institution Regulation No. 1 of 2021 dated 30 March 2021 regarding Resolution Plans for Commercial Banks.

THE BANK'S RISK MANAGEMENT SYSTEM

Risk Management Policy (KMNR) explains the basics of the Risk Management Policy and is the main guideline and the highest ranking rule in the management of risk in Bank Mandiri. KMNR is the point of reference with regards to policy, procedure, and guideline for risk management matters in accordance with applicable regulations.

Risk Management Principles

Bank Mandiri has the following Risk Management Principles:

1. **Capital**
   Bank Mandiri provides capital based on the risks it faces and maintains the capital level per the applicable provisions.
2. **Transparency**
   Bank Mandiri openly discloses relevant information during a risk-taking process and the risk-taking itself.
3. **Independence**
   The management of Bank Mandiri acts professionally and is free from outside pressure and influence.
4. **Integration**
   Bank Mandiri applies Integrated Risk Management to Financial Institutions that are part of Bank Mandiri's financial conglomerates under applicable provisions.
5. **Continuity**
   Risk management is continuously developed to make it relevant to business conditions and the available best practices.
6. **Accountability**
   Bank Mandiri applies policies and procedures to guarantee the accountability of the management to its stakeholders.
7. **Responsibility**
   Bank Mandiri acts prudently and in compliance with the applicable laws and regulations.
8. **Equality**
   Bank Mandiri takes the interests of its shareholders based on equal treatment.

Risk Management Process

The Corporate Risk Management Process regulated in the Risk Management Policies is as follows:

1. Risk Management shall be performed across the Bank, at the operational, transactional, or portfolio levels.
2. Risk Management shall be performed at the individual and consolidated/integrated level with Subsidiaries in conjunction with the regulations and business characteristics that apply to the Subsidiaries.
3. The Risk Management process is dynamic and is routinely compared with the industry's best practices and the applicable provisions so that adjustments and updates can be made when necessary.
4. The execution of Risk Management is done in a manner consisting of:
   a. Risk identification
      Risk identification aims to identify the types of risks prevalent in every functional activity that may pose a threat to the Bank
   b. Risk measurement
      Risk measurement aims to identify risk exposures that are prevalent in the Bank's activities and compare them to the Bank's risk appetite so the Bank can take risk mitigation steps and allocate capital for residual risks.
   c. Risk monitoring
      Risk monitoring aims to compare the limit of risk already set to the risk exposures that are being managed.
   d. Risk control
      Risk control aims to prepare against potential risks that exceed the established risk limit of the Bank.

RISK MANAGEMENT

INTEGRATED RISK MANAGEMENT SYSTEM

Consolidated/Integrated Risk Management at Bank Mandiri has been in effect since 2008, in line with Bank Indonesia Regulation No.8/6/PBI/2006 on Implementation of Consolidated Risk Management for Banks Controlling Subsidiaries. With time, that regulation was supplanted by OJK Regulation No. 38/POJK.03/2017 on Implementation of Consolidated Risk Management for Banks Controlling Subsidiaries. Besides, Bank Mandiri has implemented Integrated Risk Management per OJK Regulation No. 17/POJK.03/2014 on Implementation of Integrated Risk Management for Financial Conglomerates. In the implementation of Integrated Risk Management, Bank Mandiri also refers to Integrated Governance Guidelines per OJK Regulation No. 18/POJK.03/2014 on Implementation of Integrated Governance for Financial Conglomerates.

The implementation of Consolidated/Integrated Risk Management adheres to Risk Management principles, the business characteristics of each subsidiary, and local Authorities/Supervisors. Bank Mandiri's subsidiaries are Bank Syariah Indonesia, Bank Mandiri Taspen, Bank Mandiri (Europe) Ltd, Mandiri Tunas Finance, Mandiri Utama Finance, AXA Mandiri Financial Services, Mandiri AXA General Insurance, Mandiri Inhealth, Mandiri Sekuritas, Mandiri Capital Indonesia and Mandiri International Remittance.

As the Main Entity responsible for active monitoring of the implementation of Consolidated/Integrated Risk Management, Bank Mandiri has an Integrated Risk Committee/IRC comprising Directors and the Company's officials as well as Directors and/or Officials from its Subsidiaries. Bank Mandiri also has an Integrated Risk Management Task Force (IRMTF) that is directly responsible to the Risk Management Director. The duties and responsibilities of the IRMTF are outlined in Bank Mandiri's Guidelines on Integrated Governance:

1. Provide input to the Board of Directors of Bank Mandiri concerning the establishment of Integrated Risk Management policy;
2. Monitor the implementation of Integrated Risk Management policy including developing the procedure and tools for identification, calculation, supervision, and control of risks;
3. Supervise risks in Financial Conglomerates based on the results of;
    a. Risk Profile of each Subsidiary of the Financial Conglomerate;
    b. Level of risk of each integrated risk;
    c. Integrated Risk Profile;
4. Perform stress testing;
5. Perform regular review to ensure:
    a. Accuracy of risk assessment methods;
    b. Adequacy of the implementation of the management information system;
    c. Accuracy of the integrated implementation of policies, procedures, and risk limit;
6. Review ideas for new strategic business lines that may have significant effects on risks borne by financial conglomerates;
7. Provide information to the Integrated Risk Management Committee on matters to attend concerning evaluation results of the Integrated Risk Management implementation;
8. Provide input to the Integrated Risk Management Committee to prepare and update the Integrated Risk Management policy;
9. Prepare and submit a report on Integrated Risk Profile regularly to the Director in charge of the Integrated Risk Management function and the Integrated Risk Management Committee.

In 2021, the IRMTF launched some integrated work initiatives/plans to improve the implementation of Consolidated/Integrated Risk Management of Mandiri Group, namely:

1. Implementation of Operational Risk Management (ORM) framework at Bank Mandiri (Europe) Ltd (BMEL) and Mandiri Manajemen Investasi (MMI);
2. Stress Testing of Mandiri Group with Subsidiaries every semester;

3. Enhancement of the Integrated Risk Management Information System (RACER System).
4. Strategic review of the implementation of Risk Management at some subsidiaries
5. Integrated Risk Management Forum every quarter.

Bank Mandiri also actively identifies, measures, supervises, and controls the risks of Mandiri Group (self-assessment) using an integrated information system called Risk Assessment Consolidation Generator (RACER) to support the self-assessment:

a) The Bank Soundness Rating is measured using consolidated Risk-Based Bank Rating (RBBR) consisting of the assessment of Risk Profile, Integrated Governance, Rentability, and Capital. In 2021, Bank Mandiri reported its Consolidated Soundness Rating for Semester II of 2020 and Semester I of 2021 to the Regulator in time.
b) The Consolidated Risk Profile consists of the management of 8 types of risk (Credit, Market, Liquidity, Operational, Legal, Reputational, Strategic, and Compliance). In 2021, Bank Mandiri reported its self-assessment of Consolidated Risk Profile for quarters I and III of 2021 to the Regulator in time.
c) The Integrated Risk Profile consists of the management of 10 types of risks (8 types plus Intra-group Transaction and Insurance Risks). In 2021, Bank Mandiri reported its Integrated Risk Profile for Semester II of 2020 and Semester I of 2021 to the Regulator in time.

The suggestion from the self-assessment result of the Consolidated/Integrated Risk Profile and the Consolidated RBBR is recommended by Integrated Risk Committee (IRC) and the approval is granted by the Risk Management & Credit Policy Committee (RMPC) Category A. Then, the self-assessment result of the Consolidated/Integrated Risk Profile and the Consolidated RBBR that have been approved by RMPC is reported to the Regulator and submitted to the Integrated Governance Committee.

RISK MANAGEMENT UNIT

The Bank has a Risk Management Group which functions to manage the bank's risk management. The Bank's Risk Management Group is headed by the Director of Risk Management, Ahmad Siddik Badurddin. The following is the profile of the Group Head of Risk Management and the organizational structure of Bank Mandiri's Risk Management Group in 2021.

The Bank has a Risk Management Group which functions to manage the Bank's risk management. The Group is headed by the Director of Risk Management, Ahmad Siddik Badurddin. The following is the Group Head's profile and its organizational structure in 2021.

Bank Mandiri has a Risk Management Unit (SKMR) responsible for managing all risks faced by Bank Mandiri, including the development of supporting tools needed in business processes and risk management.

Profile of Risk Management Group of Bank Mandiri

David Khosumadi
Group Head Operational Risk

Age
44 years old

Nationality
Indonesia

Domicile
Jakarta

Education
- Bachelor of Industrial Engineering from Universitas Kristen Maranatha (2000)
- Master of Business Administration from Southeastern Louisiana University, United States (2004)

Position(s)
At Bank Mandiri as:
Group Head Operational Risk (2021-present).

RISK MANAGEMENT

Alfanendya Safudi

Group Head Credit Portfolio Risk

Age
51 years old

Nationality
Indonesia

Domicile
Jakarta

Education

- Bachelor of Industrial Engineering from Institut Teknologi Bandung (1994)
- Financial Risk Manager (FRM) from Global Association of Risk Professional (2015)
- Chartered Financial Analyst (CFA) from CFA Institute (2019)

Position(s)

At Bank Mandiri as:

- Department Head of Model Risk Validator (2010-2014).
- Department Head Credit Risk Modelling (2015-2016).
- Department Head Enterprise Risk Management (2016-2018).
- Group Head Credit Portfolio Risk Group (2018-present).

Bily Arkan

Group Head Market Risk

Age
43 years old

Nationality
Indonesia

Domicile
Jakarta

Education

- Bachelor of Accounting Economics from Universitas Trisakti (2000)
- Master of Management from Universitas Indonesia (2005)

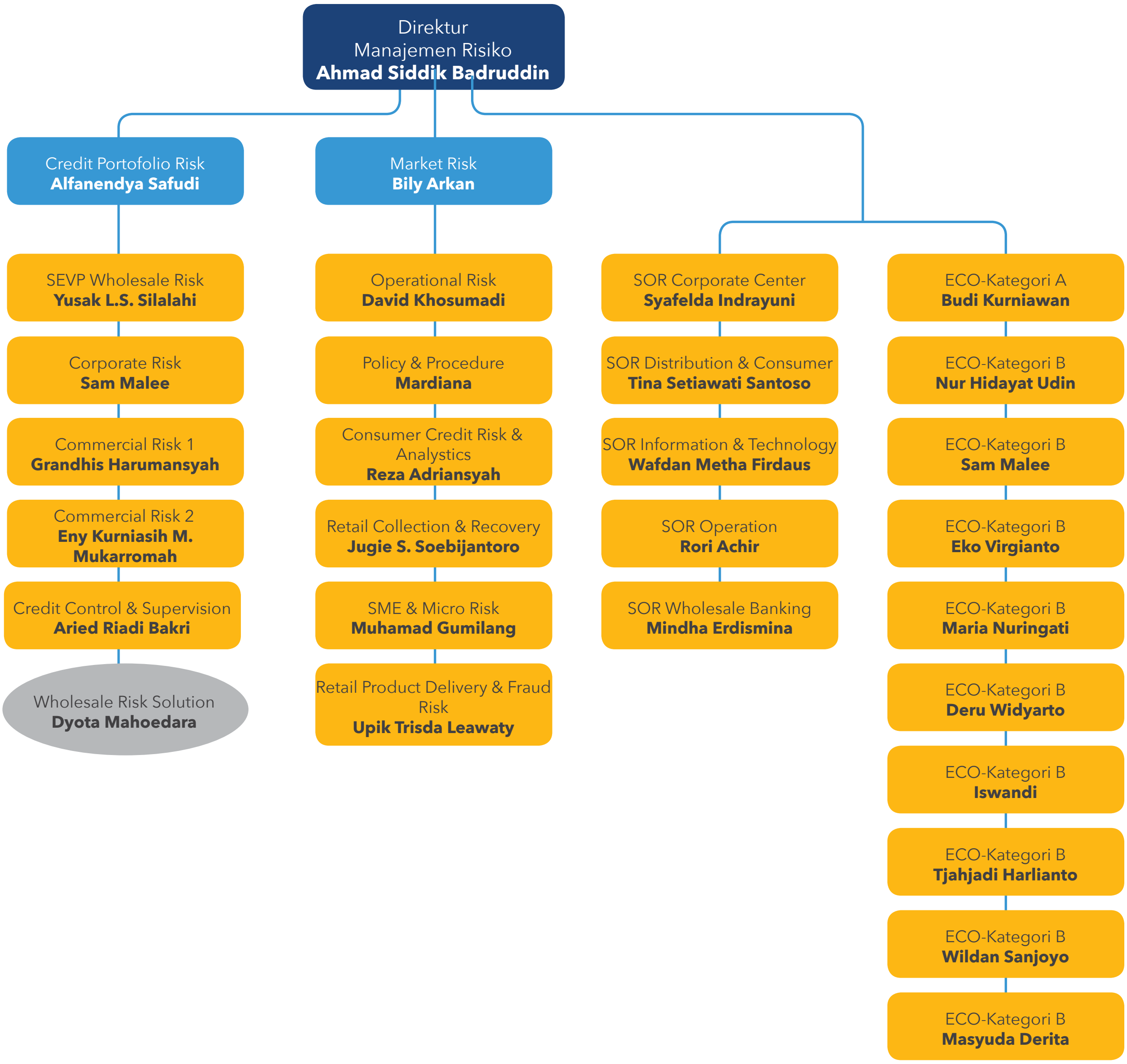
Position(s)

At Bank Mandiri as:

- Department Head Trading Risk (2012-2016)
- Department Head Assets & Liability Management (2016-2018)
- Deputy Group Head Retail Collection & Recovery East Indo (2018-2020)
- Group Head Market Risk (2021-present)

RISK MANAGEMENT

Organizational Structure of the Risk Management Group of Bank Mandiri



Duties and Responsibilities of the Risk Management Group

The Risk Management Group of Bank Mandiri consists of several work units namely Market Risk Group, Operational Risk Group, and Credit Portfolio Risk Group supervised by the Risk Management Director. The duties and responsibilities of each work unit are as follows.

RISK MANAGEMENT

Group	Functions, Duties and Responsibilities
Operational Risk	1. Formulate, propose, and monitor Operational Risk Appetite. 2. Develop, implement, evaluate, and monitor regulatory capital charge calculation method in accordance with applicable regulations and Basel provisions. 3. Formulate, develop, and refine frameworks of operational risk management; the frameworks include procedures, technical guidelines, methodologies, and tools. The Risk Management Group is also responsible for introducing and providing training and asssitance in the frameworks' implementation to the Operational Risk Management Unit (Senior Operational Risk by Business Area). 4. Monitor and evaluate the quality and adequacy of operational risk management framework tools, such as Risk & Control Self Assessment (RCSA), Key Indicator (KI), Loss Event Database (LED, and Issue and Action Management (IAM) in the Owner & Risk Control Unit and Operational Risk Management Work Unit (Senior Operational Risk by Business Area). 5. Design, develop, and implement operational risk management system (ORMS). 6. Develop and implement operational risk awareness for all employees. 7. Develop a reporting system informed by the best practices and submit Bank's Operational Risk Profile report to the Management or Risk Management & Credit Policy Committee and regulators. 8. Review and recommend business process improvement actions to minimize operational risk to the Risk Owner Unit, Operational Risk Management Unit (Senior Operational Risk by Business Area) and/or to Risk Management & Credit Policy Committee. 9. Provide references, evaluate, recommend, disseminate, and provide assistance in operational risk management framework implementation to Subsidiaries.
Market Risk	1. Measure market risk using a standardised method, an internal method, and market risk modelling. 2. Perform analysis, provide recommendations, and perform market risk mitigation function for treasury treading activities on behalf of business units and management. 3. Manage the Bank's liquidity risk by applying liquidity risk management principles and preparing alternative strategies for funding liabilities and asset payment so that the Bank's liquidity is managed efficiently, and the risk is controlled. 4. Manage interest rate risk and forex risk of the banking book portfolio and make recommendations for the strategies to manage the Bank's balance sheet to achieve optimum risk and return rate in an effort to maintain profitability and increase shareholder value. 5. Review the pricing methodology of Third-Party Funds, credit, and Transfer Pricing Funds in line with the strategies for managing assets and liabilities. 6. Manage information system concerning the management of interest rate risk, forex risk, and liquidity risk.

RISK MANAGEMENT

Group	Functions, Duties and Responsibilities
Credit Portfolio Risk	1. Develop and improve credit risk methodology, Credit Risk Tools (Rating & Scoring, Watchlist, Stress Testing and Financial Spreadsheet), and process used in credit rating to fulfill the requirement of business development, credit process improvement, and keep up with changes in regulations, competition, and best practices. 2. Prepare a Portfolio Guideline for credit growth reference and determine portfolio limit (per economic/industrial sector, segment, and region) to identify how much risk the Bank can take (risk appetite). 3. Implement portfolio management bank-wide or per each business segment, which includes allocation, reallocation, and concentration of credit portfolio; supervision of risks per sector; and stress testing and sensitivity analysis per sector including portfolio control when necessary. 4. Formulate, prepare and coordinate the implementation of Enterprise Risk Management (ERM) which includes policies, governance, methods, processes, and information system to support the execution of risk management embedded in the business process and risk-based performance, by referring to the international best practices, OJK/BI Regulations, and Basel II/III, and prepare a Recovery Plan. 5. Carry out/coordinate the process of identification, measurement, and analysis of the Bank only and consolidated/integrated risks of subsidiaries using Risk Profile, Risk-Based Bank Rating, and Scenario Analysis (Stress Testing) 6. Perform risk management enterprise modelling by implementing governance model and validation model to ensure that the Bank's models (risk management model or business model) have a reliable quality that can be asserted academically and commercially and that they satisfy the provisions set by the Regulator. 7. Manage crediting database and ERM datamart accurately, reliably, and timely to be used in the modelling, portfolio management, and ERM implementation.

Risk Management Certification

Name	Position	Certification Scheme
Alfanendya Safudi	Group Head Credit Portfolio Risk	• Indonesia Banking Certification in Risk Management – Level 4 • Financial Risk Manager (FRM) • Chartered Financial Analyst (CFA)
Bily Arkan	Group Head Market Risk	Banking Risk Management – 4
David Khosumadi	Group Head Operational Risk	Indonesia Banking Certification in Risk Management – Level 4

Implementation of Duties of the Risk Management Group in 2021

In 2021, the IRMTF carried out some initiatives/plans to improve Risk Management implementation, such as:

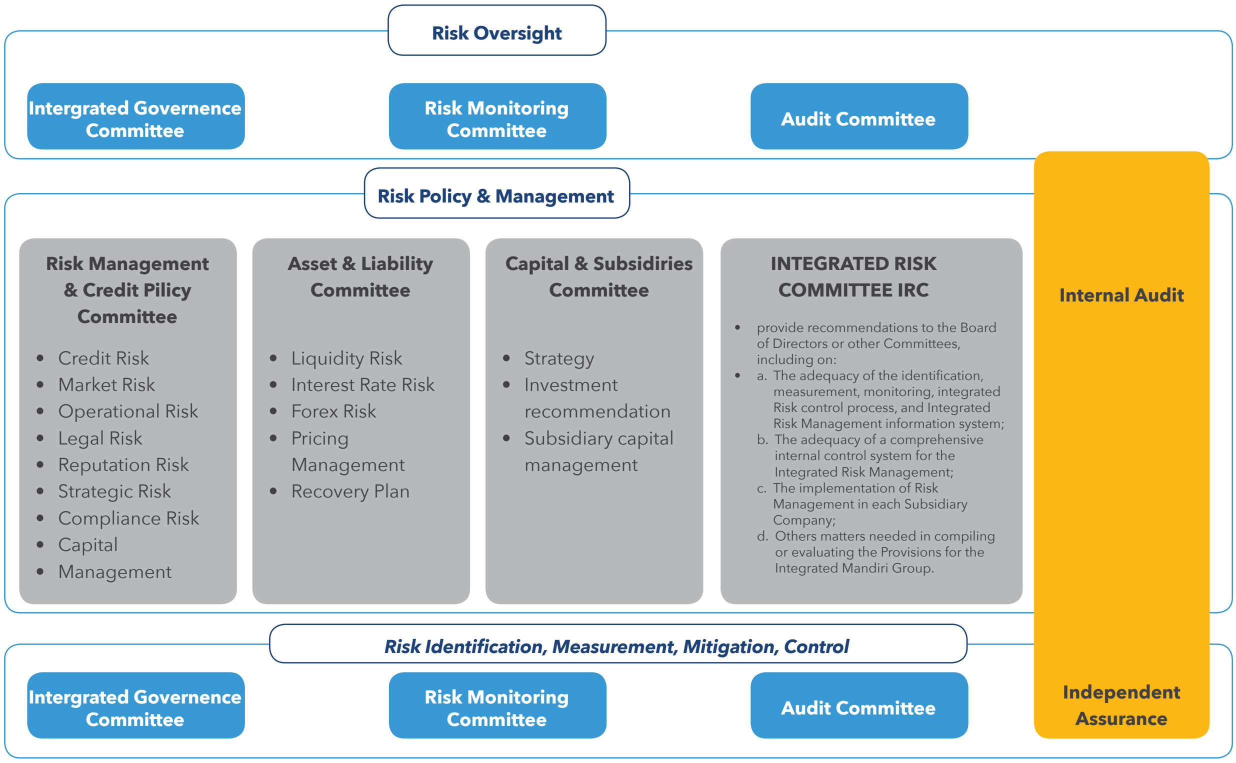
1. Sustainable Finance Action Plan (SFAP) 2021-2025;
2. Development of calculation system for Credit Risk-Weighted Asset (RWA);
3. Development of Management Limit Project that is part of Wholesale digitization development;
4. SA Market RWA Calculation Automatization Project using WEB Enterprise Application Integration (EAI);
5. Project Libor Transition;
6. Enhancement of Assessment Mechanism for Products and New Activities (PNA);
7. Uplifting of Operational Risk Awareness (OPERA) Program;
8. Risk & Control Mapping & Library establishment.
9. Development of Bank Mandiri Risk Appetite Statement 2021;
10. Implementation of stress testing of internal Bank, regularly or ad-hoc;
11. Implementation of an integrated stress testing with Mandiri Group Subsidiaries periodically;
12. 2021-2022 Recovery Plan Updates.

RISK MANAGEMENT

RISK MANAGEMENT FRAMEWORK

The Risk Management Framework of the Company is outlined in Bank Mandiri's Risk Governance Structure consisting of three main parts, namely Risk Oversight, Risk Policy and Management, and Risk Identification, Measurement, Mitigation, and Control. All these three are supported by an Audit Unit and an Independent Assurer to guarantee operational effectiveness.

Simply, the framework and risk governance of Bank Mandiri as mentioned above can be described as follows:



Bank Mandiri's Risk Governance Structure is developed based on four Risk Management Pillars as follows:

Active Supervision by The Board of Commissioners and Directors

The framework and risk governance at Bank Mandiri consist of the Board of Commissioners performing risk oversight through an Audit Committee, Risk Monitoring Committee, and Integrated Risk Governance, and Directors performing the function related to risk policy through an Executive Committee which consists of Risk Management & Credit Policy Committee, Asset and Liabilities Committee, Capital and Subsidiaries Committee, and Integrated Risk Committee. At the operational level, the Risk Management Work Unit along with Business Unit and Compliance Work Unit conduct risk identification, risk measurement, risk mitigation, and risk control.

The duties, responsibilities, and authority of the Board of Commissioners entail the active monitoring of Risk Management activities, including:

1. Understanding the risk attached to the company's functional activities, particularly one that can influence the Company's financial conditions;
2. Evaluating and approving the Risk Management Policies at least once a year or at a higher frequency if there are changes that affect the Bank's business significantly;

RISK MANAGEMENT

3. Evaluating the Directors' implementation of Risk Management to make it compliant with the policies, strategies, and procedures set by the Bank;
4. Providing advice to the Directors concerning transactions or business activities requiring significant budget;
5. Approving the financing of related parties for the credit authorized by the Credit Committee;
6. Performing an active oversight of the Bank's capital adequacy per the Bank's risk profile as a whole, including reviewing the Risk Appetite of the Bank established by the Directors;
7. Increasing the awareness of and enhancing antifraud culture across levels at the Bank;
8. Supervising the implementation of the Integrated Risk Management based on the characteristics and complexity of the Bank's business;
9. Supervising and evaluating the implementation of the Recovery Plan.

In implementing the Integrated Risk Management, the Board of Commissioners have the following responsibilities:

1. Directing, approving, and evaluating the Integrated Risk Management policies;
2. Evaluating the implementation of the Integrated Risk Management policies by the Primary Entity Directors.
3. Evaluating the implementation of the Recovery Plan.

The duties, responsibilities, and authority of the Directors regarding Risk Management activities include:

1. Formulating policies, strategies, and procedures for Risk Management in a written form comprehensively including establishing and approving the Bank's risk limit, and performing re-evaluation once a year or more if necessary;
2. Taking the responsibility for the execution of the Risk Management Policies and risk exposures taken by the Bank as a whole, including evaluating and providing strategic direction of Risk Management based on a report submitted by the Risk Management Work Unit and the regular submission of an accountability report to the Board of Commissioners;
3. Evaluating and canceling transactions performed by a Bank official who is one level below the Directors or transactions requiring the approval of Directors under the applicable internal policies and procedure;
4. Increasing awareness and enhancing the culture of Risk Management, including antifraud culture across organizational levels, for instance by emphasizing the importance of effective internal control;
5. Improving human capital concerning the implementation of Risk Management, for instance by giving continuous lectures and training particularly concerning the system and processes of Risk Management;
6. Performing the Risk Management function independently, which is reflected in the separation of functions between the Risk Management Work Unit performing risk identification, measurement, oversight, and control and the work unit performing and concluding transactions;
7. Performing a regular review at an interval suited to the Bank's needs;
8. Establishing the capital adequacy ratio based on the Bank's risk profile and strategies to maintain the level of required capital, including determining the Risk Appetite;
9. Preparing and implementing the Bank's Recovery Plan, which includes:
    a. preparing a Recovery Plan realistically and comprehensively;
    b. presenting the Recovery Plan to shareholders during a General Meeting of Shareholders for approval;
    c. communicating the Recovery Plan kepada seluruh jenjang atau tingkatan organisasi Bank;
    d. performing a Stress Testing of the Recovery Plan regularly; and
    e. implementing the Recovery Plan effectively and timely.

In implementing the Integrated Risk Management, the Directors have the following responsibilities:

RISK MANAGEMENT

1. Formulating and implementing policies on the Integrated Risk Management
2. Nurturing risk culture as part of the implementation of the Integrated Risk Management;
3. Ensuring the effectiveness of human capital management to execute the Integrated Risk Management function;
4. Ensuring the independent nature of the implementation of the Integrated Risk Management;
5. Evaluating the review done by the Integrated Risk Management Work Unit regularly concerning the Integrated Risk Management;

Bank Mandiri also establishes risk management committees in charge of discussing and giving recommendations to the Directors on matters of:

1. Policies and procedures as well as the risks faced by the Company.
2. Management of the Company's assets and liabilities including interest rate and liquidity.
3. Management of subsidiaries (investment, divestiture, remuneration, formation of the management of the subsidiaries).
4. Implementation of Integrated Risk Management.
5. Business development.

The risk management at the Bank at least consists of:

1. Director in charge of the Risk Management function;
2. Risk Management Unit (SKMR);
3. Operational Unit (risk-taking unit);
4. Internal Audit Unit (SKAI);
5. Compliance Unit.

The Risk Management Unit (SKMR), Internal Audit Unit (SKAI), and Compliance Unit concurrently act as the Integrated Unit.

Adequacy of Policies, Procedures, and Limit Establishment

Bank Mandiri utilizes its Risk Management policies as the main guidance in carrying out the risk management function. For more specific business areas, Bank Mandiri sets more defined policies and procedures, for example in credit, treasury, and operational areas. Among other things regulated in the policies and procedure is the limit for each activity, both at portfolio and transactional levels. All the policies and procedures at Bank Mandiri are the realization of risk management for each activity of the Company that are evaluated and updated at least once a year.

Under SEOJK 34/SEOJK.03/2016 on the Implementation of Risk Management for Commercial Banks, to effectively control risk, a Bank's policies and procedures must reflect its Risk Management strategies by considering the level of risk to take (risk appetite). The level of risk/risk appetite is defined as the types and level of risk the Bank would take/face that is within the Bank's capacity to manage, to achieve business goals.

Bank Mandiri's risk appetite is realized through the Risk Appetite Framework which is strategic decision-making reflecting Bank Mandiri's risk strategies. The risk appetite is reflected in the Bank's strategies and business targets.

The risk appetite is outlined in a Risk Appetite Statement (RAS) which is a formal guideline on risk-taking processes to achieve business targets. RAS is important since it gives a clear and consistent direction for all levels at Bank Mandiri concerning risk-taking capability.

Adequacy of the Processes of Risk Identification, Measurement, Oversight, and Control, and Risk Management Information System

Bank Mandiri conducts the processes of Risk Identification, Measurement, Oversight, and Control as well as Risk Management Information System through the Enterprise Risk Management (ERM) framework. The ERM implementation at Bank Mandiri uses a two-pronged approach to ensure that the risk is not only mitigated properly through daily business processes but also when an unexpected situation (downturn) happens through capital reserves.

Internal Control System

Bank Mandiri practices effective risk management function across all work units by implementing three lines of defense with the following explanation:

1. Work Units as risk owners are the first line of defense responsible for managing their respective risks.
2. The Risk Management Unit acts as the second line of defense performing the oversight function.
3. The Internal Audit Unit acts as the third line of defense performing the independent assurance function.

RISK MANAGEMENT

BUILDING RISK-AWARENESS CULTURE

To realize Bank Mandiri's vision "We aim to be your preferred financial partner", the Bank promotes risk-awareness culture in all operational and business activities to mitigate risks that may disrupt the Bank's business continuity. The culture is introduced to all levels of the Bank, from top management to junior staff. The Bank's Board of Directors and Board of Commissioners have also determined a Risk Appetite Statement (RAS) that defines the risk level that the Bank is able to tolerate. RAS indicates the Bank's risk tolerance capacity andi s developed to help the Bank achieve its business objectives. RAS informs business decision-making, and its implementation is intensively monitored.

Risk-awareness culture building is also reflected from the Bank's product and technology development; every development initiative observes the Risk Management System so that business sustainability can be maintained. Risk assessment and mitigation are also considered prior to a product or service launch/ implementation. This risk approach also applies in the Bank's internal policies and technical guidelines formulation.

A successful risk-awareness culture needs support from everyone in the organization. Realizing this, the Bank incorporates risk-awareness into its corporate culture. The AKHLAK core values of the Bank are applied to ensure that they are deeply reflected in the employees' daily conduct – all employees are expected to drive for growth whilst keeping risk consideration in mind in order for that growth to be sustainable in the long run.

Solid communication strategies are also important in improving risk-awareness culture. Bank Mandiri utilizes a wide variety of communication channels to ensure the wide reach of its messages. The different media channels are employed in a comprehensive manner, adaptive, and sustainable in order to build risk-awareness culture within an open, efficient, and effective risk management framework.

RISK AWARENESS PROGRAM

A successful and robust risk management measures need to be supported by strong risk-awareness from all employees. Bank Mandiri has developed a flagship program in operational risk-awareness building called **"OPERA** (OPErational RiskAwareness)." With the tagline **DARE** (**Detect**, Secure, and **Respond**), OPERA is designed to improve the understanding and risk management effectiveness of every employee. OPERA is implemented bank-wide periodically and consistently by the Operational Risk Group. Each of the program's edition carries a certain theme that reflects emerging risks (significant internal and external events, incidents, current events relating to operational risk, or results of control testing) and forward looking.

In 2021, Operational Risk Group organized OPERA activities under 3 (three) key pillars. Each activity was disseminated using different media channels and approaches to ensure effective and comprehensive outcomes:

- **OPERAedu**
  The OPERA pillar to educate its audience with creative content and media.

	OPERAedu Programs	Frequency	Coverage
1	**OPERAtoon** 1-page illustration containing lessons, reminders, and latest risk control tips	Monthly	• Head office and regional employees • Overseas branch (new program, effective August 2021)
2	**OPERAletter** 3-4 pages of content on current operational risk or new regulations on risk management.	Quarterly	All employees

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3	**OPERAposter** 1-page poster containing quotes or persuasive statements to remind employees of risk and control	Monthly	All employees
4	**OPERAclip** Short clips on operational risk issues and mandatory control measures, targeting specific risk-related behaviors	Quarterly	All employees
5	**OPERAchecklist** Online checklist containing 10 short questions on operational risk related to employees' routine activities	Monthly	All employees (New program, effective July 2021)
6	**OPERAquiz** Gimmick quiz with rewards to recognize employees who actively participate in OPERA contents	Monthly	All employees

- **OPERAlearning**
  An OPERA program that aims to provide learning through modules or materials about operational risk management to employees through in-class, online, and e-learning training modes.

OPERAlearning Programs		Frequency	Coverage
1	**OPERAmodul** E-learning platform on operational risk, offering mandatory sessions for employees. The modules are arranged in several levels from basic to advance.	Adhoc	• Modules for all employees • TAD modules to L4 (Section Head/ Branch Manager/level) • Module L3 (Head of Dept. / Area Head /level) to L2 (Headof Group Work Unit/RCEO /level) • Modules for Subsidiaries
2	**OPERAe-Learning** Face-to-face and/or virtual learning programs on operational risk management frameworks, involving case studies and direct discussions with trainees	Adhoc	• Induction Officer • Officer Development Program • Staff Development Pogram • Advance Branch Management Course • Basic Branch Management Course • Subsidiaries

- **OPERAforum**
  An OPERA program that assesses operational risks; the program is designed for risk owners and to faciltiate risk discussions with employees. OPERAforum may be organized in a limited arrangement with a specific audience in mind or for general audience using online streaming.

	OPERAforum	Frequency	Coverage
1	**OPERAforum** Operational Risk Management Forum facilitated by the SOR in the individual work unit, discussing operational risk management (e.g., CT results, operational risk incidents, monitoring action plans, etc.)	Triwulan	• *SOR* • *Related work units attended by the person in charge, Department Head, Group Head*

2	**OPERApodcast** Online broadcast or streaming program that talks about current themes on operational risk with interactive Q&A session with the audience.	Adhoc	Seluruh Pegawai (program bar All employees (New program 2021) u 2021)

The above awareness-building activities help employees to remember and understand the importance of operational risk management, thereby improving its effectiveness and efficiency.

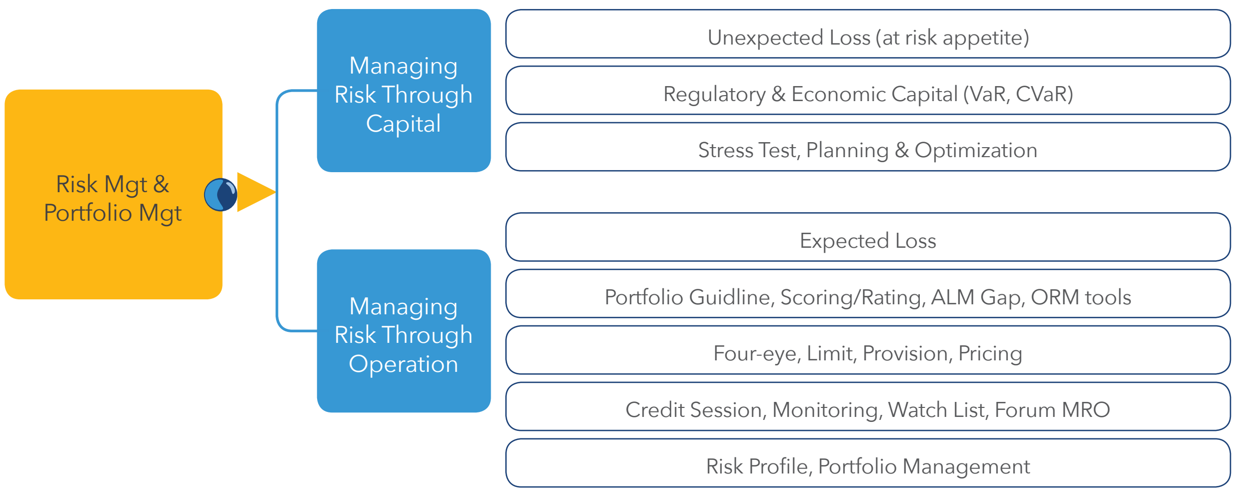
THE BANK RISK MANAGEMENT

Risk Management is carried out in an integrated manner, linking strategic planning, risk appetite, execution, risk assessment and performance evaluation, in an effort to maximize shareholder value. The implementation of risk management is aimed at providing added value for the Bank and stakeholders to realize the Corporate Plan.

Bank risk management is regulated in a bank risk management policy prepared by referring to Bank Indonesia Regulations (PBI), Financial Services Authority Regulations (POJK), Basel regulations and international best practices. This policy is reviewed regularly to anticipate changes in the Bank's business conditions, regulations, and internal conditions. The Bank has a Risk Management Policy (KMNR) which explains the basics of Risk Management Policy and is the main guideline and highest regulation in the field of risk management at Bank Mandiri. KMNR becomes a reference for policies, procedures, and guidelines in the field of risk management in accordance with applicable regulations.

Bank Mandiri runs the management through the Enterprise Risk Management (ERM) framework. The implementation of ERM at Bank Mandiri uses a two-prong approach, namely risk management through capital and risk management through operational activities, shown in the diagram below:

Risk Management



In the two-pronged approach are 4 (four) main components of supporting pillars, namely:

1. **Organization & Human Capital**
   The Risk Management Unit (SKMR) at Bank Mandiri is responsible for managing all risks faced by Bank Mandiri, including the development of supporting tools required in

RISK MANAGEMENT

business and risk management. Besides, there is a work unit acting as a risk counterpart of every business unit in the four-eye process of credit distribution. Since all work units at Bank Mandiri are responsible for risk management the success of risk management relies on the risk awareness among these work units coupled with sufficient technical know-how. Thus, Bank Mandiri always enhances its capabilities and the know-how of its employees particularly in matters of risk management, by arranging routine internal training programs via the Risk Management Academy or by outsourcing outside authorities on risk management so there is a transfer of knowledge to the employees of Bank Mandiri. Further, at least once a year, Bank Mandiri routinely arranges a workshop, forum, internship program, or a program on risk management in line with the Company's culture.

The Risk Management structure at Bank Mandiri consists of the Risk Management Directorate in charge of Independent Risk Management and Credit Approval Risk units comprising Wholesale Risk and Retail Risk. The Risk Management Directorate is led by a Risk Management Director who is assisted by a SEVP of Wholesale Risk.

2. **Policies and Procedures**
   The Risk Management Policies (KMNR) become the main guidelines on the implementation of risk management at the operational level and the capital management at the Bank consists of:
   a) **Prudence**, which entails Capital Adequacy, Early Warning System, Limit Establishment, and Risk Diversification
   b) **Risk Management**, which entails Risk Profile, Risk Appetite, Stress Testing, and Integrated Risk Management.
   c) **Risk Management for each type of risks**, which entails processes of risk identification, measurement, oversight, and control.
   d) **Risk Oversight**, which entails monitoring of activities/methods of risk management at Bank Mandiri, and the Internal Control System.

   These Risk Management Policies become the basis for making procedures and technical guidelines concerning risk management at Bank Mandiri.

3. **System & Data**
   The risk management system is developed to achieve more efficient business processes so that decision-making is faster yet prudent. To maintain integrity and data quality, Bank Mandiri has adopted an Integrated Processing System and a Loan Origination System to increase the efficiency of credit processes and maintain data quality in the Corporate, Commercial, and Retail segments. To increase collection productivity level particularly in the Consumer and Retail segments, the Bank adopts an Integrated Collection System. Bank Mandiri utilizes a Summit System and an Ambit Focus System to manage trading book and banking book risks in the activities of treasury and assets & liabilities management.

   To assess the Risk Profile and the Soundness Level of Mandiri Group at individual and consolidated levels, the Bank has adopted a web-based tool called Risk Assessment Consolidation Generator System (RACER) so that the risk assessment processes are more effective, efficient, accurate, and accountable and that the authorized access to the system is safer.

   In terms of bank-wide risk management, Bank Mandiri has implemented a new ERM system as a method of oversight of holistic risk management. This is available in the same system platform as the calculation of capital adequacy to cover credit risk capital charge using a Standardised Approach, calculation of Advanced Internal Ratings-Based Approach as a reference to determining a risk premium and applying IFRS 9, as well as calculation of impairment loss allowance under the IFRS 9.

4. **Methods/Model & Analytics**
Bank Mandiri has continuously implemented a risk measurement that adheres to international best practices by using quantitative and qualitative methods and developing risk models such as rating, scoring, Value at Risk (VaR), portfolio management, stress testing, and others as support for judgemental decision-making.

Periodically, available models are validated by an independent Unit Model Validator to ensure the quality and validity of such models. These risk models are managed through a model risk management framework inherent in the function of the Model Governance Guiding Unit. The management of model risk is done to ensure control over every component in the model used in business processes and decision-making. This model management framework includes:

- Inventory Model
Through the inventory model, the models at Bank Mandiri are identified. This identification of models includes information concerning the cycle of the models such as model initiation, model development, model validation, model implementation, model usage, and model monitoring. Some information on these models is about the description of or the statistical results produced by these models, the purpose of using the models, model owners, model developers, model users, and validation results.
- Model Risk Assessment
An assessment of the level of risk of the models based on quantifiable observations about the materiality and complexity of the models.
- Model Control
The process of monitoring of models and control over models constitutes a continuous assessment. The control process is done by validating models based on first-time validation or ongoing validation. The first-time validation is validation conducted for the first time after the model development process takes place to ensure that the developed models adhere to academic requirements, best practices, and regulatory requirements. The ongoing validation is validation conducted periodically to ensure the performance of models.

With the adoption of the model management framework, there is a segregation of duties between the first line of defense (owner, developer, and user models), the second line of defense (validator model and model management guiding unit), and the third line of defense (Internal Audit).

Bank Mandiri also continues to implement Basel II, III, and ERM in compliance with the Financial Services Authority and the BCBS (Basel Committee on Banking Supervision) as well as the best practices, which cover Credit Risk, Market Risk, Liquidity Risk, Interest Rate Risk on Banking Book Position, Operational Risk, Capital Management, and Internal Capital Adequacy Assessment Process (ICAAP), as well as Stress Testing and Recovery Plan.

WORST-CASE SCENARIO SIMULATION AND STRESS TESTING

To assess Bank Mandiri's perseverance in the face of plausible exceptional outside events, Bank Mandiri performs a stress test to make a contingency plan and satisfy regulatory requirements in Indonesia. To Bank Mandiri, a stress test aims to estimate potential losses the Bank can sustain and the Bank's capital sufficiency to absorb these losses, determine the adequate liquidity to fulfil contractual or behavioural obligations of the Bank as well as identify the necessary steps to mitigate risks and maintain capital sufficiency.

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There are 2 (two) types of stress testing at Bank Mandiri, namely sensitivity/shock analysis and scenario analysis (historical or hypothetical). The execution of a stress test covers the analysis of main risks such as credit risk, market risk, and liquidity risk whose calculation uses a statistical or a financial model developed by the Bank in line with the best practices in the industry, for instance, a model and a stress test that compares changes affecting the credit risk to macroeconomic factors.

In general, the result of stress testing throughout 2021 showed that Bank Mandiri was still capable of maintaining its capital sufficiency and liquidity by making quick anticipation of assets and liabilities management and preparing policies and systems.

In addition to conducting a stress test at the Bank at the individual level, a stress test at the level of Mandiri Group along with its subsidiaries was also performed. The stress testing for the Mandiri Group was one of the ways to communicate integrated risk management, whose result was presented to the management of Bank Mandiri, the management of Subsidiaries, and regulators for feedback and insights regarding corporate risk management strategies in case of an economic collapse.

In the future, stress testing will become relevant in identifying and measuring the impact of the COVID-19 pandemic and economic uncertainty on the Bank's performance to prepare feasible control measures.

RECOVERY PLAN

Based on the size of assets, liabilities, and capital, the level of product complexity, and the connection to the banking system, the FSA has determined that Bank Mandiri is a Domestic Systematically Important Bank.

As a Systemic Bank, Bank Mandiri prepares a Recovery Plan and Recovery Options to prevent, restore, or remedy the Bank's financial conditions and business continuity in the event of financial stress, as regulated in OJK Regulation No. 14/POJK.03/2017 on a Recovery Plan for Systemic Banks.

This Recovery Plan consists of a whole-entity analysis of the Bank's and its Subsidiaries' business lines, including crises (stress testing) that may happen to the Bank unexpectedly or a market-wide shock that may endanger the Bank's business (point of non-viability). As regulated by the OJK Regulation on Recovery Plan, the first Recovery Plan of Bank Mandiri has been approved by the shareholders on March 21, 2018, and Bank Mandiri has issued Medium Term Notes worth Rp500 billion to meet OJK Regulation No. 14/POJK.03/2017 on a Recovery Plan for Systemic Banks.

TYPES OF RISKS AND ITS MITIGATIONS

There are 10 (ten) types of risks managed by Bank Mandiri at the consolidated level, which are:

1. Credit Risk
2. Market Risk
3. Liquidity Risk
4. Operational Risk
5. Legal Risk
6. Reputational Risk
7. Strategic Risk
8. Compliance Risk
9. Intra-group Transaction Risk
10. Insurance Risk

CREDIT RISK MANAGEMENT (CPR)

Credit risk management and mitigation are performed at every phase of lending. The credit risk management at Bank Mandiri for the Wholesale segment begins with determining market targets that refer to the Portfolio Guideline, which categorizes industries according to Industry Classification (attractive, neutral, selective, alert) based on the outlook and quality of the portfolio as well as Industry Limit, purpose to minimize the concentration of credit risk in certain sectors.

In the pre-approval phase, there is a Clearance Process consisting of preliminary analysis on targeted customers for Industry Acceptance Criteria and clearance parameters (reputation, business, finance) to generate quality prospective borrower pipelines. The next process is to perform a credit risk assessment by using a number of credit risk tools (credit risk rating, spreadsheet, CPA, NAK, etc) which are then decided by the Credit Decision Authority (through Credit Committee Meetings) with a four-eye principle involving Business Unit and Credit Risk Management Unit independently.

After loans disbursement, credit risk and potential borrower failures must always be monitored and detected early (Early Warning Signals) using ALERT tools and if the borrower becomes problematic then a further action plan needs to be executed, which consists of collection, recovery, or restructuring among others.

As the nature of the Retail segment is a mass market, the credit process is more automatic in that it relies on the use of a credit risk scorecard, referring to the Risk Acceptance Criteria of each product, and is processed through an automated work-flow (loan factory). Monitoring is done at the portfolio level through the Portfolio Quality Review, which can be continued with the collection dan recovery process for the problematic portion of the portfolio.

To anticipate the deterioration of macroeconomic conditions, a "what-if" analysis of the wholesale and retail portfolios is performed and is subjected to stress testing and sensitivity analysis using certain macroeconomic scenarios.

In lending, Bank Mandiri always prioritizes the prudence principle by assigning a credit analysis function to independent business units and credit risk unit. Bank Mandiri always adheres to the Credit Policy (CP) in managing credit risk end-to-end. In the operational sense, this policy is outlined in the form of Credit Procedure Standard (CPS) and Product Manual.

In implementing credit concentration risk management at the borrower level, Bank Mandiri consistently monitors the Legal Lending Limit (LLL) and the application of Management Limit and Value Chain Limit for large business groups. In general, the credit process and credit risk management at Bank Mandiri have been carried out end-to-end and integrated by the Business Unit, Credit Operation Unit, and Credit Risk Management Unit.

The Bank periodically reviews and updates general credit policies, credit procedure per business segment, and risk management tools. The work guidelines aim to provide a comprehensive understanding of credit risk management, identify risks, measure and mitigate risks in the end-to-end lending process starting from determining the target market, credit analysis, approval, documentation, credit withdrawal, monitoring/supervision, to settlement of bad credit/restructuring.

To enhance its social role and concern about environmental issues and as an effort to do its responsibility in good corporate governance, Bank Mandiri has made a Technical Guidelines on Environmental and Social Analysis for Credit Provision that is used as a reference in doing environmental analyses for credit provision. This is in line with the Bank Indonesia Regulation concerning Asset Quality Assessment of Commercial Banks, which regulates that the assessment of the borrower's business prospect shall reflect the borrower's efforts to safeguard the environment. Besides, Bank Mandiri has started implementing sustainable banking through Sustainable Finance Action Plan (SFAP) to develop business processes and portfolios on the basis of ESG (environment, social, governance).

In principle, credit risk management is applied both at transactional and portfolio levels. At the transactional level, the four-eye principle is implemented, in which credit decisions shall involve the Business Unit and Credit Risk Management Unit independently to reach objective decisions. The mechanism of the four-eye principle is set by the Credit Committee based on the allowed limit and the credit decision-making is reached through the Credit Committee Meeting.

Credit risk from borrowers and products have been covered and reserved through CKPN which is currently calculated based on SFAS 71 as of 1 January 2020, and monitored through the cost of credit indicator.

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Throughout 2021, the Bank assessed the latest conditions of the borrower to identify its eligibility status for the extension of the COVID restructuring facility. Non-eligible borrowers would potentially become uncollectible to the point of constituting NPL. This was apparent in the amount of NPL post-COVID restructuring that rose from Rp143 billion in December 2020 to Rp2.224 billion in October 2021. To minimize the upward trajectory of the NPL post-COVID restructuring, the Bank has been monitoring and helping former borrowers benefitting from the COVID restructuring via early and selective normal restructuring. However, for total NPL, the Bank succeeded in cutting back on NPL gradually in 2021. The NPL percentage (Excluding Bank) was successfully brought down from 3.29% in December 2020 to 3.01% in October 2021. This improvement in NPL is due, among others, to optimization of Upgrade and Collection on non-performing borrowers in 2021. With respect to LAR Incl COVID, the Bank also managed to bring down the LAR Incl COVID from 22.33 in December 2021 to 20.38% in October 2021 due to decreasing NPL and COVID restructuring portfolio. In 2022, the Bank projects amelioration of NPL and LAR so that credit quality would improve gradually.

MARKET RISK MANAGEMENT

Market risk management is carried out by an independent unit by implementing the segregation of duties principle, the separation of functions and responsibilities consisting of the front office, middle office, and back office. The Market Risk Management Organization comprises two parts, namely Market Risk Management – Trading Book and Market Risk Management – Banking Book.

The framework for and governance of market risk management at Bank Mandiri consist of:

a. The Board of Commissioners, who are responsible for market risk oversight through the Risk Monitoring Committee, Integrated Governance Committee, and Audit Committee.
b. Directors, who are responsible for the risk policy function through the Executive Committee with respect to market risk management and recovery plan, the Assets & Liability Committee, and Risk Management and Credit Policy Committee.
c. Risk Management Unit together with the business units and compliance unit, who perform risk identification, risk calculation, risk monitoring, and risk control.

The Risk Management Framework of Bank Mandiri is developed based on internal and external factors including but are not limited to the Bank's business, regulatory provisions, development of methodologies and best practices, as well as risk data. The authority and responsibilities regarding the implementation of risk management are regulated in the Risk Management Policy (RMP). Meanwhile, the guidelines on market risk management in both the trading book portfolio and banking book are outlined in the Standard Treasury Procedure (STP) and the Standard Asset & Liability Procedure Management (SALPM).

Management and Mechanism of Market Risk Measurement – Trading Book

Trading book market risk is a risk arising from potential losses due to trading book activities, changes in interest rates, and exchange rates (including derivative instruments). Bank Mandiri's market risk management is carried out by applying the segregation of duties principle, i.e. separating functions and responsibilities of the treasury unit trade transactions, which consist of:

Segregation of Duties Principle

Front Office Unit (Treasury)	Middle Office Unit (Risk Management)	Back Office Unit (Treasury Operation)
Conduct transactions	Monitor, assess, and report the risks arising from all trading activities conducted by the Front Office Unit	Record and evaluate all exposures of trading activities on a daily basis using market prices from independent sources

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The measurement of trading book risk is done according to regulatory provisions and some internal indicators, which include Value at Risk, sensitivity simulation, and stress testing. Monitoring is conducted by implementing some types of transaction limits at the dealer level to ensure exposures from Treasury transactions remain consistent with the risk appetite set by the management.

Management and Mechanism of Market Risk Measurement – Banking Book

The banking book market risk is a risk that arises because of changes in interest rates and exchange rates for banking book activities that can affect the Bank's profitability (earning perspective) and the economic value of Bank capital (economic value perspective). The management of Bank Mandiri's banking book market risk is done by optimizing the balance sheet structure to obtain maximum returns per the level of acceptable risk. It is also done by setting a limit that is in accordance with internal provisions and the applicable laws and regulations, which is monitored periodically by the relevant work unit.

LIQUIDITY RISK MANAGEMENT

Liquidity risk is arising from the Bank's inability to fulfill due obligations using cash flow financing and/or high-quality collateral liquid assets without disrupting the Bank's activities and financial conditions.

Liquidity risk can be divided into two categories:

a. Funding Liquidity Risk, which is a risk caused by the Bank's inability to liquidate its assets or secure funding from other sources. The inability to secure cash flow financing that causes liquidity risk can be explained by (1) the Bank's inability to generate cash flow from productive assets or asset liquidation including liquid assets; and/or (2) the Bank's inability to generate cash flow from funding, interbank transactions, and received loans.

b. Market Liquidity Risk, which is a risk caused by the Bank's inability to close out certain positions at a market price due to inadequate market liquidity conditions or disruptions in the market.

Liquidity Risk Management is carried out in the following 4 (four) stages:

a. Identification, to determine risk and sources of liquidity risk and the problems it poses so that it may be controlled and mitigated. The identification of liquidity risk can be conducted by identifying balance sheet components and administrative account components that may affect the Bank's liquidity and identifying market parameters such as crises and other things.

b. Measurement, to measure liquidity risk, which is done using 2 (two) approaches, namely (1) Nominal Stock-Based (Liquidity Ratio) which entails the use of various financial ratios as an indicator of the level of liquidity risk and (2) Flow-Based (Liquidity Gap Analysis).

c. Monitoring, which is conducted using a limit system to monitor the indicators of liquidity risk.

d. Control, which is an activity that aims to minimize the impact of liquidity risk by considering the level of income earned.

Tools and Method

Bank Mandiri manages liquidity risk by measuring the liquidity risk using some indicators, such as primary reserve ratio (minimum statutory reserves and Cash ratio), secondary reserve (liquidity reserves), Macroprudential Intermediation Ratio (MIR), Liquidity Coverage Ratio (LCR), and Net Stable Funding Ratio (NSFR).

To manage liquidity risk in a measured and comprehensive manner, Bank Mandiri implements the following strategies:

1. Determine limits that refer to internal provisions and regulatory provisions.
2. Perform periodic liquidity risk stress testing to determine the impact of changes in market factors and internal factors in extreme conditions (crises) on liquidity conditions.

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3. Arrange and conduct a periodic review of the Liquidity Contingency Plan (LCP) and Recovery Plan that regulate the Company's procedure for handling worsening liquidity conditions including alternative financing strategies such as sale/purchase of FX, Money Market instruments, and Interbank Securities Repo, Government Bond sale, and the use of Standing Facility and repo of the Bank Indonesia. The determination of liquidity conditions and financing strategies in the LCP and Recovery Plan has considered internal and external conditions.
4. Monitor external indicators such as Jakarta Interbank Offered Rate (JIBOR), USD Interbank, Rupiah interest rate, yield from SUN and UST with a 10-year tenor, Outstanding IDR banking liquidity, USD/IDR exchange rate, credit spread of default swaps (CDS), Composite Stock Price Index (CSPI), as well as current market information. This monitoring aims to increase awareness of less stable economic conditions, either due to a global crisis or various domestic issues.

Liquidity Adequacy Ratio

Bank Mandiri's liquidity adequacy can be identified through Liquidity Coverage Ratio, Net Stable Funding Ratio, Macroprudential Intermediation Ratio (MIR), and Liquidity Reserves. The Liquidity Coverage Ratio (LCR) is a ratio of High-Quality Liquid Assets (HQLA) to the estimated net cash outflow within the next 30 (thirty) days in a crisis scenario. The LCR aims to improve the short-term liquidity of a bank during a crisis. In December 2021, Bank Mandiri's LCR reached 200.56% (Bank Only) and 197.69% (consolidated), above the minimum LCR fulfillment target set by the Regulator which was 100%.

Another indicator used by Bank Mandiri to determine liquidity adequacy is the Net Stable Funding Ratio (NSFR). The Net Stable Funding Ratio (NSFR) is a ratio of available stable funding to required stable funding. As of December 2021, Bank Mandiri's NSFR reached 126.20% (Bank Only) and 126.42% (consolidated), above the minimum NSFR fulfillment target set by the Regulator which was 100%.

The Macroprudential Intermediation Ratio (MIR) is a ratio of distributed credit and corporate commercial paper fulfilling certain requirements and are owned by the bank to third-party funds, commercial paper fulfilling certain requirements issued by the bank, and loans fulfilling certain requirements received by the bank. As of December 2021, Bank Mandiri's RIM (Bank Only) reached 78.35%.

In addition, Bank Mandiri has liquidity reserves, which serve as a liquid asset above minimum statutory reserves that are used to meet unscheduled liquidity needs. In managing its liquidity reserves, Bank Mandiri sets a limitation in the form of safety level, which is a projection of liquidity reserves for the next 1 (one) month. As of December 2021, the Bank's liquidity reserves were above the safety level.

RISK OPERATIONAL MANAGEMENT

An operational risk arises from the inadequacy and/or malfunction in internal processes, human error, system failure, and/or external events that affect the Bank's operations. Operational risks can lead to the onset of other risks such as reputational risk, strategic risk, legal risk, market risk, credit risk, compliance risk, and liquidity risk. Effective and consistent operational risk management is important to minimize the emergence of those other risks.

Operational risks are inherent to every product/activity/operational process of the Bank as part of its business activities. The risks are

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also the responsibility of every person within the Bank. Risk & Control Owner have the primary responsibility to carry out an optimal operational risk management to minimize this risk.

To ensure effective operational risk management, the process is carried out in four stages:

a. Identification – a process to identify potential inherent risks to a product/activity/process, taking into account internal and external factors, such as data of operational risk incidents, regulatory changes, and audit findings. This stage includes identifying risk mitigation and control measures.
b. Assessment – a propcess to assess the inherent risk impact and likelihood. The purpose is to learn risks are more material/significant than others, in order to effectively target control measures. Assessment process may also include a quantitative iteration using control testing to evaluate operating and design effectiveness of risk control design within the Bank.
c. Monitoring – a proses to monitor risks that have been identified and assessed for their likelihood. Risk monitoring is carried out at all times in every work unit and by its members. The activity follows a hierarchy and is done collectively, including by the unit's head, adhering to the applicable procedures. Monitoring activities inlcude the early warning systems in existing tools/reporting.
d. Risk Control/Mitigation – a process to control/mitigate risk before the risk is realized by implementing certain procedures and/or following up action plans regarding to identified weaknesses (which may increase risk potential) during monitoring or incident follow-up. This process aims to minimize residual risks that the Bank is exposed to. Risk control activities must be consistent with the available control design; the design needs to be continually reviewed to ensure its relevance in addressing emerging risks.

Operational Risk Management Tools

To enable work units in implementing operational risk management, the Bank provides the following risk management tools:

1. Risk & Control Self Assessment (RCSA)
   RCSA is a register of key risks and control measures that inform risk-based control testing to identify potential weaknesses as early on as possible. The tool allows its user to maintain minimum level of residual risks and to take necessary mitigation measures.

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2. Loss Event Database (LED)
   LED contains data of operational risk incidents that are recorded with risk-based approach. LED provides lessons learnt, allows for remediation follow-up and improvement monitoring, and data for capital modelling.

3. Key Indicator (KI)
   KI contains key risk indicators (KRIs) and Key Control Indicators (KCIs) and serves as an early warning signal that encourages early control actions to be undertaken.

4. Issue & Action Management (IAM)
   IAM is a tool to monitor if known issues are follow-up using a range of activities, such as control testing, incidents, key indicators, and self-identified issues.

5. Capital Modelling
   A tool to calculate regulatory capital charge in accordance to applicable regulations and as part of operational risk mitigation.

To improve its operational risk management effectiveness, the Bank has developed an integrated Operational Risk Management System that covers all of the tools above. The system is also implemented in all work units at the head office and regions.

The output of operational risk management activites is an Operational Risk Profile Report that describes operational risk exposure. The report is submitted periodically to the Bank's Board of Commissioners and Board of Directors, and supports the boards' active role in operational risk management. The report also informs the Bank's risk management report to regulators as part of Risk-Based Bank Rating (RBBR) in accordance with applicable provisions.

Operational Risk Management Organization

Operational risk management is carried out by all of the Bank's elements, including the Board of Directors with active supervision from the Board of Commissioners. The Boards understand existing risks and have a key role in supporting and overseeing risk management activities at the operational unit level.

The operational risk management organization and their duties and responsibilities are:

- **Risk Management & Credit Policy Committee (RMPC)**
  RMPC leads the preparation, adjustment/improvement of risk management and credit policies. RMPC's membership, duties, and authority are stipulated in a Board of Directors' Decision on RMPC.

- **Director Tasked with Risk Management Function**
  The duties, responsibilities, and authority of the Director with Risk Management Function as set out in the Risk Management Policy.

- **Internal Audit Unit**
  IAU carries out independent assurance function to ensure that all operational defense lines are functioning effectively and properly.

- **Work Unit on Operational Risk Management Development (Bankwide/Enterprise)**
  A unit that is responsible to formulate and disseminate policies, strategies, frameworks, and operational risk management tools.

- **Operational Risk Management Unit (Senior Operational Risk by Business Area)**
  A unit (attached to a business area) that is responsible for implementing operational risk management policies, strategies, frameworks and tools in collaboration with the Risk & Control Owner.

- **Risk & Control Owner**
  A unit that is fully responsible for operational risk management and ensuring the effectiveness and compliance of control measures in every operational activity. A Risk & Control Owner maintains the Bank's operational

risk appetite at a level that has been identified, thereby allowing the Bank to achieve its goals and keep an optimal level of regulatory capital charge.

LEGAL RISK MANAGEMENT

Legal risk is encountered by Bank Mandiri as a result of lawsuits, either filed by internal or external parties and/or the discovery of legal loopholes such as the absence of legal documents and regulations or weaknesses in documents. The legal risk management is conducted by the Legal Unit at the Head Office that performs functions, duties, and responsibilities in relation to regulatory matters, advisory, litigation, advocacy and legal support, education and transformation in legal area and manages the Bank's legal risk. In implementing these functions, duties, and responsibilities, the Legal Unit of the Head Office coordinates with the Legal Unit of the Work Unit and Legal Unit of the Region. The Head Office Legal Unit is the governing body of the system and is in charge of supervising the Legal Unit of the Work Unit and the Legal Unit of the Region.

The risk management mechanism which entails the identification process of measurement, control, and monitoring follows the applicable provisions on risk management. Each unit of product owner and/or executor or activity organizer must identify and manage risks to the best of their abilities including but not limited to the legal risk that is essentially prevalent in every product or activity made or conducted by the Company, so that it does not escalate and trigger other risks including but not limited to reputational risk.

The legal risk management by Bank Mandiri that is either preventive or repressive protects Bank Mandiri's legal interests satisfactorily and minimizes significant financial impact on Bank Mandiri, which is considered low according to the 2021 Legal Risk Profile Report.

REPUTATIONAL RISK MANAGEMENT

Reputational risk arises as a result of declining stakeholder trust due to negative sentiments surrounding the Bank.

Reputational risk is managed via monitoring, supervision, handling, and settlement coordinated by the Corporate Secretary with support from relevant work units, such as Customer Care, Legal, Retail Product & Fraud Risk Management, IT Application Development & IT Application Support, and Business Continuity Management. The management of reputational risk follows internal provisions and applicable laws. In its implementation, reputational risk management is done by creating positive images via conventional media and positive content on social media.

The Mechanism for Managing Reputational Risk

Reputational risk is managed via monitoring, supervision, handling, and settlement coordinated by the Corporate Secretary Group which follow the provisions of the Corporate Secretary Standard Guidelines. Based on the Guidelines, there are 4 (four) stages of reputational risk management, namely identification, measurement, monitoring, and control of risk. The realization of those four stages can be seen in each activity performed by the corporate secretary handling reputational risk, such as the Bank's activity as a public company.

Based on that activity, reputational risk in its several forms is evident, such as lateness, errors, and incongruency in report submission caused by individuals who are not aware of or do not understand the principle of disclosure of information or negligence by supervisors. To mitigate that, the Company may take risk mitigation steps such as providing a list of mandatory information for disclosure and/or encouraging supervisors to check and recheck the work.

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Should the reputational risk happen and lead to a negative perception of the Company, an action to minimize the ruin caused by such reputational risk can be taken. One action would be to commission positive articles for printed media, online media, or electronic media as well as positive content for social media to counter the negative perception that has taken shape. These positive articles can be based on business and social activities of the Company or the Company's support of government programs per the Corporate Secretary Standard Guidelines.

Implementation of Reputational Risk Management

One approach to managing reputational risk taken by the Company is ensuring that all work units perform their functions well and follow the applicable regulatory provisions. If there is a mistake that potentially affects the reputational aspect of the main duties and functions of a certain work unit, the work unit must provide detailed information to the Corporate Secretary Group immediately so the risk can be managed and its impact minimized.

At present, Bank Mandiri operates internal channels for handling complaints and questions from customers, such as branch offices, call center 14000, website, and the Company's official social media accounts. All complaints and questions are then forwarded to the Customer Care Group to be addressed and resolved. The Customer Care Group manages complaints and questions not only from internal channels but also from external sources such as printed media, online media, electronic media, and social media.

In doing its duties, the work unit of the Customer Care Group coordinates with the Corporate Secretary Group, especially in handling customer complaints from conventional media and social media.

The Corporate Secretary Group also monitors and evaluates various news items on print, online, and electronic media as well as social media periodically to measure the effectiveness of publications and communications of the Company. Next, the result of the monitoring and evaluation becomes a reference point to which media publications and communications are made in the next period to strengthen the Company's reputation continually.

For that purpose, the Corporate Secretary Group also performs a series of communications activities to bolster government programs such as the addressing of Job Creation Law to the public, Sovereign Wealth Fund Creation, and the Formation of a Government-Owned Sharia Bank. These are executed by inviting editors in chief and organizing other gatherings with several media groups.

In addition, the Corporate Secretary Group also prepares a series of communications activities involving state-owned enterprises to support the National Discount Festival (NDF) that is part of the national program *Bangga Buatan Indonesia* (BBI). The Corporate Secretary Group manages schedules and the involvement of each state-owned enterprise in the NDF.

All those activities reflect the commitment of the Corporate Secretary Group to support the strengthening of the Company's reputation, especially in the main shareholders' perspective amidst national economic conditions affected by the COVID-19 pandemic.

In the event of a crisis so massive that it erodes the Company's reputation as well as the trust placed by the Stakeholders, the Company will immediately implement an action plan to minimize ruin, for instance formulating problem-solving strategies, determining internal sources, and making a schedule for crisis management and conducting the overall evaluation.

STRATEGIC RISK MANAGEMENT

Strategic Risk Management Organization

The Bank has formed a Risk Management Committee and a Risk Management Work Unit that aim to support comprehensive, integrated, measured, and controlled risk management. Each committee is supported by a working group consisting of groups that are directly involved in the risk management issues handled by the said committee.

Strategic Risk Management Mechanism

The Bank's risk management is regulated by a bank risk management policy per the Bank of Indonesia Regulation (PBI), the Financial Services Authority Regulation (FSAR), Basel provisions, and international best practices. This policy is regularly reviewed to anticipate changes in business conditions, regulations, and the Bank's internal conditions.

In managing strategic risk, Bank Mandiri always reviews its performance and evaluates its business target planning and takes corrective steps in developing a strategic plan and business targets by considering internal and external conditions, if necessary.

The Implementation of Strategic Risk Management

The year 2021 was a period of economic recovery that was surrounded by challenges and uncertainty. However, a strategic direction of the Corporate Plan was established per the bank's core competencies, shifting business patterns, and the public's transition to digital mindset. The Covid-19 pandemic expedited digital transition and made it a new habit. Besides, amidst economic uncertainty, Bank Mandiri also needed to pay attention to its profitability and credit distribution quality to manage risks in the future. As such, in addition to implementing initiatives outlined in the corporate plan, Bank Mandiri sharpened its business strategies by focusing on:

- Fostering credit growth in sectors having had quicker recovery, by prudently expanding credit to potential and stable industrial sectors per the portfolio guidance by considering the potential, capacity, and capability of each segment. Besides, Bank Mandiri also optimized the value chain program to capture business potential in the business ecosystem of wholesale customers.

- Optimizing fee-based income as a revenue driver by increasing e-channel productivity, increasing a recurring fee-based income growth, and enhancing the grip on existing customers and targeting top players in each industry group.

- Operational costs control, by enhancing the productivity of owned resources and developing virtual capacity of employees, emphasizing the achievement of KPI, prioritizing costs for strategic initiatives, providing value to customers, leveraging shifting customer behavior through more scalabale digitized services, and improving business processes continuously.

The Steps and Plan to Anticipate Strategic Risk

To anticipate the risk factors encountered by Bank Mandiri, it is necessary to implement independent and prudent risk management, but which does not limit the Company's business expansion process. The following are strategies for strategic risk management in 2021:

- Reviewed strategies periodically by considering external and internal factors to ensure the achievement of leading indicators of revenue and costs for each financial indicator. For instance, in guaranteeing prudent credit expansion, the Bank exercised selective focus on industrial sectors that were sustainable and growing by taking into account its internal capabilities and resources per the Risk Acceptance Criteria. This was done through end-to-end supervision of watchlist and high-risk debtors for better credit management.
- Controlled the impairment loss allowance by reviewing and following up on the credit restructuring program due to the Covid-19 as an attempt to help potentially uncollectible debtors. Bank Mandiri also maintained its Coverage Ratio & Cost of Credit at a level that was optimal to anticipate lessening credit quality affecting the bank's performance.

- Leveraged sufficient liquidity in the market through affordable funds stimulation to drive down Cost of Funds which resulted in cost saving.

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- Investment of capital sourced from retained earnings (Tier-1) through optimization of revenue and efficiency program/saving of overhead costs and further review of initiatives affecting productivity and eliminating long-term non-value-added costs.

COMPLIANCE RISK MANAGEMENT

Compliance arises as a result of the Bank's failure to comply with and/or to carry out the provisions of the applicable laws and regulations.

To manage compliance risk, Bank Mandiri has established policies, rules, systems, and procedures to build compliance culture as one of the keys to successful compliance risk management at Bank, consolidated, and Financial Conglomerate levels.

All levels of the Company are fully responsible for implementing compliance in each of their respective activities. The organization, duties, and responsibilities with respect to compliance are as follows:

1. Board of Commissioners
   With respect to Compliance and Integrated Governance, the Board of Commissioners is mandated to supervise the implementation of Compliance Function.
2. Integrated Governance Committee
   The committee is established to assist the Board of Commissioners in carrying out its supervisory function on the implementation of Integrated Governance and Integrated Compliance Functions at Bank Mandiri and its Subsidiaries.
3. Board of Directors/SEVP
   The Board of Directors is responsible to foster and realize Compliance Culture as well as to ensure that Compliance Function is implemented at all levels of the organization and the Bank's business activities.
4. Director in Charge of Compliance Function
   The Director in charge of the Compliance Function is responsible for formulating compliance culture strategies, minimizing compliance risk, establishing compliance systems and procedures, and ensuring that all policies, provisions, systems, and procedures implemented by the Bank are in accordance with applicable laws and regulations.
5. Compliance Unit (i.e., Compliance & AML-CFT Group)
   The Compliance Unit assists and/or represents the Director in charge of the Compliance Function in carrying out its duties and responsibilities.
6. Compliance Unit at Unit level (i.e., Senior Operational Risk Unit)
   This unit ensures that all work units under its supervision exercise compliance function in accordance with applicable regulations.
7. Heads of Units
   Heads of Work Units are responsible for realizing compliance culture in their respective units, managing compliance risk, and implementing system/process and/or procedure improvements related to compliance issues in their units.

Compliance Risk Management Mechanism

Bank Mandiri has established compliance risk management policies and procedures based on the applicable rules and regulations, where the risk is managed in several stages:

a. Identification
   Identification of compliance risk is articulated in the Compliance Risk Statement (CRS). CRS entails reference of regulations, risk cause, risk control, and action plans for prevention purpose.

b. Evaluation
   All identified risks are assessed by each risk owner. The output of assessment is a compliance risk profile for every work unit.

Risk assessment is carried out based on the risk's occurrence likelihood and its potential impacts. Risk owners also assess the effectiveness of control measures.

c. Monitoring
Risk monitoring is part of an adequate compliance risk management. Monitoring activities include identifying and overseeing compliance risk appetite statement (RAS).

d. Mitigation
Compliance risk mitigation is carried out by:
    1. Reviewing risk identification process to ensure the process has been carried out appropriately.
    2. Reviewing the appropriateness of control and mitigation activities.
    3. Reviewing the appropriateness of compliance risk assessment process, including that the process has considered historical sanction data.

Compliance Risk Management Implementation

Compliance risk management activities in 2021 are:

1. Defining Risk Appetite Statement (RAS)
   In 2021, Bank Mandiri defined its compliance Risk Appetite Statement (RAS) at 4 (four) violations per month. Throughout the year, the Bank received 1 (one) sanction per month, which was well below the RAS threshold.
2. Compliance Risk Assessment
   Compliance risk assessment is carried out on a quarterly and semi-annual basis and submitted to the OJK as part of the Bank's Risk Profile Report. According to the self-assessment conducted in Quarter IV 2021, the Bank's compliance risk level was 2 (low to moderate). Several issues of concern for improvement were employees' compliance risk awareness, data quality, and monitoring of report submission to regulators.
3. Compliance Risk Mitigation
   To mitigate compliance risk, the Bank has implemented several compliance programs:
   a. Monitoring the Fulfillment of the Banks' Obligations on New Regulations
      The Compliance Unit conducts breakfast meetings on new regulations, monitors action plans that need to be carried out, and issues reminders on regulatory obligations to the relevant Units.
   b. Control Testing Against High-Risk Activities
      Control testing is carried out by the compliance units at work unit level on high-risk activities. Where discrepancy with applicable regulations is identified, immediate actions are taken to prevent the Bank from suffering any losses.
   c. Compliance Assessment Program
      This program aims to increase compliance risk awareness of the risk owners and compliance with applicable regulations (according to their duties and responsibilities).
   d. Compliance Unit Competency Improvement Program
      To increase understanding related to compliance risk management, the Company partners with a third party to organize compliance training and certification for all Compliance Unit personnel.

Measures and Plans to Anticipate Compliance Risk

To improve compliance risk management, the following measures are taken:

1. Compliance Risk Management
   a. Define compliance Risk Appetite Statement (RAS) and monitor sanctions/ fines raised against the Bank to ensure the appetite threshold is not breached
   b. Improve compliance risk assessment parameters
   c. Improve reporting process on compliance function
2. Promotion of compliance risk awareness
   a. Conduct compliance assessment to improve employee understanding of the applicable rules and regulations, especially those related to their duties and responsibilities.

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b. Provide advice on compliance issues.

3. Strengthening monitoring on regulatory mandate fulfillment
   a. Disseminate information on new laws and regulations, or other policies or the results of legal analysis to the Bank's management and employees.
   b. Monitoring the work units' action plans relating to new regulations that have significant impacts on the Bank.

4. Competency Building for Compliance Work Units
   To improve the quality of personnel in Compliance Units, the Bank collaborates with independent parties to organize training and certification of compliance.

5. Credit Webinars
   A credit webinar is a discussion forum that is held together with Businesss Unit to increase compliance risk awareness in the credit sector.

INTRA-GROUP TRANSACTION RISK MANAGEMENT

The risk management of intragroup transaction risk is at the level of the Group with Subsidiaries per the business strategies of Bank Mandiri. Bank Mandiri identifies and analyses the activities that may increase exposures to Intragroup Transaction Risk and affect the Company's performance. This risk identification is at the business activity and Subsidiary levels of Bank Mandiri by considering the complexity of transactions. Bank Mandiri may combine qualitative and quantitative methods to measure the Intragroup Transaction Risk for further periodic monitoring according to established procedures.

INSURANCE RISK MANAGEMENT (CPR)

Insurance risk is a risk due to the failure of insurance companies to fulfill obligations to policyholders as a result of insufficient risk selection (underwriting) processes, pricing, reinsurance use, and/or claim handling. Insurance Risk Management is carried out by Subsidiaries of the Bank Mandiri business group that are engaged in the insurance business, which in this case include AXA Mandiri Financial Services, Mandiri AXA General Insurance, and Mandiri Inhealth. Bank Mandiri identifies and analyzes activities that can increase insurance risk exposure and affect company performance. The risk identification is carried out in the business activities of Subsidiaries engaged in the insurance business by considering its characteristics. Bank Mandiri can combine qualitative and quantitative approaches in the process of measuring insurance risk which will then be subject to periodic risk monitoring per the established procedure.

Self-assessment of Integrated Insurance Risk Profile throughout 2021 was at a Low to Moderate (low) level. This reflects low potential loss faced by Financial Conglomerates due to Integrated Insurance Risk at a certain time in the future. The quality of the implementation of the Integrated Management of Insurance Risk is sufficient although there are some issues that are resolvable in the normal course of business.

RISK ASSESSMENT OF THE BANK

To get a better picture of the risks, the Bank routinely makes a self-assessment of Bank Soundness Rating (BSR) which is reported to the Regulator every semester or 6 (six) months, and a Risk Profile Report (RPR) which is prepared quarterly or every 3 (three) months. The Bank's self-assessment of Bank Soundness Level is in accordance with OJK Regulation No. 4/POJK.03/2016 and OJK Circular No. 14/SEOJK.03/2017 on Assessment of Bank Soundness Rating, which consists of Risk Profile Assessment (including Inherent Risk and Quality of Risk Management Implementation), Rentability, Governance, and Capital. The Risk Profile Assessment entails assessment of Credit Risk, Market Risk, Liquidity Risk, Operational Risk, Legal Risk, Strategic Risk, Reputational Risk, and Compliance Risk. For Integrated Risk Profil assessment, there are two additional risks, Insurance Risk and Intra-Group Transaction Risk.

Bank Mandiri's self-assessment of its Risk Profile at the individual level as of 30 December 2021 resulted in it being at rank 2 ("Low To Moderate") with Inherent Risk Level that was "Low To Moderate" and at "Satisfactory" level for the Quality of Risk Management Implementation, with the following details:

Risks	Inherent Risk Rating	KPMR Rating	Risk Level Rating
Credit Risk	Moderate	Satisfactory	Low to moderate
Market Risk	Low	Strong	Low
Liquidity Risk	Low	Strong	Low
Operational Risk	Moderate	Fair	Moderate
Legal Risk	Low	Strong	Low
Strategic Risk	Low	Satisfactory	Low
Compliance Risk	Low to moderate	Satisfactory	Low to moderate
Reputation Risk	Low	Satisfactory	Low
Composite Rating	Low to moderate	Satisfactory	Low to moderate

REVIEW OF RISK MANAGEMENT SYSTEM EFFECTIVENESS

The assessment of Bank Mandiri's Risk Profile at the individual or Consolidated/Integrated level throughout 2021 reflected that the risks faced by Bank Mandiri at both levels can be managed well so that further business development can be ensured. In other words, Risk Management was finely and effectively executed by Bank Mandiri.

STATEMENTS FROM THE BOARD OF DIRECTORS AND/OR THE BOARD OF COMMISSIONERS OR THE AUDIT COMMITTEE ON THE ADEQUACY OF RISK MANAGEMENT SYSTEM

The internal control system performed by Bank Mandiri was considered effective and adequate, reflected in the effectiveness of the implementation of internal control functions, including internal audit function, risk management, compliance, financial and operational controls.

RISK MANAGEMENT ACTIVITY REPORT IN 2021

Concerning BSL and RPR individual assessment, throughout 2021 Bank Mandiri had prepared and reported the following:

a. Bank Soundness Rating using a Risk-Based Bank Rating (RBBR) at the individual level, consisting of assessments of Risk Profile, Governance, Rentability, and Capital. In 2021, Bank Mandiri reported its individual Bank Soundness Rating for Semester II of 2020 and Semester I of 2021 to the Regulator in time.
b. The Consolidated Risk Profile consists of the management of 8 types of risk (Credit, Market, Liquidity, Operational, Legal, Reputational, Strategic, and Compliance). In 2021, Bank Mandiri reported its self-assessment of Consolidated Risk Profile for Quarter I and Quarter III 2021 to the Regulator in a timely manner.

Risk Management during the Pandemic

In navigating through the COVID-19 pandemic, the Bank faced several risks such as:

- Potential decline in portfolio quality especially in sectors affected by the COVID-19
- Weakened Company Performance and declining Consumption/Public Demand as a result of Social Restriction and Mobility Restriction
- Uncertainty risk concerning Commodity prices
- Disruptions to the financial system including cyber attacks, disruptions to banking services, payment system, or supporting operations.

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- **Potential decline in portfolio quality especially in sectors affected by the COVID-19**
  The COVID-19 pandemic led to a decline in company performance, especially in sectors having slow recovery rate such as Tourism, Transportation, Trade, and Manufacturing. The decline in company performance in those sectors may raise exposures to bad credit if not accompanied by special programs such as incentives and credit restructuring.

- **Weakened Company Performance and declining Consumption/Public Demand as a result of Social Restriction and Mobility Restriction**
  Mitigation of the COVID-19 transmission that was realized through Large Scale Social Restriction (LSSR) or Public Mobility Restriction (PMR) led to the weakening of company performance and caused a decline in public demand or consumption. It requires time for business players to recover from the impact of the public mobility restriction as they need to adjust their business processes.

- **Uncertainty risk concerning Commodity prices**
  Prices of CPO, coal, and oil showed recovery trends and were expected to get better throughout 2021 although it was shadowed by uncertainty due to the unfinished cycle of the COVID-19 pandemic and rising new cases in some countries.

- **Disruptions to the financial system including cyber attacks, disruptions to banking services, payment system or supporting operations**
  The higher the number and the value of banking transactions and financial services transactions via the IT system, the more probable the operational aspect of such an IT system is affected. Restrictions on face-to-face interactions during the COVID-19 pandemic and a switch to digital transactions also contributed to failed transactions due to system failure and cyber attacks.

To manage those risks and to help the government maintain economic stability, the Bank had prepared and adjusted some internal policies regarding the treatment of borrowers affected by the COVID-19 that is in line with the policies and regulations set by the Regulator. The measures taken by the Bank are as follows:

A. **Credit Restructuring for Borrowers Affected by the COVID-19**
   The Bank already has guidelines on the application of restructuring for borrowers affected by the COVID-19 per the Bank's credit segment which are under:
   1. OJK Regulation No.40/POJK.03/2019 on Assessment of Comercial Banks Asset Quality (especially Chapter VI Credit Restructuring).
   2. OJK Regulation No.17/POJK.03/2021 on the Second Amendment to the OJK Regulation No. 11/POJK.03/2020 on Stimuli to National Economy as a Countercyclical Policy on Mitigation of the Impact of the Coronavirus Disease 2019.
   3. Other binding regulations and internal Bank provisions.

The restructuring guidelines for borrowers affected by the COVID -19 outline the criteria of borrowers and businesses affected by the COVID -19 who are eligible for restructuring as well as which restructuring is best for each borrower.

Aside from the restructuring, the Bank also participated actively in some government programs to recover the national economy, for instance, credit underwriting (Wholesale and Retail Segments), interest subsidy, and credit distribution for State Cash Placement (SCP). In its implementation, the Bank prepared Risk Acceptance Criteria (RAC) of the borrowers to prevent moral hazard and minimize credit risk by adhering to the following regulations:

1. OJK Regulation No. 17/POJK.03/2021 (POJK 17/2021) on the Second Amendment to the OJK Regulation No. 11/POJK.03/2020 on Stimuli to National Economy as a Countercyclical Policy on Mitigation of the Impact of the Coronavirus Disease 2019 (valid through 31 March 2023);
2. Indonesian Finance Minister Regulation No.71/PMK.08/2020 (PMK 71/2020) on Procedure for Government Guarantee through An Appointed Guarantor to Implement National Economic Recovery Program (program was valid until 30 November 2021);
3. Indonesian Finance Minister Regulation No. 32/PMK.08/2021 (amendment to 98/PMK.08/2020 on Procedure for Government Guarantee for Corporations through An Appointed Guarantor to Implement National Economic Recovery Program) (program was valid until 17 December 2021);
4. Indonesian Finance Minister Regulation No. 104/PMK.05/2020 (PMK 104/2020) on Cash Placement to Implement National Economic Recovery (NER), including mechanism of State Cash Placement on Commercial Banks (still valid, but the state had been remunerated by January 13, 2021);
5. Indonesian Coordinating Minister of Economy Regulation No. 03 of 2021 (PerMenKo 03/2021) regarding the Fourth Amendment to the Coordinating Minister of Economy Regulation No. 6 of 2020 on Special Treatment of Microfinancing Recipients Affected by the Coronavirus Disease 19 Pandemic (program was valid until 31 December 2021);
6. Indonesian Finance Minister Regulation No. 150/PMK.05/2021 on Procedure for Interest Subsidy/Margin Subsidy Provision to Support the Implementation of National Economic Recovery Program (program was valid until 31 December 2021).

B. Credit Monitoring Process during the COVID-19 Pandemic

In facing the pandemic, the Bank made some adjustments to the process and mechanism of credit monitoring for borrowers at entity level or portfolios. These adjustments were made to ensure early warning signals were visible and that risk mitigation could be effective in maintaining credit quality during the pandemic.

Strategies for credit portfolio monitoring include:

a) An analysis of early warning signals from all borrowers especially those operating in business sectors affected by the COVID-19 under OJK Regulation No. 17/POJK.03/2021 (on the second amendment to the OJK Regulation No. 11/POJK.03/2020) and the Bank's internal provisions.

   The output of the early warning signals from borrowers who potentially experience declining performance is complemented by an action plan that is regularly monitored.

b) Credit disbursement control for borrowers on credit restructuring especially those using National Economic Stimuli OJK Regulation No. 17/POJK.03/2021 (on the second amendment to the OJK Regulation No. 11/POJK.03/2020) so the goal of restructuring can be achieved.

The Bank always reviews the implementation of credit monitoring mechanism during the pandemic so that adjustments can be made at the first opportunity when there are changes due to the pandemic under the applicable government regulations.

Due to the nature of the pandemic that indirectly affects the risk measurement model of the Bank and as part of the implementation of Model Risk Management to increase the accuracy of predictions, Model Validator and Model Developer are jointly used for model monitoring. The main purpose of model monitoring is to review the performance of the model by doing a backtest of the model during the COVID-19 pandemic. Backtesting is done especially for models for credit risk, for example, Rating/Scoring Model, Basel Model, and Macro PD. The review result of this model monitoring will then result in short-term and long-term action plans needed to minimize the impact of the COVID-19 on the accuracy of models at predicting.

c) Regular stress test and sensitivity analysis of credit portfolio to identify borrowers who are affected by the pandemic and potentially have lower creditworthiness.

d) Daily monitoring of borrowers who are in the process of Suspension of Debt Payment Obligations/ Bankruptcy to anticipate early signs of declining creditworthiness.

C. Allowance for Impairment Losses (CKPN) for borrowers affected by the COVID-19 Pandemic

The COVID-19 pandemic very much affected the national economy. Due to the pandemic and restrictions on business activities, many borrowers experienced a drop in their sales or profit which caused cash flow and liquidity problems. In addition, many individual borrowers were terminated from their work. As a result, borrowers had a lower capability in fulfilling their financial obligations to Banks and other creditors so restructuring was needed for borrowers affected by the impact of COVID-19.

With OJK Regulation No. 11/POJK.03/2020 and its second amendment, OJK Regulation No. 17/ POJK.03/2021 then the asset quality of borrowers who were subject to relaxation or restructuring due to the impact of COVID-19 would remain acceptable. Besides, the OJK through Letter No. S-7/D.03/2020 provided stimuli to banks by declaring that borrowers who were on restructuring due to the COVID-19 pandemic would be categorized in stage 1 of the CKPN calculation according to SFAS 71.

However, there remain possibilities that the credit collectability 1 given to borrowers and the provision of CKPN based on stage 1 category do not fully reflect the real conditions of the borrowers. The Bank needs to identify and evaluate the restructured borrowers affected by the COVID-19 pandemic and see whether they can recover and fulfill their contractual obligations by the end of the relaxation period, when there is a potential risk caused by credit collectability 2 and non-performing loan (NPL) that potentially boost CKPN significantly.

As such, to apply the prudence principle and anticipate an increasing credit risk due to the credit restructuring of borrowers affected by the COVID-19 pandemic, the Bank formed a larger CKPN during the relaxation period (based on the borrowers' credit risk level) to account for a possible decline in credit quality and a build-up in CKPN during the relaxation period. The Bank had analyzed the Risk Classification for the COVID-19 restructuring portfolio for borrowers and had divided the said portfolio into three, namely High Risk, Medium Risk, and Low Risk. Based on this, the Bank re-classified the borrowers' risk and would reallocate CKPN as necessary based on final evaluation results. Besides, as an effort to prevent an increase in NPL and LaR (Loan at Risk), the Bank would prepare an action plan for borrowers who are potentially downgraded to NPL by preparing a normal restructuring scheme (outside OJK Regulation No.17/POJK.03/2021).

DISCLOSURE OF RISK EXPOSURES

The Bank presents a disclosure of risk exposures for credit risk, market risk, liquidity risk, and operational risk as follows:

CREDIT RISK EXPOSURES

Disclosure of Credit Risk Exposures by Region, Period, and Economic Sector

Bank Mandiri has several exposures per region, period, and economic sector based on a standardised approach below:

- Table 2.1.a Disclosure of Net Receivables by Region – Bank Only
- Table 2.1.b Disclosure of Net Receivables by Region – Bank Consolidated with Subsidiaries
- Table 2.2.a Disclosure of Net Receivables Remaining Contract Period – Bank Only
- Table 2.2.b Disclosure of Net Receivables by Region – Bank Consolidated with Subsidiaries
- Table 2.3.a Disclosure of Net Receivables by Economic Sector – Bank Only
- Table 2.3.b Disclosure of Net Receivables by Economic Sector – Bank Consolidated with Subsidiaries

Disclosure of Credit Risk Exposures and Allowance

Bank Mandiri adopts a policy that follows the prudence principle in credit risk mitigation, including in making allowance for losses due to declining value of assets.

Allowance by Region - Bank Only and Consolidated with Subsidiaries

- Table 2.4.a Disclosure of Receivables and Allowance by Region – Bank Only
- Table 2.4.b Disclosure of Receivables and Allowance by Region – Bank Consolidated with Subsidiaries

Allowance by Economic Sector - Bank Only and Consolidated with Subsidiaries

- Table 2.5.a Disclosure of Receivables and Allowance by Economic Sector – Bank Only
- Table 2.5.b Disclosure of Receivables and Allowance by Economic Sector – Bank Consolidated with Subsidiaries

Details of Allowance Transaction - Bank Only and Consolidated with Subsidiaries

- Table 2.6.a Disclosure of Detailed Transaction of Loss Allowance – Bank Only
- Table 2.6.b Disclosure of Detailed Transaction of Loss Allowance – Bank Consolidated with Subsidiaries

Credit Risk using a Standardised Approach

In the calculation of RWA for Credit Risk, Bank Mandiri referred to the following regulations:

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- OJK Circular No. 42/ SEOJK.03/2016 on Guidelines on Calculation of Risk-Weighted Asset for Credit Risk using a Standardised Approach,
- OJK Circular No. 48/ SEOJK.03/2017 on Guidelines on Calculation of Net Invoice from Derivative Transaction and Calculation of Risk-Weighted Asset for Credit Risk using a Standardised Approach,
- OJK Circular No. 11/ SEOJK.03/2018 on the amendment to OJK Circular No. 42/SEOJK.03/2016 on Guidelines on Calculation of Risk-Weighted Asset for Credit Risk using a Standardised Approach, and
- OJK Regulation No. 11/ POJK.03/2019 on Prudence in Securitization of Assets for Commercial Banks

One component of RWA for Credit Risk is the counterparty credit risk which was reported in January 2018 and the result of Credit Valuation Adjustment for risk-weighted assets was reported in January 2017 to the OJK.

Disclosure of Credit Risk Exposure based on Portfolio Category and Rating Scale

In calculating RWA for Credit Risk, Bank Mandiri uses the rating published by credit rating agencies recognized by the regulator under OJK Circular No. 37/SEOJK.03/2016 on Credit Rating Agencies and Ratings Recognized by the OJK. The results of the calculation of exposures based on external ratings using a Standardised method are shown in the below tables.

Net Receivables by Rating Scale – Bank Only and Consolidated with Subsidiaries

- Table 3.1.a. Disclosure of Net Receivables by Portfolio Category and Rating Scale – Bank Only
- Table 3.1.b. Disclosure of Net Receivables by Portfolio Category and Rating Scale – Bank Only and Consolidated with Subsidiaries

Disclosure of Counterparty Credit Risk

Counterparty credit risk can arise due to derivative, repo, and reverse repo transactions. As the Indonesian financial market has yet to have numerous derivative instruments, Bank Mandiri's derivative exposure is not significant. According to the Standardised Approach reporting, the Counterparty Credit Risk is as follows.

Derivative Transactions - Bank Only and Consolidated with Subsidiaries

- Table 3.2.a Disclosure of Net Receivables of Counterparty Credit Risk by Approach Used
- Table 3.2.b Disclosure of Capital Charge for Credit Valuation Adjustment
- Table 3.2.c Disclosure of Net Receivables of Counterparty Credit Risk by Risk Weight

Disclosure of CCR Exposure by Portfolio Category and Risk Weight - Bank Only

Disclosure of CCR Exposure by Portfolio Category and Risk Weight - Consolidated with Subsidiaries

Table 3.2.d Disclosure of Net Receivables of Credit Derivatives

Credit Risk Mitigation by a Standardised Approach

According to the Standardised method reporting, the Bank's exposures and the credit risk mitigation are as follows.

Net Transactions by Risk Weight after Credit Risk Mitigation – Bank Only and Consolidated with Subsidiaries

- Table 4.1.a. Disclosure of Net Receivables by Risk Weight after Accounting for the Effects of Credit Risk Mitigation - Bank Only
- Table 4.1.b. Disclosure of Net Receivables by Risk Weight after Accounting for the Effects of Credit Risk Mitigation – Bank Consolidated with Subsidiaries

Net Transactions and Credit Risk Mitigation Technique - Bank Only and Consolidated with Subsidiaries

- Table 4.2.a. Disclosure of Net Receivables and Credit Risk Mitigation Technique - Bank Only
- Table 4.2.b. Disclosure of Net Receivables and Credit Risk Mitigation Technique - Bank Consolidated with Subsidiaries

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Securitization of Assets

- Table 5.1.a. Disclosure of Securitization Exposures in Banking Book
- Table 5.1.b. Disclosure of Securitization Exposures in Trading Book
- Table 5.2.a. Disclosure of Securitization Exposures in Banking Book when the Bank Acts as An Originator or A Sponsor and the Capital Requirements
- Table 5.2.b. Disclosure of Securitization Exposures in Banking Book when the Bank Acts as An Investor and the Capital Requirements

Disclosure of RWA Calculation for Credit Risk using A Standardised Approach

According to the exposure category of the Standardised method, Bank Mandiri has the following exposures.

Asset Exposures in the Balance Sheet - Bank Only and Consolidated with Subsidiaries

- Table 6.1.1. Disclosure of Asset Exposures in the Balance Sheet - Bank Only
- Table 6.2.1. Disclosure of Asset Exposures in the Balance Sheet – Bank Consolidated with Subsidiaries

Commitment/Contingency Invoice Exposures - Bank Only and Consolidated with Subsidiaries

- Table 6.1.2. Disclosure of Commitment/ Contingency Obligation Exposures in Administrative Account Transactions – Bank Only
- Table 6.2.2. Disclosure of Commitment/ Contingency Obligation Exposures in Administrative Account Transactions – Bank Consolidated with Subsidiaries

Counterparty Credit Risk Exposures - Bank Only and Consolidated with Subsidiaries

- Table 6.1.3. Disclosure of Counterparty Credit Risk Exposures – Bank Only
- Table 6.2.3. Disclosure of Counterparty Credit Risk Exposures – Bank Consolidated with Subsidiaries

Settlement Risk Exposures - Bank Only and Consolidated with Subsidiaries

- Table 6.1.4. Disclosure of Settlement Risk Exposures – Bank Only
- Table 6.2.4. Disclosure of Settlement Risk Exposures – Bank Consolidated with Subsidiaries

Securitization Exposures - Bank Only and Consolidated with Subsidiaries

- Table 6.1.5. Disclosure of Securitization Exposures – Bank Only
- Table 6.2.5. Disclosure of Securitization Exposures – Bank Consolidated with Subsidiaries

Derivative Exposures - Bank Only and Consolidated with Subsidiaries

- Table 6.1.6. Disclosure of Derivative Exposures – Bank Only
- Table 6.2.6. Disclosure of Derivative Exposures – Bank Consolidated with Subsidiaries

Sharia Business Unit Exposures - Bank Only and Consolidated with Subsidiaries

- Table 6.1.7. Disclosure of Exposures in Sharia Business Units and/or Subsidiaries Engaged in Sharia Business
- Table 6.1.8. Disclosure of Total Credit Risk Measured – Bank Only
- Table 6.2.7. Disclosure of Total Credit Risk Measured – Bank Consolidated with Subsidiaries

All tables regarding Credit Risk Exposures can be found on pages 824-895 herein.

MARKET RISK EXPOSURES

Market Risk Disclosure Using Standard Methods and Internal Models

The Bank regularly calculates the Capital Adequacy Ratio (CAR) using a Standardised Method that is reported monthly to the Financial Services Authority (OJK), while for the consolidated position with its subsidiaries, it is reported quarterly. This reporting aims to improve the Bank's quality and quantity so the Bank will be able to absorb potential losses due to financial and economic crises.

RISK MANAGEMENT

- Table 7.1 Disclosure of Market Risk using a Standardised Method

For internal purposes, Bank Mandiri also has calculated using an Internal Method. The CAR calculation using an internal method is done by applying Value at Risk (VaR), a value describing the maximum losses the Bank can handle because of market movements affecting the Bank's risks in normal market conditions with a 99% confidence level. To obtain the VaR, the method used is Historical Simulation.

Realization of Value at Risk of Bank Mandiri in 2021 is as follows:

- Table 7.2 Disclosure of Market Risk using an Internal Model (Value at Risk/VaR) - Bank Only

Disclosure of Interest Rate Risk in Banking Book (IRRBB) Exposures

The Interest Rate Risk in The Banking Book is a risk due to movements of interest rates in the market that run counter to the position of the Banking Book, which potentially impacts the capital and income of the Bank in the current period or the future.

According to OJK Circular 12/SEOJK.03/2018 on "Implementation of Risk Management and Risk Measurement using a Standardised Method for Interest Rate Risk in The Banking Book for Commercial Banks", the Bank uses 2 (two) methods in calculating the IRRBB:

a. Calculation based on changes in the economic value of equity, hereafter EVE, which is a method that measures the impact of interest rate changes on the economic value of equity of the Bank; and
b. Calculation based on changes in net interest income, hereafter NII, which is a method that measures the impact of interest rate changes on the income of the Bank.

Based on the sensitivity analysis at the end of December 2021, the impact of interest rate changes on the economic value of equity and the net interest income is as follows:

- Table 7.3a Disclosure of Interest Rate Risk in Banking Book (IRRBB) Exposures - Bank Only
- Table 7.3b Disclosure of Interest Rate Risk in Banking Book (IRRBB) Exposures - Bank Consolidated with Subsidiaries

In addition to the disclosure of IRRBB exposures, the Bank also discloses foreign exchange risk. The foreign exchange risk arises because of market movements that run counter to Bank Mandiri's foreign exchange position. This risk comes from the Bank's assets and liabilities in the balance sheet in foreign currencies, from foreign exchange transactions with customers and counterparties causing open positions in the foreign exchange, or from a structural position in the foreign exchange due to capital participation.

- Table 7.4 Disclosure of Risk Management Implementation Report for IRRBB

All tables regarding Market Risk Exposures can be found on pages 814-815 herein.

Qualitative Analysis of IRRBB	
1	Explanation about how the Bank defines IRRBB for risk measurement and control
	The Interest Rate Risk in The Banking Book is a risk due to movements of interest rates in the market that run counter to the position of the Banking Book, which potentially impacts the capital and rentability (earnings) of the Bank in the current period or the future. The Bank uses 2 (two) methods in calculating the IRRBB, namely calculation based on changes in the economic value of equity, or ΔEVE, and calculation based on changes in net interest income, or ΔNII. The simulation of ΔEVE and ΔNII is performed according to interest rate shock in OJK Circular No. 12/SEOJK.03/2018 dated 21 August 2018. The Bank controls and mitigates interest rate risk using a recomposition of assets and liabilities or a hedging strategy.

RISK MANAGEMENT

2	Explanation about IRRBB strategic management and mitigation
	The Bank adopts IRRBB control strategies that are in line with the Bank's overall business strategies by considering the risk appetite and risk tolerance approved by the Board of Directors. Meanwhile, in response to changes in the economic value of equity (ΔEVE), the IRRBB mitigation strategies are formulated based on the duration of the positions (average repricing maturity) of assets and liabilities. As of December 31, 2021, Bank Mandiri's individual ΔEVE was 5.18%, far below the level set by the Regulator of 15%. The increase of ΔEVE compared to previous period was driven by the Bank's internal strategy in managing assets & liabilities, specifically in optimizing liquidity.
3	Periodic calculation of the Bank's IRRBB and the explanation about specific actions taken by the Bank to measure sensitivity to IRRBB.
	To ensure IRRBB is monitored properly, the Bank calculates IRRBB every end-of-month of the reporting period and reports and publishes the result for every quarter position per the prevailing provisions. The measurement of sensitivity to IRRBB is in accordance with OJK Circular No. 12/SEOJK.03/2018 dated August 21, 2018: a) IRRBB calculation considers the whole Banking Book position by excluding equity and grouping it according to currency positions material to the Bank b) ΔEVE does not consider a commercial margin in the cash flow and discount on the cash flow.
4	Explanation about shock scenario for interest rates and stress scenario used by the Bank to estimate changes in economic value and earnings.
	IRRBB exposures calculation is based on 6 (six) shock scenarios for interest rates:

Scenario	**Explanation**	**Estimasi perubahan**	
		Economic value	***Earnings***
Parallel Up	Interest rate shock that is parallel up	√	√
Parallel Down	Interest rate shock that is parallel down	√	√
Steepener	Steep interest rate shock in which short-term interest rates go down and long-term interest rates go up	√	
Flattener	Flat interest rate shock in which short-term interest rates go up and long-term interest rates go down	√	
Short Up	Interest rate shock in which short-term interest rates go up	√	
Short Down	Interest rate shock in which short-term interest rates go down	√	

5	Modelling assumption used significantly in the Internal Measurement System (IMS) – if any.
	The Bank has no modelling assumption that is used significantly in the Internal Measurement System (IMS) because the Bank's assumption is different from the modelling assumption used in the IRRBB calculation with a standardised method.
6	Explanation about how the Bank hedges the IRRBB (if any), along with the relevant accounting treatment.
	The Bank makes hedging transactions on the interest rate risk position by considering risk appetite, business strategies, and projected future movements of market factors. The Bank does not apply the hedge accounting method in the hedging transaction accounting. The profit/loss arising from the hedging transaction is recorded in the Bank's profit/loss statement.

RISK MANAGEMENT

7	Comprehensive explanation about the primary assumptions of modelling and the parameters used to calculate ΔEVE and ΔNII.
	The following are the primary assumptions of modelling used to calculate ΔEVE and ΔNII: a. ΔEVE calculation does not consider a commercial margin in the cash flow and discount on cash flow while ΔNII calculation considers a commercial margin in the cash flow. b. The material impact of instruments having behavioral options, such as consumer credit, retail deposit, and NMD on ΔEVE and ΔNII has been factored in using the early prepayment model (for consumer credit), early redemption method (for termed deposit), and behavior analysis method for NMD. These models will affect the repricing time of the instruments inside the repricing gap.
Quantitative Analysis	
1	Average repricing maturity applied to NMD.
	✓ Average Repricing Maturity for IDR Checking Account is 1.79 years ✓ Average Repricing Maturity for USD Checking Account is 1.29 years ✓ Average Repricing Maturity for IDR Savings Account is 2.33 years ✓ Average Repricing Maturity for USD Savings Account is 2.31 years
2	The longest Repricing maturity applied to NMD.
	✓ The longest repricing maturity for NMD is 6 years.

LIQUIDITY RISK EXPOSURES

In order to improve liquidity resilience, the Bank manages risk by measuring the short-term liquidity adequacy ratio using the Liquidity Coverage Ratio (LCR) and the long-term using the Net Stable Funding Ratio (NSFR). The Bank manages the LCR and NSFR ratios in accordance with the provisions of the Regulator, both individually and on a consolidated basis, above the minimum limit of 100%.

- Table of Disclosure of Liquidity Coverage Ratio
- Table of Disclosure of Net Stable Funding Ratio

All tables regarding Liquidity Risk Exposures can be found on pages 802-805 herein.

OPERATIONAL RISK EXPOSURE

Calculating Operational Risk-Weighted Assets (RWA)

To calculate its capital expenses and Operational RWA, the Bank employs the Basic Indicator Approach (BIA) method in accordance with OJK Circular Letter No.24/SEOJK.03/2016 regarding Operational RWA using the Basic Indicator Approach.

The operational risk weighted assets position as at 31 December 2021 for Bank only stood at Rp. 130,682,428.32 million, while the consolidated operational RWA together with the subsidiaries stood at Rp.151,994,521.47 million.

The following table provides information on capital expenses and operational RWA, calculated using BIA method in accordance with the provisions of Bank Indonesia.

- Table 9.1 Disclosure of Operational Risk Quantitative – Bank Only and Consolidated with Subsidiaries
- Table on Operational Risk Exposures can be found on page 818-823 herein.

	Approach Used	31 December 2021 position		
		Gross Income (Last 3 Year Average) *	Beban Modal	ATMR
1	Basic Indicator Approach (Individual)	69,697,295.00	10,454,594.27	130,682,428.32
2	Basic Indicator Approach (Consolidated)	81,063,744.78	12,159,561.72	151,994,521.47

*) for Banks that use the basic indicator approach in calculating Operational risk

Moreover, Bank Mandiri has piloted the calculation of capital expenses risk using the Standardized Approach (SA) in accordance with OJK circular No. 06/SEOJK/03/2020 concerning the Calculation of Operational Risk-Weighted Assets using Standardized Approach, which will be in effect starting January 2023. Bank Mandiri was also the pilot project site in Indonesia for the implementation of Basel III Reform and has complied with the quarterly Quantitative Impact Study reporting to simulate the calculation of statutory capital using the SA method under the Basel III Reform.