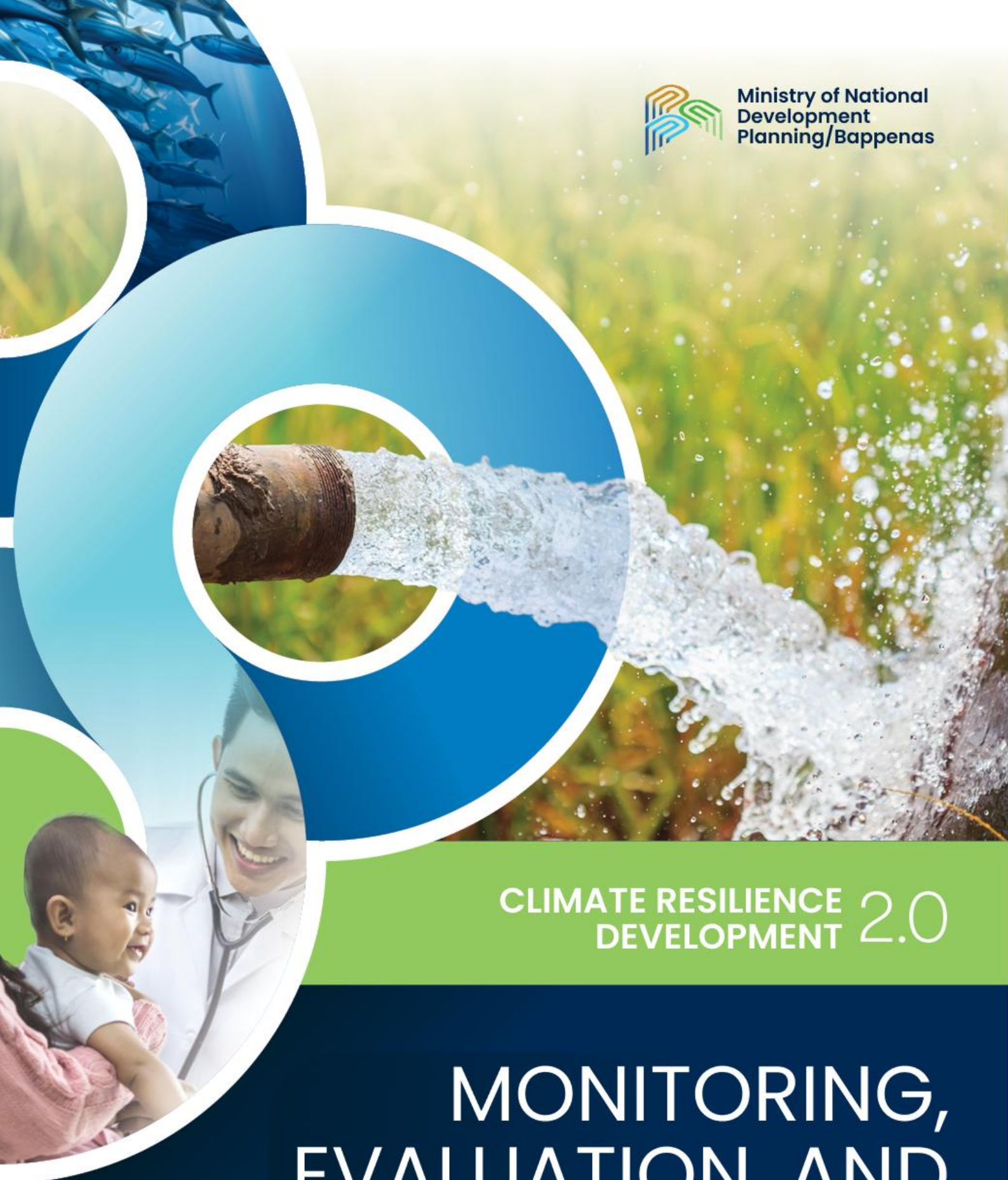

Ministry of National Development Planning/Bappenas

CLIMATE RESILIENCE DEVELOPMENT 2.0

MONITORING, EVALUATION, AND REPORTING OF ACTIONS

BOOK 5

Ministry of National Development Planning/Bappenas. 2025

Climate Resilience Development 2.0

Monitoring, Evaluation, and Reporting of Action

EDITORIAL

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The preparation of this document involved a wide range of stakeholders and leveraged scientific studies provided by multidisciplinary experts. Key contributions include:

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This team conducted studies on the impacts of climate change across the priority sectors of Climate Resilience Development and assessed potential economic losses. The findings from these studies serve as a key basis for the formulation of Climate Resilience Development policies. Team members include:

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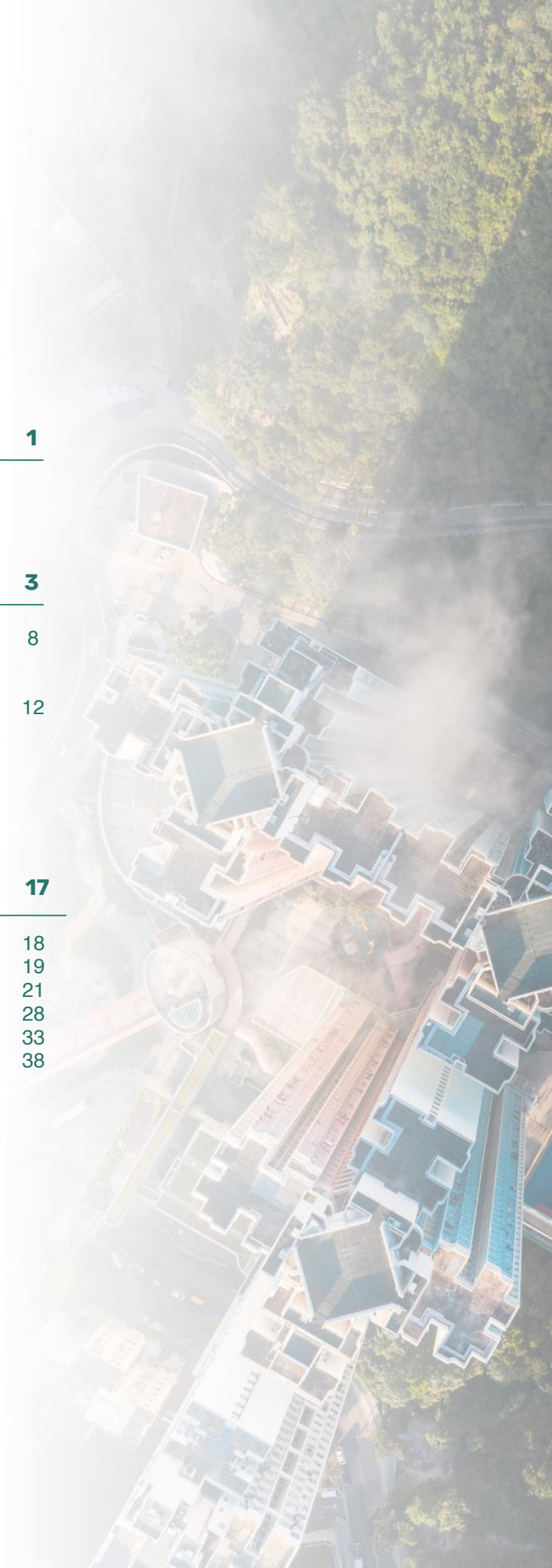

LIST OF ABBREVIATION

K

K/L	Line Ministries (Kementerian dan Lembaga)
Kementerian PPN/Bappenas	Ministry of National Development Planning / National (Kementerian Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional)

L

LSM	Non-Governmental Organization (NGO).

P

PBI	Climate Resilience Development
PDB	Gross Domestic Product (GDP)
Permen	Ministerial Regulation (Peraturan Menteri)
Perpres	Presidential Regulation (Peraturan Presiden)
PN	National Priority (Prioritas Nasional)
PP	Government Regulation (Peraturan Pemerintah)

R

RAN API	National Action Plan for Climate Change Adaptation *(Rencana Aksi Nasional Adaptasi Perubahan Iklim)*
Renstra	Strategic Plan *(Rencana Strategis)*
RPJMD	Regional Medium-Term Development Plan (Rencana Pembangunan Jangka Menengah Daerah)
RPJMN	National Medium-Term Development Plan (Rencana Pembangunan Jangka Menengah Nasional)
RPJPD	Regional Long-Term Development Plan (Rencana Pembangunan Jangka Panjang Daerah)
RPJPN	National Long-Term Development Plan (Rencana Pembangunan Jangka Panjang Nasional)

S

SDGs	*Sustainable Development Goals*
SPPN	National Development Planning System (Sistem Perencanaan Pembangunan Nasional)

U

UU	Law / Act (Undang-undang)
UNFCCC	United Nation Framework Convention on Climate Change

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1. MONITORING, EVALUATION, AND REPORTING ON CLIMATE RESILIENCE DEVELOPMENT

The Importance of Monitoring, Evaluation and Reporting on Climate Resilience Development

Climate change is no longer a future threat but an ongoing crisis. In response to this threat, the national commitment to addressing climate change has been realized through the formulation and implementation of various strategic policies. This commitment is reinforced by the establishment of the Climate Resilience Development Policy as National Priority 8 in the 2025-2029 RPJMN. To ensure the achievement of planned development goals, it is necessary to implement a systematic monitoring, evaluation, and reporting mechanism for the indicators that have been formulated in Climate Resilience Development actions. Climate Resilience Development actions require appropriate, consistent, and responsive planning and implementation in response to the evolving dynamics of climate risk. In this context, monitoring, evaluation, and reporting (MER) are crucial elements to ensure that every intervention is truly effective, targeted, and has a real impact on reducing national climate risk. The Ministry of National Development Planning/Bappenas has developed an integrated framework through KRISNA–SAKTI–AKSARA to ensure that the entire development process, from planning to reporting, runs in a complete and accountable cycle. This shows that the MER process is not just an administrative activity, but a strategic instrument in Climate Resilience Development. MER is a strategic instrument in assessing development indicator achievements and ensuring that the implementation of national programs is in line with the expected direction of transformation.

Detailed implementation of Ministry/Agency outputs that reflect Climate Resilience Development actions in supporting the reduction of potential economic losses due to the impacts of climate change, supported by various funding sources such as the State Budget, Foreign Loans, and Grants. Through these regulations, the government strengthens the MER systems for climate action. The success result of climate resilience is now measured through indicators such as the reduction in potential GDP losses due to climate hazards. MER are crucial elements in the national development planning and implementation system. These three processes serve to ensure that the direction, implementation, and results of development are always in line with the objectives and targets set out in national planning documents, both medium and long term.

Government Regulation No. 17 of 2017 concerning the Synchronization of the National Development Planning and Budgeting Process emphasizes the importance of monitoring and evaluation in harmonizing planning and budgeting. The results of the evaluation are used as a basis for policy formulation and budget allocation for the following year, so that development can proceed in line with national priorities and actual conditions in the field. Thus, the existence of MER mechanisms is not merely an administrative obligation, but an instrument of transparent, accountable, and performance-based development governance. Through a strong MER system, the government can ensure that every development policy and program truly provides tangible benefits to the community and contributes to the achievement of long-term national development goals. Based on Law Number 25 of 2004 concerning the National Development Planning System, each stage of development must be carried out systematically, measurably, and continuously. This law emphasizes the importance of monitoring and evaluation as a mechanism for assessing the effectiveness of program implementation and providing feedback for planning improvements in the next period.

Government Regulation No. 39 of 2006 concerning Procedures for Controlling and Evaluating the Implementation of Development Plans also reinforces these provisions by providing technical

guidelines on how to carry out control and evaluation. This regulation places monitoring and reporting as the basis for strategic decision-making, as well as a tool to ensure the effective, efficient, and accountable use of development resources. The national development planning cycle consists of four main stages, as follow:

1. Plan formulation;
2. Plan approval;
3. Control of plan implementation; and
4. Evaluation of plan implementation.

Referring to Government Regulation No. 39 of 2019 concerning the Implementation of Government Activities, which is an update in development governance, control is defined as a series of activities aimed at ensuring that development programs and activities are carried out according to the established plans. Control and evaluation are carried out through performance monitoring and reporting activities to ensure the effective and accountable achievement of national development goals and objectives. The book on monitoring, evaluation, and reporting of Climate Resilience Development actions within the framework of national development planning contains:

1. Mechanisms for Monitoring, Evaluation, and Reporting of Climate Resilience Development Actions in the Implementation of the National Development Plan and,
2. Methodology for calculating the impact of Climate Resilience Development Actions in the Implementation of the National Development Plan.

The process of compiling this book was carried out collaboratively, involving ministries, agencies, and relevant stakeholders. To ensure policy alignment, cross-sector integration, and consistency with national development directions in priority locations affected by climate change, a common understanding of the basic concepts used in policy formulation and intervention is necessary. By definition

Climate Resilience Development Action

"is the management of climate impacts and risks aimed at strengthening social and ecological resilience and reducing potential economic losses in priority locations affected by climate change".

Legal Basis

1. Law No. 25 of 2004 concerning the National Development Planning System;
2. Government Regulation No. 39 of 2006 concerning Procedures for Controlling and Evaluating the Implementation of Development Plans;
3. Government Regulation No. 8 of 2008 concerning the Stages of Procedures for the Preparation, Control, and Evaluation of the Implementation of Regional Development Plans;
4. Government Regulation No. 6 of 2023 concerning the Preparation of Work Plans and Budgets.
5. Government Regulation No. 17 of 2017 concerning the Synchronization of National Development Planning and Budgeting;
6. Presidential Regulation No. 18 of 2020 concerning the 2020-2024 National Medium-Term Development Plan;
7. Presidential Regulation No. 59 of 2017 concerning the Implementation of Sustainable Development Goals;
8. Presidential Regulation No. 39 of 2019 concerning One Data Indonesia;
9. Minister of National Development Planning/Bappenas Regulation No. 1 of 2023 concerning guidelines for the evaluation of National Development.
10. Regulation of the Minister of Home Affairs No. 86 of 2017 concerning Procedures for Planning, Controlling and Evaluating Regional Development, Procedures for Evaluating Draft Regional Regulations on Regional Long-Term Development Plans and Regional Medium-Term Development Plans, as well as Procedures for Amending Regional Long-Term Development Plans, Regional Medium-Term Development Plans, and Regional Government Work Plans.
11. Presidential Regulation No. 12 of 2025 concerning the National Medium-Term Development Plan (RPJMN) 2025-2029.

2. MONITORING, EVALUATION, AND REPORTING MECHANISM OF CLIMATE RESILIENCE DEVELOPMENT ACTIONS

Coordination and Institutional Framework for Monitoring, Evaluation, and Reporting of Climate Resilience Development

Based on Regulation of the Minister of National Development Planning/Head of Bappenas No. 1 of 2023 concerning Guidelines for National Development Evaluation, monitoring, control, and evaluation of development aim to provide general guidance for the government to monitor, control, and evaluate the implementation of development plans, namely annual development plans and medium-term development plans. In addition, it also mentions the objective of clarifying the division of roles of the parties involved in the implementation of development monitoring, control, and evaluation. Monitoring is basically an activity of observing the progress of the implementation of development plans to see the suitability of the implementation of planning and to anticipate problems in order to take action as early as possible. The process of monitoring, controlling, and evaluating development is carried out in three stages, namely the planning, implementation, and post-implementation phases of development plans. In order to support the implementation of comprehensive evaluation and control of development, a monitoring process is needed as the first step in evaluating and controlling the implementation of development plans. The framework for this process can be seen in **Figure 1.**

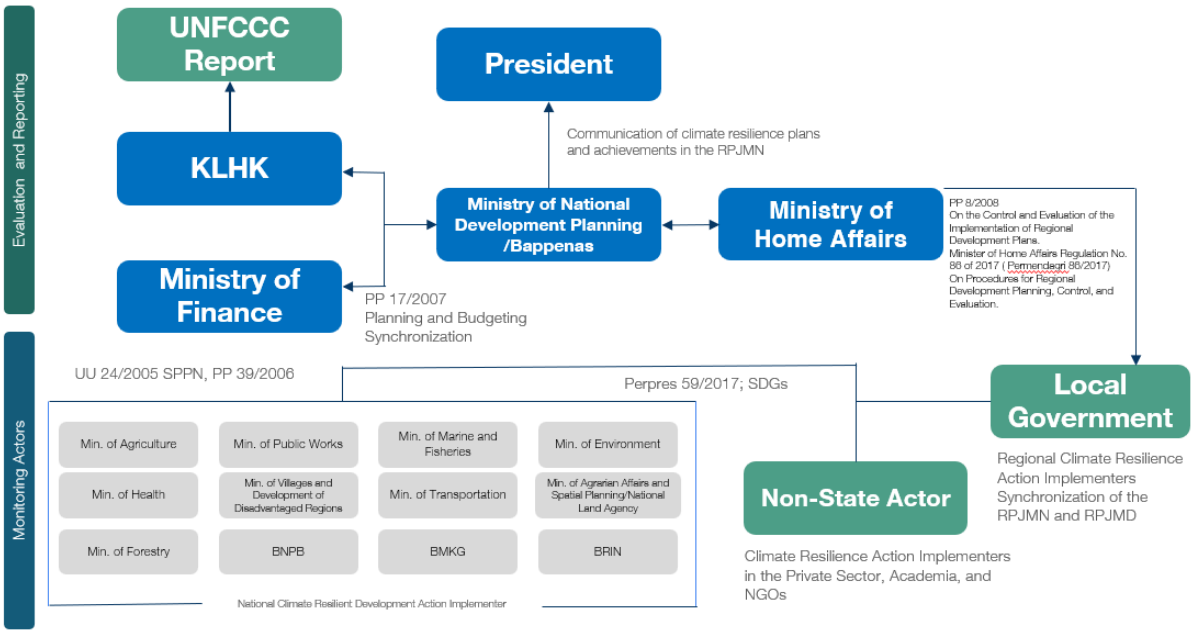


Figure 1. The Role of Stakeholders in Monitoring, Controlling, and Evaluating Development

In conducting development plan evaluations, three types of evaluations can be used, namely:

1. Performance measurement evaluation, conducted to assess program or activity performance achievements by comparing actual results with predetermined targets.
2. Evaluation of the development plan implementation process, conducted to answer descriptive questions to explain the implementation status of priority programs/activities.
3. Strategic policy/program evaluation, conducted to clarify the cause-and-effect relationship of the failure or success of the plan.

Thus, in order to optimize the implementation and utilization of the results of monitoring, control, and evaluation, a clear division of roles among the parties involved is required. Furthermore, the Ministry of National Development Planning/Bappenas will carry out monitoring, control, and evaluation of the implementation of development plans at the national level. The division of roles in the process of monitoring, evaluation, and reporting of Climate Resilience Development actions aims to ensure that the implementation of actions is coordinated, effective, and accountable. Through a clear division of roles between ministries/agencies, local governments, and other stakeholders, cross-sector coordination can be strengthened, and the quality of data and reporting can be improved. The roles of stakeholders in this case are divided into two, namely:

1. Implementers and Monitors of Climate Resilience Development Actions
2. Evaluation and Reporting on the Implementation of Climate Resilience Development Actions.

Climate resilience actions must be controlled through a structured division of roles between implementers and monitors, with a focus on data collection, performance monitoring, and transparent evaluation of results. This is important to ensure that every Climate Resilience Development action contributes significantly to the achievement of development targets and the reduction of economic risks due to climate change, as can be seen in **Figure 2.**

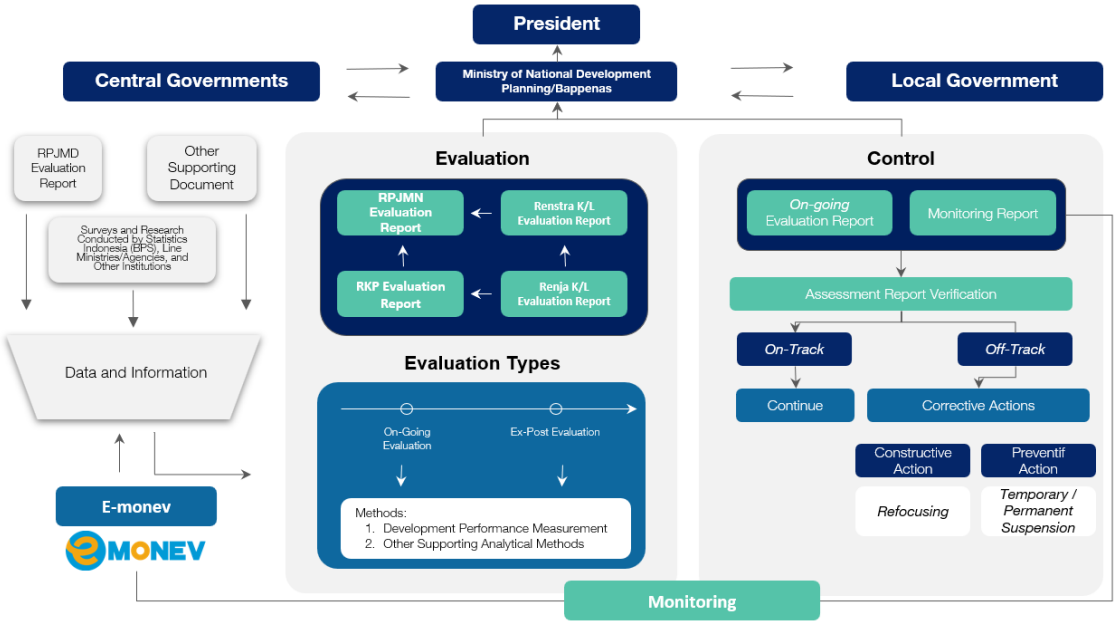


Figure 2. Framework for Monitoring, Control, and Evaluation of Development

2.1 Implementation and Monitoring of Climate Resilience Development Actions

Based on Government Regulation No. 39 of 2006 concerning Procedures for Controlling and Evaluating Development Implementation, there are two institutional roles that carry out Climate Resilience Development control, namely monitoring and evaluating climate resilience activities. Monitoring refers to the activity of observing the progress of development plan implementation, identifying and anticipating problems that arise and/or will arise so that action can be taken as early as possible. This monitoring is related to the progress of fund absorption, the realization of output targets, and the obstacles encountered in the implementation of actions. In addition, the implementation of actions is expected to collect technical data to measure the achievement of reducing potential economic losses. The implementation and monitoring of climate resilience actions by sector can be seen in **Table 1.**

Table 1. Related Ministries/Institutions

Sector	Ministry/Institution
Marine and Coastal Affairs	• Ministry of Marine Affairs and Fisheries • Ministry of Transportation • Ministry of Public Works
Water	• BMKG • Ministry of Environment/Environmental Control Board • Ministry of Public Works • Ministry of Forestry
Agriculture	• Ministry of Agriculture • BMKG • Ministry of Public Works
Health	• Ministry of Health • Ministry of Public Works

Implementation of Climate Resilience Development Action Evaluation & Reporting

Evaluations are conducted on the implementation of K/L Work Plans and RKP to assess the success of a program or activity based on the indicators and performance targets listed in the K/L Strategic Plan and RPJMN PP 39/2006 Article 12 (1) and (2) Evaluations are conducted on the implementation of the K/L Work Plan and Government Work Plan (RKP) to assess the success of a program/activity based on performance indicators and targets and on the implementation of the National RPJM and K/L Strategic Plan (Renstra) to assess the efficiency, effectiveness, benefits, impact, and sustainability of the program. The role of the Climate Resilience Development Action Evaluation and Reporting Implementer:

The role of the Climate Resilience Development Action Evaluation and Reporting Implementer

1. Collect and analyze activity monitoring reports to assess the progress of planned activities and identify issues that require follow-up (Article 10 of PP 39/2006).

2. Conducting evaluations and reporting on the achievements of climate resilience actions in national development planning; namely, assessing the success of the implementation of a program/activity based on performance indicators and targets, so as to obtain a value for the efficiency, effectiveness, benefits, impact, and sustainability of a program.

Mechanism for Monitoring, Evaluation, and Reporting on Climate Resilience Development Actions at the National Level

The National RPJMN evaluation is conducted to assess the performance of macro development targets outlined in the Development Priorities in the RPJMN. In addition, the evaluation during the implementation of the RPJMN also aims to analyze problems and obstacles in the implementation of policies, programs, and activities that support the achievement of Development Priorities, as stipulated in Presidential Regulation Number 1 of 2023 concerning Procedures for Monitoring, Controlling, and Evaluating the Implementation of Development Plans.

The evaluation is carried out continuously during the current period and the results are used as input in the preparation of the RKP each year. In the third year, a Mid-Term Evaluation is carried out, which is used as a basis for improving the implementation of programs and activities and as material for revising the RPJMN if necessary. Furthermore, in the fifth year, a Final Evaluation of the RPJMN is carried out, which becomes the main input in the preparation of the next RPJMN period.

This evaluation is also intended to assess the benefits and added value of interventions in the form of policies, programs, and activities on the implementation of Development Priorities. The evaluation results are used as a basis for controlling and improving the implementation of programs and activities in the fourth and fifth years. The timeline for the implementation of the evaluation and the utilization of its results in planning documents is illustrated in **Figure 3.**

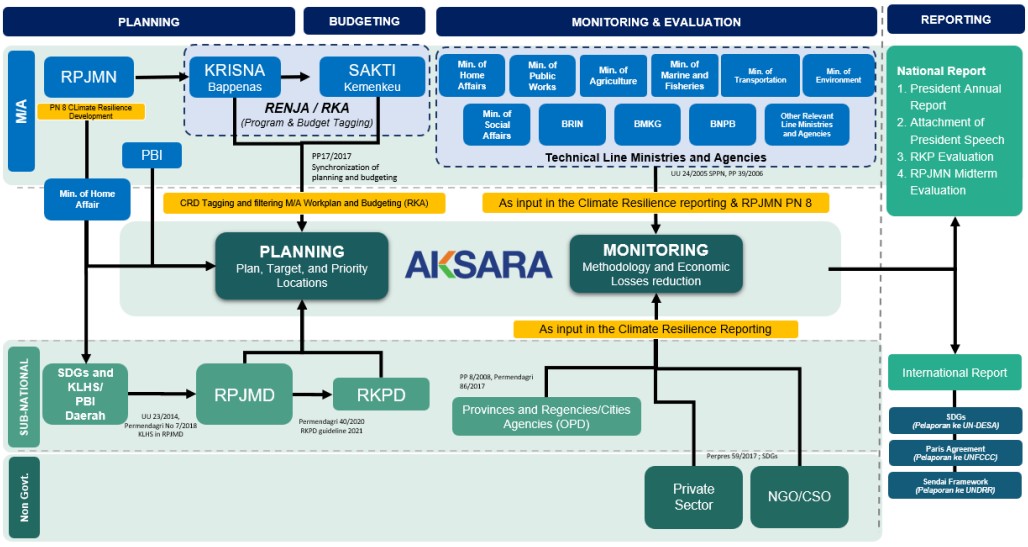


Figure 3. Mechanism for Monitoring, Evaluation, and Reporting on Climate Resilience Development Actions

2 Monitoring, Evaluation, and ReportingMechanism of Climate Resilience Development

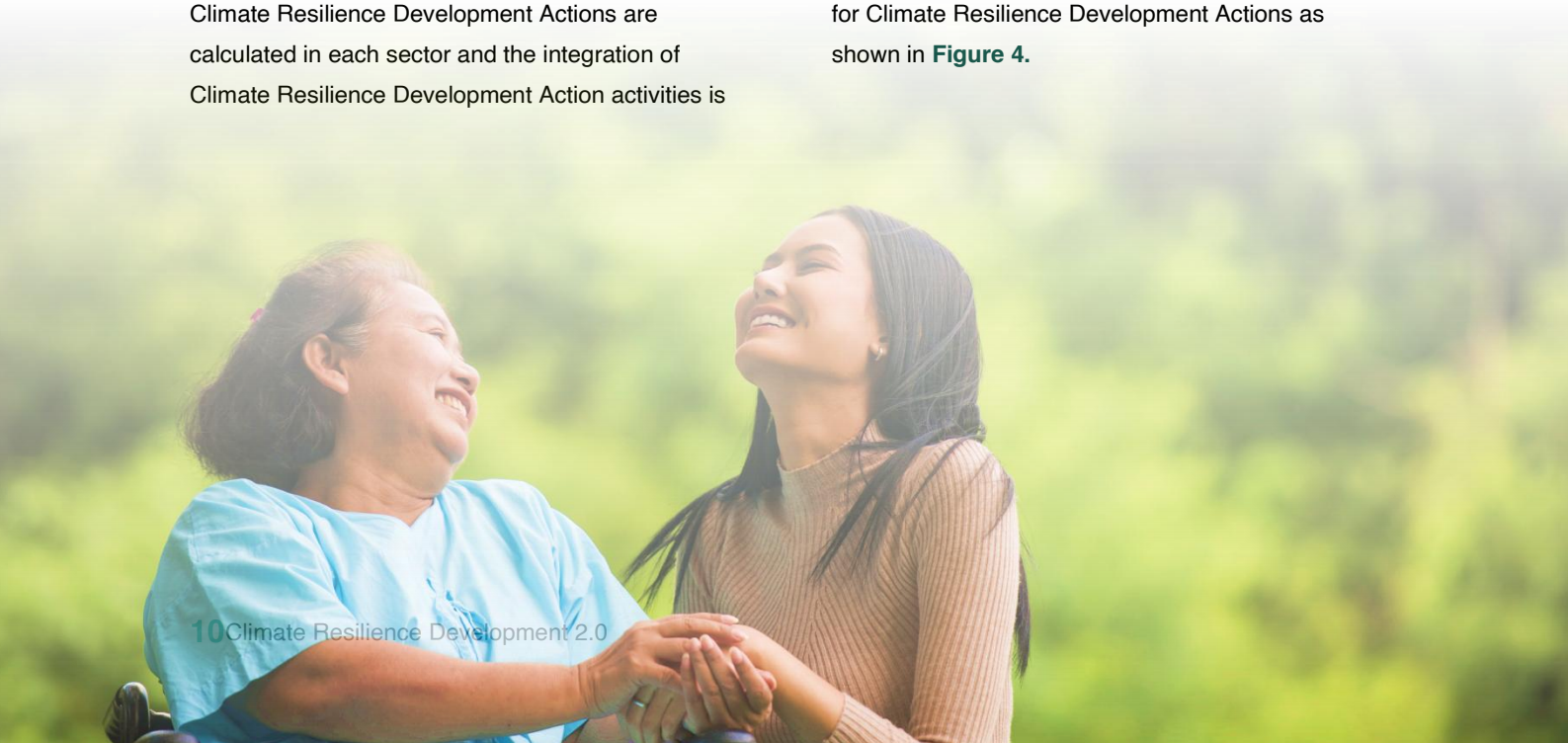
In line with this evaluation framework, Climate Resilience Development is one of the national priorities reflected in the 8th National Development Agenda, namely Strengthening the Harmonious Coexistence of Natural and Cultural Environments, and Increasing Interfaith Tolerance to Achieve a Just and Prosperous Society. In its implementation, an integrated monitoring, evaluation, and reporting mechanism is needed so that the direction of development policies, programs, and activities can support the achievement of climate resilience targets in an effective, efficient, and accountable manner.

Based on Government Regulation No. 17 of 2017 concerning the Synchronization of the National Development Planning and Budgeting Process through KRISNA, ministries and institutions prepare work plans (Renja), strategic plans (Renstra), and other planning documents that contain outputs and activities related to Climate Resilience Development Actions. The success of budget tagging depends heavily on the quality of input data, namely accurate tagging at the planning stage and consistent reporting of realization at the implementation stage.

The monitoring and evaluation stages of Climate Resilience Development Actions are carried out through the AKSARA portal developed by the Ministry of National Development Planning/National Development Planning Agency. Through AKSARA, Climate Resilience Development Actions are calculated in each sector and the integration of Climate Resilience Development Action activities is carried out as stipulated in Law Number 25 of 2004 concerning the National Development Planning System and Government Regulation Number 39 of 2006 concerning Procedures for Controlling and Evaluating the Implementation of Development Plans.

The relevant ministries and agencies shall prepare work plans that include targets, indicators, and outputs of activities that support Climate Resilience Development Actions. Monitoring shall be conducted to observe the progress of the implementation of Climate Resilience Development Actions, identify potential problems, and anticipate them through early corrective measures. Furthermore, an evaluation is conducted on the relationship between the outputs and outcomes of Climate Resilience Development Action activities and the established planning standards.

Monitoring, Evaluation, and Reporting (MER) of Climate Resilience Development Action is integrated into reporting at the national and international levels. In the initial stage, this mechanism still focuses on activities carried out by relevant ministries and institutions and will continue to be developed in the future to accommodate activities carried out by local governments and non-governmental stakeholders. This series of processes is summarized in the design of the monitoring, evaluation, and reporting mechanism for Climate Resilience Development Actions as shown in **Figure 4.**



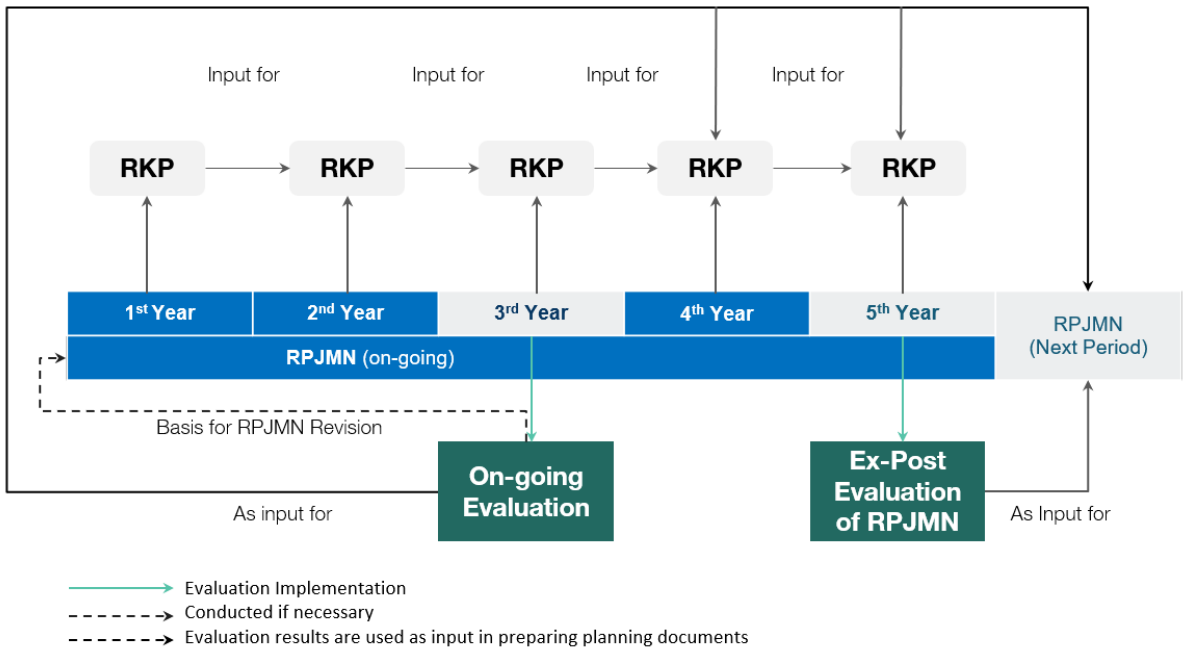


Figure 4. RPJMN Evaluation Implementation Flow

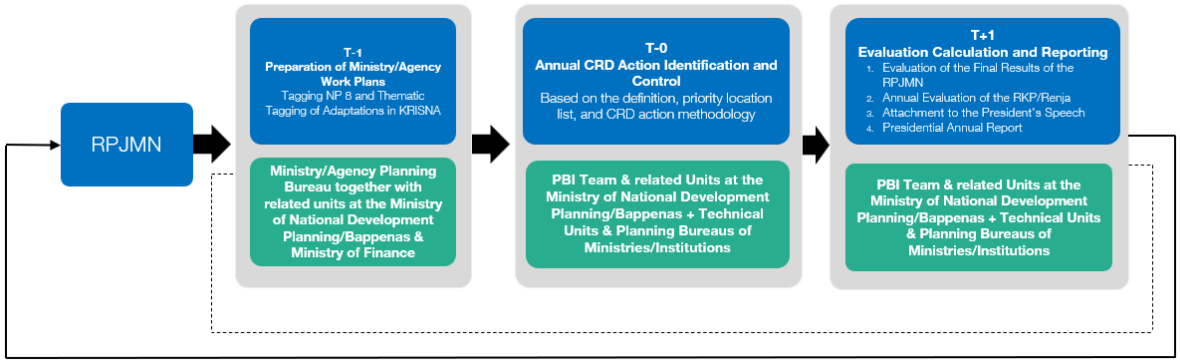


Figure 5. The Role of Stakeholders in Monitoring, Control, and Evaluation of Development

2.2 The Process of Monitoring, Evaluation, and Reporting of Climate Resilience Development

2.2.1 Stage of Ministry/Agency Work Plan Preparation Period (T–1)

The initial stage in the process of Monitoring, Evaluation, and Reporting of Climate Resilience Development Actions begins in the period of preparation of the Ministry/Agency Work Plan (Renja K/L) for the year (T–1). At this stage, the main role lies with the Ministry/Agency Planning Bureau, with the Ministry of National Development Planning/Bappenas reviewing the substance of the plan and the Ministry of Finance reviewing the budgeting aspects. Activities carried out include the preparation of the Ministry/Agency Work Plan, which contains climate resilience actions in line with the targets of the National Medium-Term Development Plan, a list of priority locations, and a list of climate resilience actions. Next, the government's work plans related to climate resilience are marked through the KRISNA application. The expected output of this stage is the formulation of a Ministry/Agency Work Plan that is in line with RPJMN and climate resilience action locations, as well as the availability of accurate climate resilience activity tagging results in the KRISNA application.

The process of preparing the Work Plan for Ministries/Institutions refers to Government Regulation No. 6 of 2023 concerning the Preparation of Work Plans and Budgets and Government Regulation No. 17 of 2017 concerning the Synchronization of the National Development Planning and Budgeting Process. These provisions stipulate that the process of preparing the work plan of ministries/institutions for the fiscal year being prepared refers to national development priorities and indicative ceilings, and is reviewed by the Ministry of National Development Planning/Bappenas and agreed upon in a Trilateral Meeting (TM) with the Ministry of Finance.

The government work plan related to climate resilience that has been prepared and is in accordance with the definition and location of climate resilience actions is then entered into the KRISNA application. In the process of preparing the work plan, the Planning Bureau of the Ministry/Agency can include activities that support the achievement of the Climate Resilience Development Policy targets in the 2025-2029 RPJMN, as listed in the following framework of indicators and targets.

Table 2. Framework of Climate Resilience Development Indicators and Targets in the 2025–2029 National Medium-Term Development Plan

Category	Indicator	Unit	Target				
			2025	2026	2027	2028	2029
National Priority 8: Strengthening the Harmonisation of Life in Balance with the Natural Environment and Cultural Values, alongside the Enhancement of Interfaith Tolerance, to Achieve a Just and Prosperous Society	The proportion of direct economic losses from disasters relative to GDP.	Percent (%)	0,137	0,137	0,136	0,136	0,135
Program Priority 3: Climate Resilience Development	Percentage reduction in potential economic losses due to climate change to GDP (%) in four priority	Percent (%)	0,135	0,275	0,406	0,53	0,646

Category	Indicator	Unit	Target				
			2025	2026	2027	2028	2029
	sectors (marine and coastal, water, agriculture, health)						
Action Priority 1: Marine and Coastal Climate Resilience Enhancement	Resilience value of coastal areas of small islands	Value	55	60	65	70	76
Action Priority 2: Climate Adaptive Water Resource Management	Percentage of accuracy of weather modification success	Percent (%)	82	84	86	88	90
Action Priority 3: Climate Smart Agriculture Development and Implementation	Percentage reduction in potential economic losses due to climate change to GDP (%) in the agricultural sector	Percent (%)	0,091	0,187	0,276	0,360	0,439
Action Priority 4: Climate-sensitive disease prevention and control	Reduction in the incidence of climate-sensitive diseases percentage	Percent (%)	10	11	12	13	14
Action Priority 5: Governance and Capacity Enhancement for Climate Resilience Development	Climate Resilience Action Percentage in Priority Location	Percent (%)	10	15	20	25	30

2.2.2 Monitoring and Identification of Climate Resilience Development Actions Period (T0)

In accordance with Government Regulation No. 39 of 2006 concerning Procedures for Controlling and Evaluating the Implementation of Development Plans, ministries/institutions are responsible for monitoring the implementation of the Ministry/Institution Work Plan (Renja K/L). The Ministry of National Development Planning/Bappenas collects, processes, and analyzes the monitoring reports as part of the national development evaluation process. This monitoring mechanism forms the basis for controlling the achievement of development targets, including in the context of Climate Resilience Development.

Within this framework, the monitoring and evaluation of Climate Resilience Development actions are operationalized through AKSARA, an integrated reporting system designed to ensure systematic tracking, performance assessment, and accountability across sectors and levels of government. This system is used as the main instrument for compiling the realization of activities and technical data on Climate Resilience Development actions from ministries/agencies. The collected data forms the basis for calculating performance achievements, including estimates of potential economic losses that have been reduced and other sectoral impacts. The monitoring and reporting mechanism is implemented through the arrangement of responsible parties, main activities, and expected outputs as follows:

2 Monitoring, Evaluation, and ReportingMechanism of Climate Resilience Development

Responsible Party and Implementing Unit

- Planning Bureau: Ministry/Agency
- Technical Unit: Ministry/Agency

Activities

- Realization of plans and technical data on Climate Resilience Development actions into the AKSARA System.
- The AKSARA System calculates the potential economic losses that have been successfully reduced and other sectoral impacts.

Expected Outputs

- Climate resilience development actions recorded in the AKSARA System
- Availability of the value of potential economic losses that have been successfully reduced and other sectoral impacts of these actions

Data reported through the AKSARA System is then checked and validated by the Climate Resilience Development Team of the Ministry of National Development Planning/Bappenas to ensure the data is accurate and complete in accordance with monitoring and evaluation requirements. If there are corrections or clarifications, the correction process is carried out through the system until the data is declared valid. Validated data is then displayed in the Climate Resilience Development achievement dashboard as a basis for monitoring the achievement of RPJMN targets.

In order to ensure the accuracy of the determination of Climate Resilience Development Actions, the Climate Resilience Development Team of the Ministry of National Development Planning/Bappenas carries out an identification process for actions listed in the Work Plan and Budget (Renja) and the Ministry/Agency Work Plan and Budget (RKA K/L) for the current year. This identification process is carried out through structured and coordinated stages. These stages include:

A. Collection of K/L RKA

The team collected comprehensive data on climate resilience activities from relevant units in the K/L RKA, both those that had been labeled “Climate Resilience Action” in the KRISNA application and those that had not. The purpose of this collection was not only to identify activities, but also to evaluate the results of the labeling so that the quality of the labeling process through the system could continue to improve each year. The data sources are KRISNA, Sakti, and the K/L Planning Bureau.

B. Identification of Climate Resilience Actions

This stage is carried out to assess the suitability of the K/L Work Plan with the location and targets of Climate Resilience Development in the 2025-2029 RPJMN. Activities in the K/L Work Plan that meet the criteria will be identified as potential Climate Resilience Development actions.

C. Focus Group Discussion (FGD) to Clarify Identification Results

The Ministry of National Development Planning/Bappenas initiated an FGD involving relevant ministries and institutions. In this forum, the results of the identification of climate resilience actions in the K/L Work Plan were presented and discussed based on the climate resilience sector. The discussion focused on:

1. Clarification of activity plans,
2. Clarification of implementation locations, and
3. Data requirements for calculating the achievement of economic loss reduction targets

D. Establishment of an Agreement on the List of Climate Resilience Development Actions

The FGD produced a list of Renja and RKA K/L activities agreed upon as Climate Resilience Development actions. The list was then entered into the Climate Resilience PEP (AKSARA) application as a basis for monitoring, evaluation, and reporting after the activities were implemented.

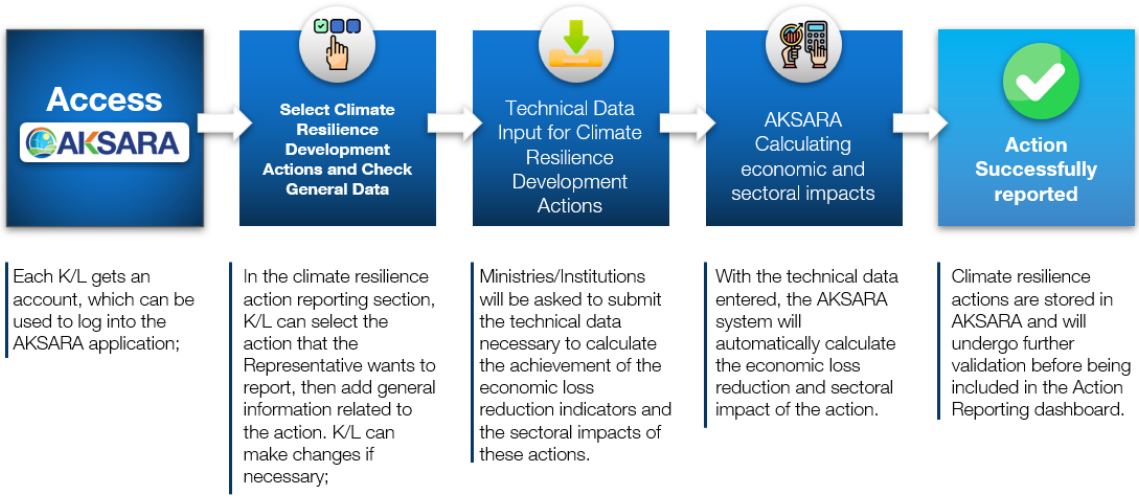


Figure 6. Monitoring, Evaluation, and Reporting Process Flow for Climate Resilience Development Action

2.2.3 Evaluation and Reporting Calculations for Period (T+1)

The Evaluation and Reporting stage is the final part of the Monitoring, Evaluation, and Reporting cycle for Climate Resilience Development Actions. At this stage, an analysis is conducted on the results of the implementation of Climate Resilience Development actions to assess the level of achievement of the National Medium-Term Development Plan (RPJMN) targets. The evaluation focuses on measuring performance achievements, implementation effectiveness, and the contribution of actions to reducing risks and potential losses due to climate change.

The evaluation is conducted based on the results of calculations of the impact of Climate Resilience Development actions that have been collected and processed through a monitoring system. The results of these calculations are then compared with the targets and indicators of the RPJMN to assess the

level of achievement of Climate Resilience Development goals. This analysis forms the basis for the preparation of annual achievement reports as a form of accountability for the implementation of Climate Resilience Development policies.

The results of the evaluation and reporting are used as input in the planning process for the following year. The annual achievement report is submitted to planners, reviewers, and implementers of Climate Resilience Development actions as a basis for improving planning, strengthening the quality of programs and activities, and preparing the Ministry/Agency Work Plan for the following period.

Responsible Party and Implementing Unit

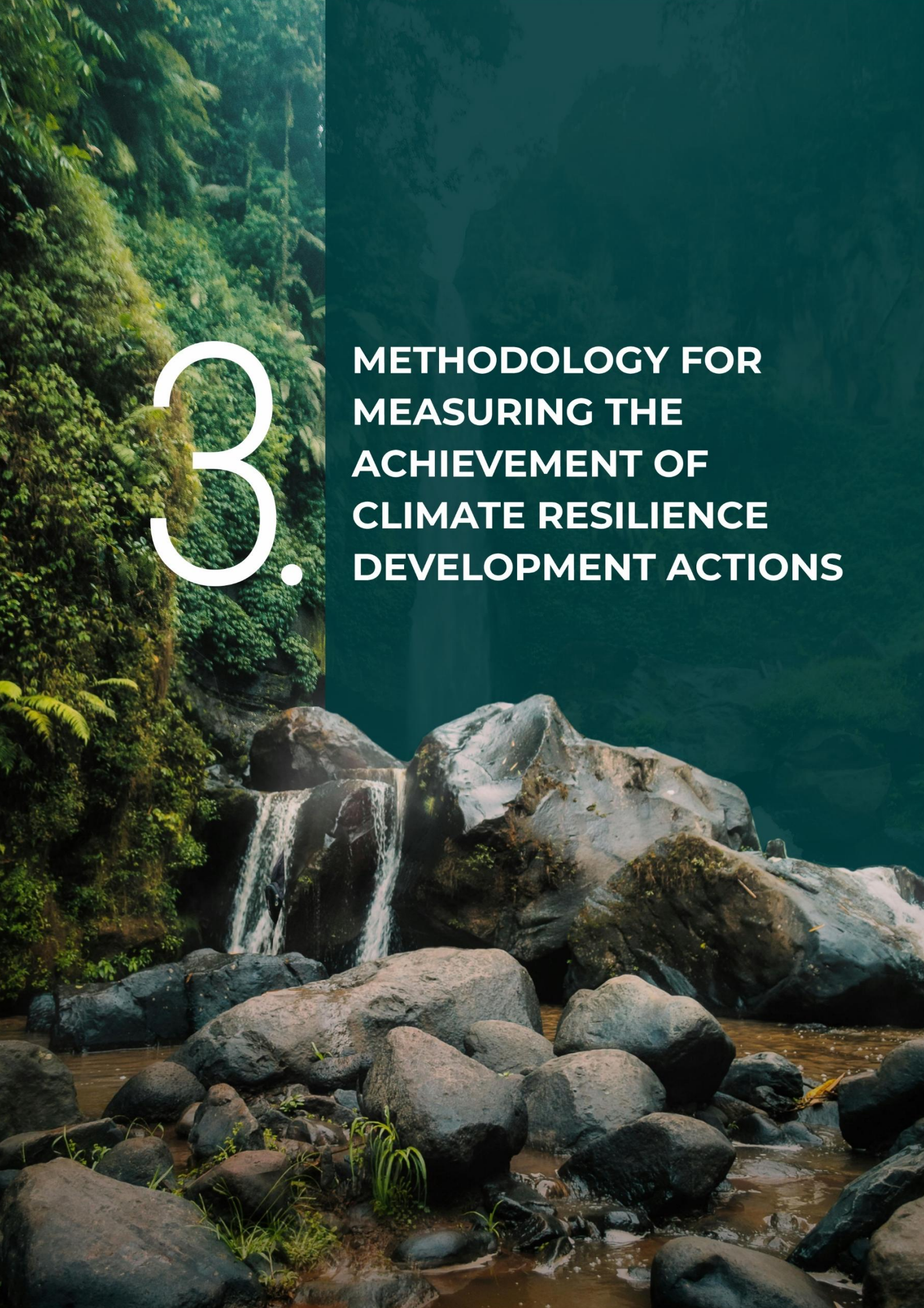
- Ministry of National Development Planning/Bappenas
- Planning Bureau of Ministries/Institutions
- Technical Units of Ministries/Institutions

Activities

- Processing and calculating the impact of Climate Resilience Development Actions based on actual data for the current year.
- Comparison of achievements with targets and indicators of the National Medium-Term Development Plan (RPJMN).
- Evaluation of the achievements of Climate Resilience Development Action programs and activities.
- Preparation of annual achievement reports as material for accountability of Climate Resilience Development performance.

Expected Outputs

- Availability of measurable, documented results of the impact of Climate Resilience Development Actions that are in line with RPJMN indicators.
- Compilation of annual reports on the achievements of Climate Resilience Development Actions.
- Availability of input for the preparation of the Next Year's K/L Work Plan.



3. METHODOLOGY FOR MEASURING THE ACHIEVEMENT OF CLIMATE RESILIENCE DEVELOPMENT ACTIONS

In the National Medium-Term Development Plan (RPJMN) 2025–2029, Climate Resilience Development has been formally integrated into National Priority (NP) 8 under Priority Program (PP) 3. The principal indicator used to assess progress is the percentage reduction in potential economic losses due to climate change relative to Gross Domestic Product (GDP) across four priority sectors including marine and coastal areas, water resources, agriculture, and health. To ensure the achievement of this target, Climate Resilience Development actions are implemented through four strategic approaches covering infrastructure development, technological innovation, capacity enhancement, and improvements in governance and financing mechanisms. Furthermore, these actions are classified into two categories: core actions and supporting actions. A comprehensive and sector-specific list of priority actions and locations is detailed in **Book I: List of Priority Locations and Actions.**

Core Actions

Core actions are defined as interventions whose outputs and outcomes directly contribute to reducing the potential economic losses across the four priority sectors (marine and coastal areas, water resources, agriculture, and health). Within the framework of the RPJMN 2025–2029, the achievement of these actions is measured through the implementation of PP 3 on Climate Resilience Development, which is substantiated by progress in the execution of Priority Activities (KP) 1, KP 2, KP 3, and KP 4.

These core actions are implemented by relevant ministries and government agencies and may be further supported by subnational governments as well as nongovernmental institutions, thereby ensuring coordinated and multilevel implementation.

Supporting Actions

Supporting actions refer to interventions whose outputs do not directly contribute to the reduction of potential economic losses across the four priority sectors. Nevertheless, they play a critical role in reducing sectoral climate vulnerability and risk exposure. In the RPJMN 2025–2029, these actions support KP 5 – Strengthening Governance and Capacity for Climate Resilience Development under PP 3 – Climate Resilience Development. This component emphasizes the enhancement of institutional governance frameworks and the provision of systemic support to achieve the overall targets of Climate Resilience Development.

Furthermore, the implementation of supporting actions may be undertaken not only by the central government but also by subnational governments and non-state stakeholders, thereby fostering a multi-level and multi-actor approach to climate resilience.

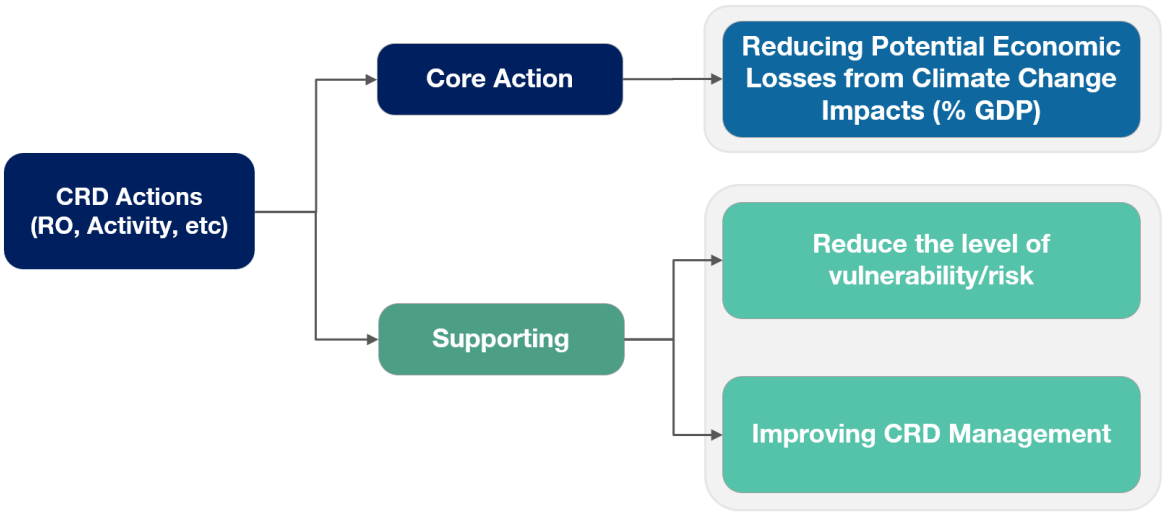


Figure 7. Relationship between Core and Supporting Actions in Achieving Climate Resilience Development Targets

Based on the categories of activities described above, only core activities can be used to calculate economic loss reduction values using the methodology described in the Methodology Chapter. The development of the methodology for measuring the achievement of climate resilience actions involved a team of experts from relevant ministries/agencies and academics. Several actions in core activities that have the same output characteristics were grouped into one action group with one calculation method.

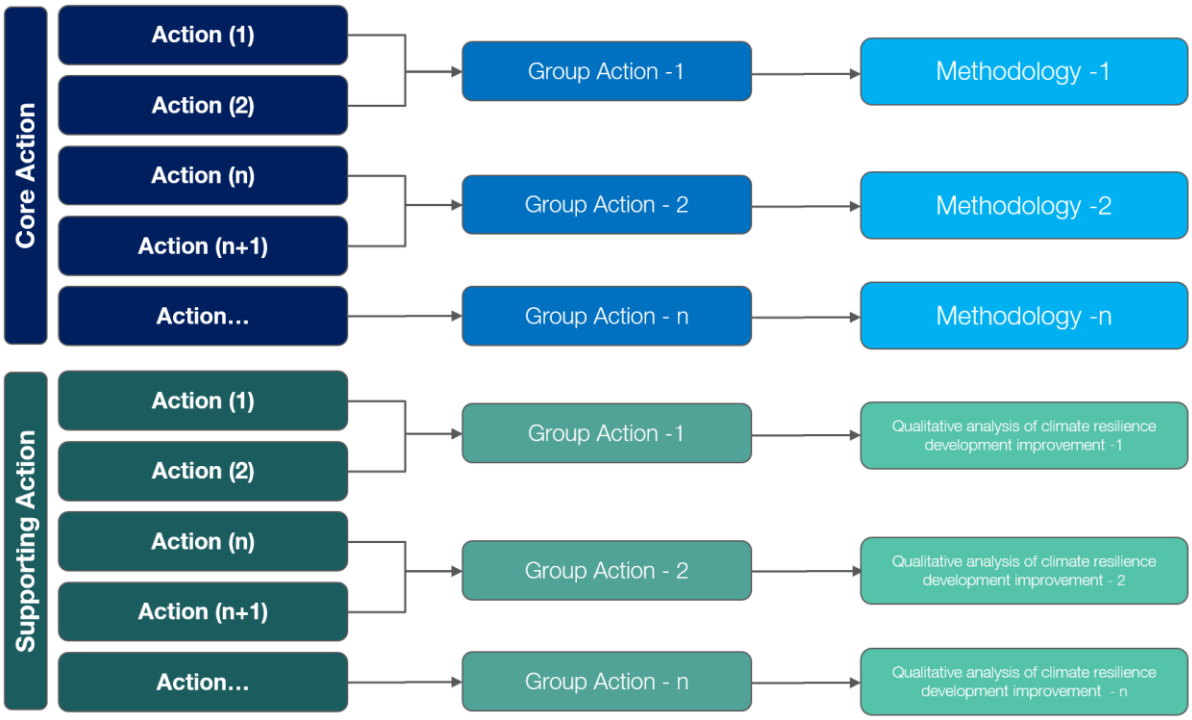
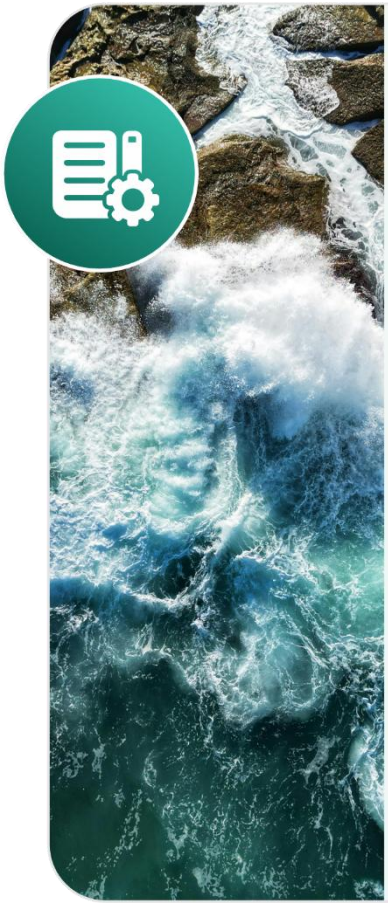


Figure 8. Classification of Climate Resilience Development Action Methodologies

Data and information requirements for climate resilience actions are divided into two types, namely:

1. General Data

General data on climate resilience actions; all actions from various sectors will have the same general data. Examples of general data include the name of the activity, implementer, location, budget, etc.



2. Technical Data

Data used to calculate the reduction in economic losses from core climate resilience activities. This technical data is divided into two types, primary and secondary technical data. Primary variables used in calculating the reduction in economic losses. Without this primary data, it is difficult to perform the calculation. On the other hand, Secondary Technical Data provide additional information or form conversion factors from the primary data into the value of the reduction in economic losses.

Some technical data is also needed for supporting activities as a benchmark to assess the reduction in vulnerability and increased climate resilience capacity from climate resilience actions. The method for determining the achievement of climate resilience improvements in supporting activities uses a qualitative analysis approach of reported primary and secondary data.

3.1

Marine and Coastal
Sector Methodology

In the 2025–2029 National Medium-Term Development Plan (RPJMN), the Marine and Coastal Sector plays a role in reducing the potential economic losses caused by climate change through Priority Program (PP) 3 on Climate Resilience Development, specifically Priority Activity (KP) 1 on Strengthening Climate Resilience in the Marine and Coastal Sector. This Priority Activity sets a performance indicator in the form of the Coastal and Small Islands Resilience Value, with a target value of 76 by 2029.

The achievement of this indicator is planned to be realized through the implementation of various strategic interventions. These include the provision of maritime navigation safety infrastructure, the supply of fishing vessels, the construction of coastal protection structures, and the restoration and rehabilitation of coastal ecosystems.

In addition, a range of complementary measures will be undertaken to reduce the incidence of fishing vessel accidents caused by high sea waves, as well as to reduce the adverse impacts of coastal inundation. Together, these interventions are expected to strengthen climate resilience in the marine and coastal sector while contributing to the reduction of potential economic losses. Climate change from the implementation of core climate resilience activities in the marine and coastal sectors is presented in the following charts and tables.

A. Marine Subsector

The main problem faced in the marine sub-sector is disruption to shipping safety, which also affects fish catches, especially for small vessels that are not equipped with adequate technology. Climate change is altering fishing patterns, including fishing further from the coast, unpredictable fish stocks, and weather that cannot be predicted using conventional methods. The reduction in economic losses due to climate change from the Core Activities of the Marine Subsector's climate resilience actions is explained in the charts and tables on the following pages.

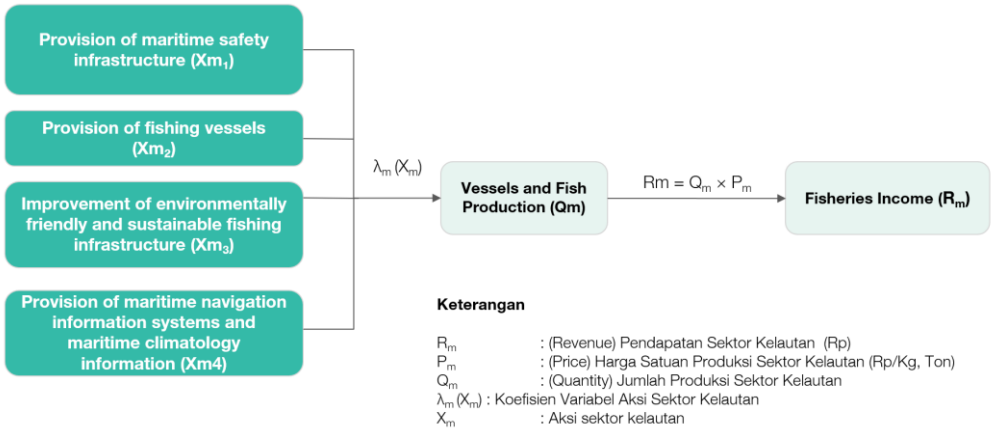


Figure 9. Methodological Flow for Climate Resilience Development Actions in the Marine Subsector

Core Actions

Table 3. Details of the Methodology for Core Actions in the Marine Subsector

Action Group	Output Indicators	Data Requirements	Calculation Concept
Provision of Maritime Safety Infrastructure	Improved security and safety of marine capture fisheries navigation for fishers (units)	**Primary Data:** Number of fishing vessels accessing maritime safety infrastructure (units). **Secondary Data:** Sea area coverage supported by maritime safety facilities (nautical miles); Capacity area of maritime safety infrastructure (m^2).	The provision of maritime safety and sea monitoring infrastructure enables fishers to access safe navigation route information, reducing the risk of maritime accidents that may affect fishing operations and catch outcomes. This intervention directly contributes to increased productivity and income in the marine and fisheries sector.
Provision of Fishing Vessels	More resilient and climate-adaptive fishing vessels capable of operating under rough sea conditions (units)	**Primary Data:** Number of fishing vessels provided (units). **Secondary Data:** Fish catch capacity (tons/vessel); Vessel asset value (IDR/vessel); Number of crew members (persons); Data on number and types of fishing vessels (units).	The provision of fishing vessels larger than 10 GT and the strengthening of vessels smaller than 10 GT reduce accident risks and improve operational safety. These interventions increase fish catch volume and overall fisheries production, contributing directly to higher incomes in the marine and fisheries sector.
Enhancement of Adaptive, Environmentally Friendly, and Sustainable Capture Fisheries Facilities and Infrastructure	Increased catch yield and time efficiency while supporting more sustainable fishing practices (units)	**Primary Data:** Number of capture fisheries facilities and equipment distributed (units). **Secondary Data:** Productivity of capture fisheries facilities (tons/unit); Fisheries income per unit of catch (tons/unit).	Improving adaptive, environmentally friendly, and sustainable capture fisheries facilities enhances the ability of fishers to continue operations under climate variability. These facilities directly increase productivity and income in the marine and fisheries sector while supporting sustainable fishing practices.
Provision of Navigation Information Systems and Maritime Climatology Information	Utilization of navigation tools and maritime technologies to support safe fishing activities and reduce accident risks (units)	**Primary Data:** Number of vessels accessing fishing and navigation information systems (units). **Secondary Data:** Locations of high fish catch potential areas; Sea area coverage surveyed using ROV or similar technologies (nautical miles); Vessel productivity (tons/unit).	The provision of fishing and navigation information systems improves access to accurate fishing ground and maritime climate information. This increases catch volume and fisheries production efficiency, which directly contributes to higher income in the marine and fisheries sector.

Supporting Actions

Table 4. Details of the Methodology for Supporting Actions in the Marine Subsector

Action Group	Output Indicators	Data Requirements	Analysis Concept
Strengthening Economic Resilience and Livelihood Diversification of Fishers	Availability of climate-adaptive alternative livelihoods for fishers and improved economic resilience of fisher households	Socio-economic data of fishers; seasonal fishing patterns; income levels and economic vulnerability; potential alternative coastal livelihoods; climate impacts on fisheries productivity	Livelihood diversification is analyzed as an adaptation strategy to reduce dependence on capture fisheries that are highly vulnerable to climate variability, thereby lowering economic vulnerability and strengthening the resilience of fisher livelihoods.
Optimization of Marine Technology Utilization and Information Systems	Availability of marine information systems and early warning systems to support fishers' decision-making	Marine weather and climate data; oceanographic data; potential fishing grounds; level of technology utilization by fishers; coastal communication infrastructure	Technology utilization is analyzed as an adaptation instrument to improve safety and operational efficiency through reliable access to marine weather and climate information, thereby reducing risks associated with extreme weather events.
Strengthening Marine Institutions and Marine Spatial Governance	Strengthened marine management institutions and availability of climate-adaptive marine spatial governance frameworks	Marine policy and institutional data; Marine Spatial Planning (RZWP3K); data on marine spatial use conflicts; coastal vulnerability data	Marine spatial governance is analyzed as a prerequisite for climate change adaptation to ensure ecosystem sustainability, reduce spatial use conflicts, and lower climate-related risks in coastal and marine areas.
Improving Access to Fisheries Financing	Increased access of fishers to financing and insurance schemes that support climate adaptation	Fisher financial access data; financing and insurance schemes; fisheries business risks; losses resulting from disasters and extreme weather events	Climate-adaptive financing is analyzed as a mechanism to strengthen the financial resilience of fishers in coping with climate risks and investing in adaptation measures.
Capacity Building on Maritime Safety	Improved capacity of fishers in maritime safety and reduced risk of marine accidents due to extreme weather	Maritime accident data; fishers' safety awareness levels; availability of maritime safety equipment; extreme weather data	Capacity building on maritime safety is analyzed as a component of climate change adaptation to protect fishers' safety and reduce the impacts of extreme weather on marine-based activities.

B. Coastal Subsector

The primary challenge faced by the coastal subsector is coastal inundation resulting from sea level rise. This condition can significantly affect economic activities and community productivity in coastal areas. The reduction of economic losses due to climate change impacts through the Core Activities of climate resilience actions in the coastal subsector is presented in the following diagram and table.

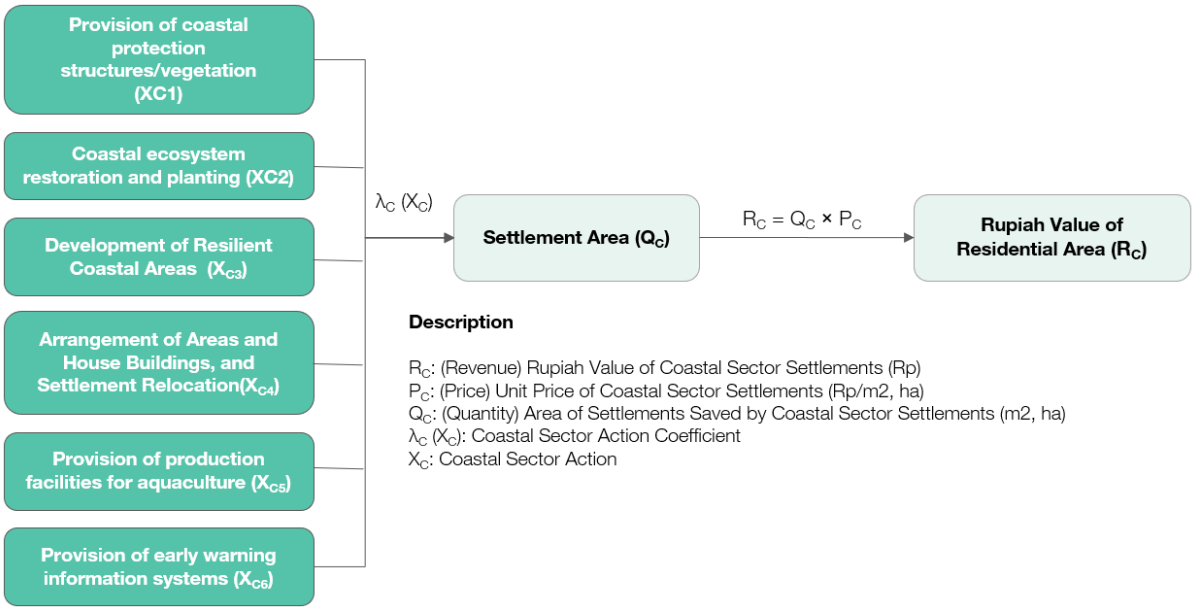


Figure 10. Methodological Flow for Climate Resilience Development Actions in the Coastal Subsector

Core Actions

Table 5. Details of the Methodology for Core Actions in the Coastal Subsector

Action Group	Output Indicators	Data Requirements	Analysis Concept
Provision of Coastal Protective Structures and Vegetative Barriers	Construction of hard coastal protection structures (e.g., breakwaters, seawalls, groynes, sluice gates) and rehabilitation of mangrove areas through replanting and strengthening of coastal buffer zones	Primary Data: Area of coastal zones protected (ha). Secondary Data: Property value in coastal areas (IDR/ha); Type and area of properties within the protected zones (type and ha).	The provision of coastal protection structures and vegetative barriers prevents coastal inundation and flooding of onshore areas, thereby directly protecting property values in coastal zones.
Restoration and Replanting of Coastal Ecosystems	Rehabilitation of seagrass beds through transplantation and coral reef restoration to support coastal ecosystem recovery	Primary Data: Area of coastal zones protected (ha). Secondary Data: Property value in coastal areas (IDR/ha); Type and area of properties within the protected zones (type and ha); Area of ecosystem rehabilitation (ha).	Restoration and replanting of coastal ecosystems, including seagrass beds and coral reefs, reduce coastal inundation risks and directly contribute to the protection of property values in coastal areas.
Development of Climate Resilience Coastal Zones	Availability of coastal resilience-supporting facilities, such as evacuation routes and tidal flood evacuation shelters, including basic coastal	Primary Data: Area of aquaculture zones protected or with increased production (ha). Secondary Data: Aquaculture productivity (tons/ha); Property value in aquaculture zones	The development of climate-resilient coastal zones protects aquaculture areas from flood and inundation risks, contributing to the preservation of aquaculture

Action Group	Output Indicators	Data Requirements	Analysis Concept
	infrastructure (jetties, telecommunication towers, and clean water and sanitation facilities)	(IDR/ha); Aquaculture production value (IDR/ton).	production value and property assets in coastal areas.
Spatial Planning, Housing Improvement, and Settlement Relocation	Organized fisher settlements or coastal villages through improved local spatial planning, provision of fisheries-supporting facilities, and enhanced accessibility and environmental quality	Primary Data: Area of coastal zones safeguarded from inundation (ha). Secondary Data: Property value in coastal areas (IDR/ha); Type and area of properties within the zones (type and ha).	Through spatial planning, reconstruction, and relocation, coastal areas exposed to inundation risks are protected from coastal flooding, thereby preserving the economic value of the area and its assets.
Provision of Aquaculture Production Facilities	Distribution of improved fish seed, fish feed, and seaweed inputs to coastal aquaculture operators	Primary Data: Area of aquaculture zones protected or with increased production (ha). Secondary Data: Aquaculture productivity (tons/ha); Property value in aquaculture zones (IDR/ha); Aquaculture production value (IDR/ton).	The provision and protection of aquaculture production inputs safeguard aquaculture areas from flood and inundation risks, contributing to the protection of aquaculture production value and property assets in coastal zones.
Provision of Early Warning Information Systems	Availability of early warning systems (EWS) for extreme weather and coastal hazards in coastal areas	Primary Data: Area of coastal zones utilizing early warning systems (ha). Secondary Data: Property value in coastal areas (IDR/ha); Type and area of properties within the zones (type and ha).	The provision of early warning systems, such as sea level markers and hazard alerts, enables communities to anticipate coastal inundation and flooding, thereby protecting fisheries production and property values in coastal areas.

Supporting Actions

Table 6. Details of the Methodology for Supporting Actions in the Coastal Subsector

Action Group	Output Indicators	Data Requirements	Analysis Concept
Strengthening Coastal Regulatory Frameworks	Development and effective implementation of coastal management regulations that are adaptive to climate change risks	Coastal regulatory and policy data; coastal zoning plans; coastal climate risk data (coastal erosion, tidal flooding, sea level rise); regulatory compliance and implementation data	Regulatory strengthening is analyzed as a structural adaptation instrument to control coastal spatial use, reduce exposure to climate risks, and enhance the long-term resilience of coastal areas.
Human Resource Capacity Building for	Improved capacity of coastal human resources in planning, implementing, and	Data on capacity levels and training needs of coastal human resources; capacity-building	Human resource capacity building is analyzed as an effort to strengthen the adaptive capacity of coastal communities and

Action Group	Output Indicators	Data Requirements	Analysis Concept
Climate Resilience	managing climate change adaptation	programs; climate literacy levels of coastal communities; social vulnerability data	institutions in responding to climate change impacts and reducing socio-economic vulnerability.
Development of Coastal Protection Technologies	Availability of effective and climate-adaptive coastal protection technologies and infrastructure	Data on shoreline conditions; rates of coastal erosion and tidal flooding; effectiveness of coastal protection technologies; data on supporting coastal ecosystems (mangroves, coral reefs)	The development of coastal protection technologies is analyzed as a physical adaptation measure to reduce the impacts of erosion, extreme waves, and sea level rise through ecosystem-based approaches and sustainable infrastructure.
Enhancement of Coastal Area Protection Capacity	Improved capacity of coastal protection systems, including preparedness and response to climate-related disasters	Data on early warning systems; coastal disaster response capacity; protection infrastructure; data on coastal climate-related disaster events	Coastal area protection is analyzed as a component of adaptation to reduce risks and losses from climate-related disasters by enhancing preparedness, response capacity, and protection of coastal assets.
Provision of Innovative Financing Mechanisms	Availability of sustainable climate adaptation financing mechanisms for coastal areas	Data on coastal adaptation financing needs; innovative financing schemes; public and non-public funding sources; economic loss data resulting from climate change impacts	Innovative financing mechanisms are analyzed as adaptation enablers to support the implementation of coastal actions, strengthen the economic resilience of coastal areas, and ensure the sustainability of climate change adaptation financing.

3.2 Water
Sector Methodology

In the 2025–2029 RPJMN, the water sector plays an important role in reducing the potential economic losses caused by climate change through its support for Priority Program (PP) 3 on Climate Resilience Development. The contribution is further elaborated in Priority Activity 2, namely Climate-Adaptive Water Resources Management. The achievement of this Priority Activity target is planned through the implementation of various strategic activities, including the construction of water absorption and storage infrastructure, conservation of upstream watersheds, and various other interventions aimed at increasing water availability and maintaining the sustainability of water resources. Conceptually, the reduction in potential economic losses due to climate change in the water sector is calculated based on the contribution of these core activities in reducing the risk of hydrometeorological disasters, such as floods, droughts, and landslides, and in maintaining the function of water resources for the community and the economy. A description of the concept of calculating and estimating the reduction in economic losses from the implementation of climate resilience actions in the water sector is presented further in the following charts and tables.

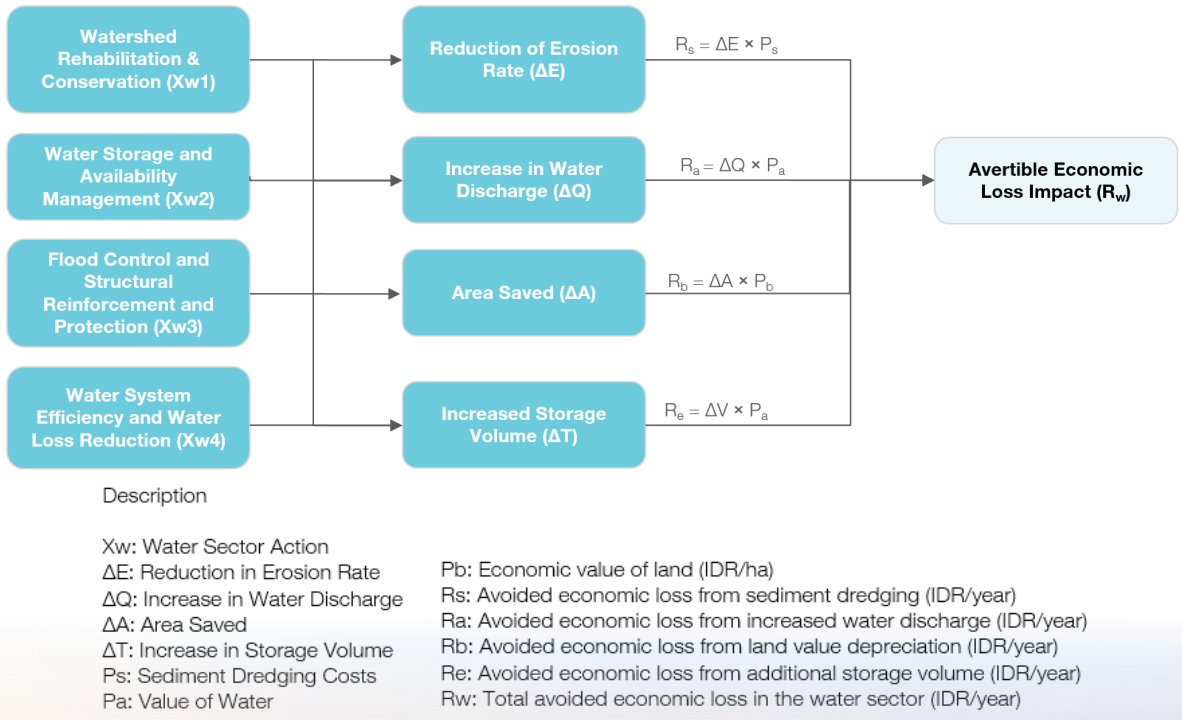


Figure 11. Impact Assessment Flowchart for Climate Resilience Development Actions in the Water Sector

Table 7. Details of the Methodology for Core Actions in the Water Sector

Action Group	Output Indicators	Data Requirements	Calculation Concept
Watershed Rehabilitation & Conservation	Reduction in sediment potential entering the river system	Primary Data: • Rehabilitated land area (ha) • Avoided sediment rate (tons/ha/year) Supporting Data: • Sediment dredging cost (IDR/ton) • Land cover type • Slope gradient	Annual sediment reduction is calculated by multiplying the rehabilitated land area by the avoided sediment rate. Economic benefits are calculated as the avoided cost of sediment dredging.
	Additional Water Volume from Rehabilitation	Primary Data: • Rehabilitated or vegetated area (ha) • Coefficient of increased water availability from vegetation (m^3/ha/year) Supporting Data: • Economic value of water (IDR/m^3) • Ecosystem type (forest, peatland, wetland) • Initial land cover condition	Additional annual water volume is calculated by multiplying the rehabilitated area by the water availability improvement coefficient. Economic benefits are calculated as the value of the additional available water.
Water Storage and Availability Management	Additional water storage capacity constructed or optimized	Primary Data: • Additional effective storage capacity (m^3) Supporting Data: • Economic value of water (IDR/m^3)	Economic benefits are calculated as the potential avoided economic losses resulting from increased water storage capacity through construction or optimization of storage facilities.
	Additional Water Volume Stored or Secured in Storage Structures	Primary Data: • Additional flow/volume (m^3/year) Supporting Data: • Economic value of water (IDR/m^3)	Economic benefits are calculated as the potential avoided economic losses from increased water volume or flow available and usable during critical periods.
	Effective additional rainfall in the target area and affected land area	Primary Data: • Additional rainfall due to TMC (mm) • Affected area (ha) Supporting Data: • Economic value of water (IDR/m^3)	Economic benefits are calculated from the increase in rainfall resulting from TMC in the target area, which generates additional water availability.
	Volume of clean water produced from recycling and reclamation technologies	Primary Data: • Number of recycling/SWRO installations in operation (units) • Clean water production capacity per unit (m^3/day)	Economic benefits from water recycling and reclamation technologies are calculated as the potential avoided economic losses resulting from the

Action Group	Output Indicators	Data Requirements	Calculation Concept
		• Operating days per year Supporting Data: • Economic value of water (IDR/m^3)	availability of additional clean water produced by operating installations.
Flood Control and Structural Reinforcement and Protection	Constructed and functioning flood control infrastructure and protected area size	Primary Data: • Affected area before intervention (ha) • Affected area after intervention (ha) Supporting Data: • Runoff flow controlled by gates and canal barriers (m^3/second) • Drainage capacity and flow (m^3/second) • Increased storage capacity and water body discharge (m^3/second) • Coefficient of area protected by riverbanks (ha) • Coefficient of area protected by dredged drainage and water bodies (ha) • Property value of the area (IDR/ha)	Economic benefits are calculated from the reduction in the affected area after the intervention, representing avoided flood damage.
Water System Efficiency and Water Loss Reduction	Volume of water saved from losses due to improved system efficiency.	Primary Data: • Total volume of water distributed in the system per year (m^3/year) • Percentage of water loss before intervention (%) • Effectiveness rate of efficiency intervention (%) Supporting Data: • Economic value of water (IDR/m^3)	Economic benefits are calculated as the value of water saved from system losses, representing avoided economic losses.

Supporting Actions

Table 8. Details of the Methodology for Supporting Actions in the Water Sector

Action Group	Output Indicators	Data Requirements	Analysis Concept
Development of Innovation and Protection Technologies	Availability and effective functioning of innovations and technologies supporting protection against floods, droughts, and landslides	Data on types and locations of technology implementation; technical specifications; coverage of beneficiary areas; system performance data	The development of innovation and protection technologies in the water sector produces systems, facilities, and water resource management methods that are more adaptive to flood, drought, and landslide risks. The application of these technologies improves water management efficiency, decision-making accuracy, and system reliability under climate change dynamics. This action strengthens the capacity of government and relevant stakeholders to access and utilize reliable technologies, contributing to enhanced climate resilience and reduced sectoral vulnerability.
Capacity Building of Government Institutions Related to Flood, Drought, and Landslide Hazards	Improved technical and institutional capacity of government in risk planning and management	Training and technical assistance data; human resource capacity; budget availability; supporting infrastructure; cross-agency coordination mechanisms	Government capacity building is carried out through strengthening technical competencies, institutional arrangements, and cross-sectoral coordination in hydrometeorological disaster risk management. This enhances the ability of local governments to plan, implement, and monitor climate-resilient development actions in the water sector effectively, thereby improving institutional preparedness and reducing vulnerability to floods, droughts, and landslides.
Community Capacity Building Related to Flood, Drought, and Landslide Hazards	Increased community knowledge, preparedness, and participation in risk management	Outreach and education data; target groups; community participation levels; local water management practices	Community capacity building focuses on strengthening knowledge, skills, and active participation in hydrometeorological disaster risk management. Through education, awareness-raising, and reinforcement of adaptive practices, communities become better prepared to face floods, droughts, and landslides and contribute to the sustainability of water resource systems. This action strengthens social resilience and reduces community vulnerability to climate change impacts in the water sector.
Strengthening Water Resources Regulations Related to Flood, Drought, and Landslide Risks	Established and implemented regulations and policies supporting climate-resilient development in the water sector	Regulatory and policy documents; alignment with RPJMD, RAD-API, and spatial planning frameworks (RTRW); implementation and monitoring mechanisms	Strengthening water resources regulations provides a policy foundation for the consistent and sustainable implementation of climate-resilient development. Regulatory formulation and alignment ensure the integration of flood, drought, and landslide risks into water resource planning and management across governance levels, strengthening governance capacity, improving policy certainty, and reducing vulnerability of the water sector to climate change impacts.

3.3

Agricultural
Sector Methodology

In the 2025-2029 RPJMN, the agricultural sector contributes to reducing potential economic losses due to the impact of climate change through Priority Program (PP) 3 Climate Resilience Development, specifically Priority Activity (KP) 3 Implementation and Development of Climate-Friendly Agriculture. This activity has an indicator of "Percentage reduction in potential economic losses due to climate change against GDP (%) in the agricultural sector" with a target of 0.439 percent against GDP.

The achievement of this indicator is sourced from the core actions of the PBI implemented by ministries/institutions. The achievement of KP 3 also contributes to the reduction of total economic losses in PP 3 Climate Resilience Development. The calculation concept and data required to calculate the achievement of the reduction in potential economic losses from these core activities are described as follows:

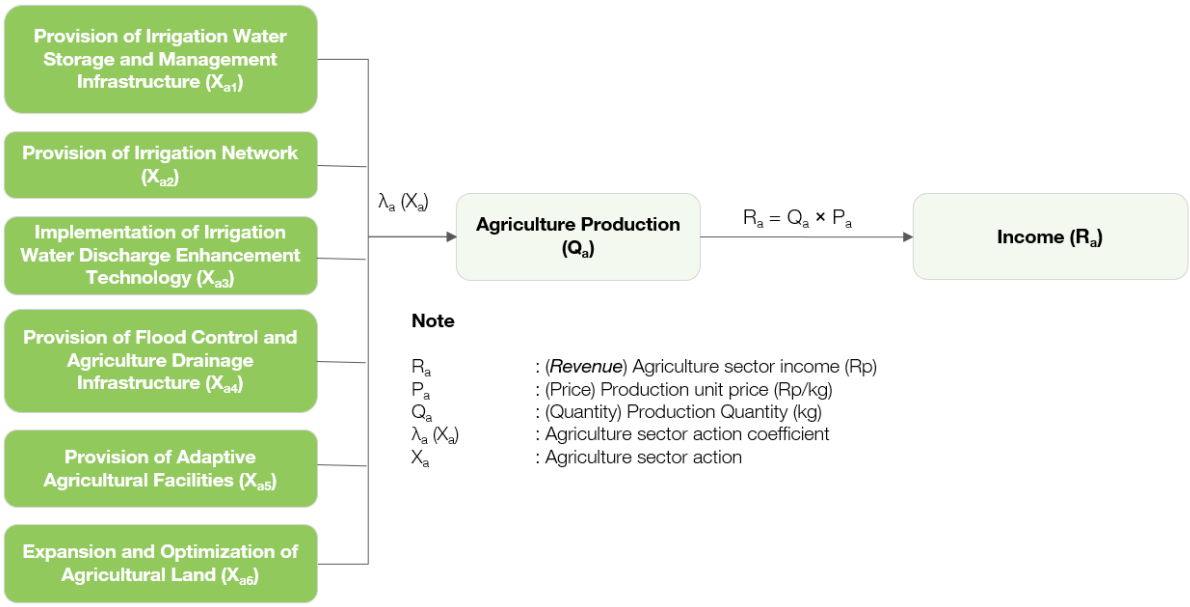


Figure 12. Methodological Flow for Climate Resilience Development Actions in the Agricultural Sector

Core Action

Table 9. Details of the Methodology for Calculating Achievements in the Agricultural Sector

Action Group	Output Indicators	Data Requirements	Calculation Concept
Provision of Irrigation Water Storage and Management Infrastructure	Irrigation water storage and management infrastructure (e.g., farm ponds, retention basins, reservoirs, micro-catchments) (volume – m^3; discharge – m^3/second)	Primary Data: Water storage volume (m^3); Area of agricultural land served (ha). Secondary Data: Crop water requirement coefficient (m^3/ton);	The availability of irrigation water storage and management infrastructure provides irrigation water measured by irrigation volume. This water supports agricultural land irrigation and contributes to biomass formation, resulting in additional crop production (tons). Economic loss reduction is calculated by converting

Action Group	Output Indicators	Data Requirements	Calculation Concept
		Agricultural land productivity (tons/ha); Commodity prices (IDR/kg).	the additional irrigation water supplied into potential increases in crop production.
Provision of Irrigation Networks	Length or number of secondary, primary, and tertiary irrigation networks (meters; units)	Primary Data: Area of irrigated agricultural land (ha). Secondary Data: Irrigation flow coefficient (units/ha); Irrigation water coefficient (m^3/ton); Agricultural land productivity (tons/ha); Commodity prices (IDR/kg).	Irrigation networks distribute water evenly across agricultural land, including small plots. The use of irrigation pipes, drip irrigation, and sprinkler systems improves irrigation efficiency. The estimated reduction in economic losses is calculated based on the extent of agricultural land benefiting from climate-adaptive agricultural inputs, which contribute to enhanced productivity and, consequently, reduced vulnerability to climate-related shocks.
Application of Technologies to Increase Irrigation Water Supply	Implementation of weather modification technologies in agricultural areas (number of applications)	Primary Data: Area of technology application (ha). Secondary Data: Agricultural land productivity (tons/ha); Commodity prices (IDR/kg).	The application of weather modification technologies increases rainfall in drought-prone agricultural areas, enhances soil moisture, and prevents crop water stress. Economic loss reduction is calculated based on the agricultural land area benefiting from weather modification interventions.
Provision of Flood Control and Agricultural Drainage Infrastructure	Flood control and agricultural drainage infrastructure (e.g., embankments, polders, ditches)	Primary Data: Area of protected agricultural land (ha). Secondary Data: Coefficient of protected area per unit of infrastructure (ha/m) or field-based observation; Agricultural land productivity (tons/ha); Commodity prices (IDR/kg).	Agricultural land is vulnerable to crop failure and yield reduction due to flooding. Flood protection infrastructure such as polders, river embankments, drainage channels, and ditches protects agricultural land from inundation caused by rainfall runoff and river overflow. Economic loss reduction is calculated based on the area of agricultural land protected, enabling the preservation of crop production.
Provision of Climate-Adaptive Agricultural Inputs and Equipment	Distribution of fertilizers, improved crop varieties, pest and disease control inputs, and agricultural machinery (units; ha; kg)	Primary Data: Area of agricultural land intervened (ha). Secondary Data: Agricultural land productivity (tons/ha); Potential productivity gains from improved seeds (tons/ha); Organic fertilizer impacts (tons/ha); Machinery and	Agricultural intensification through the use of climate-resilient improved seeds, organic fertilizers, pest and disease control inputs, and agricultural machinery increases productivity and production efficiency. Economic loss reduction is calculated based on the area of agricultural land experiencing productivity improvements.

Action Group	Output Indicators	Data Requirements	Calculation Concept
		equipment efficiency gains (tons/ha); Commodity prices (IDR/kg).	
Expansion and Optimization of Agricultural Land	Newly developed or optimized agricultural land (ha)	Primary Data: Area of newly developed or optimized agricultural land (ha). Secondary Data: Agricultural land productivity (tons/ha); Commodity prices (IDR/ha).	Climate resilience efforts in the agricultural sector aim to maintain food availability through agricultural extensification and land optimization. Economic loss reduction is calculated based on the agricultural production generated from newly developed and optimized agricultural land areas.

Supporting Actions

Table 10. Details of the Methodology for Supporting Actions in the Agricultural Sector

Action Group	Output Indicators	Data Requirements	Analysis Concept
Research and Development of Agricultural Technologies	Availability of climate-resilient crop varieties tolerant to climate stress, pests and diseases (OPT), and salinity; planting calendar systems; agricultural information models; and new agricultural machinery and equipment	Agricultural research data and outputs of technology development	Research and development of agricultural technologies generate tools and innovations that enhance productivity and production efficiency, thereby supporting the sustainability of food availability under climate change impacts. This action strengthens the capacity of government institutions, farmers, and agribusiness actors to access reliable production technologies and contributes to increased climate resilience capacity and reduced sectoral vulnerability in the agricultural sector.
Development of Agricultural Information Systems	Availability of agricultural information system applications and/or up-to-date agricultural data to support climate change impact management in the agricultural sector	Agricultural databases and information systems developed	Comprehensive and accurate agricultural data and information, supported by agricultural information systems, enable more precise and efficient policy formulation and responses. These systems enhance the capacity of government, communities, and stakeholders to strengthen climate resilience in the agricultural sector by providing key data on land location and characteristics, climate conditions, irrigation networks, soil fertility, and planting plans. The quantity and quality of available information systems and databases directly contribute to increased climate resilience capacity.
Capacity Building of	Improved climate resilience capacity of	Institutional data; human resource data;	Government capacity building strengthens the role of public institutions in policy

Action Group	Output Indicators	Data Requirements	Analysis Concept
Government Institutions Related to Agriculture	central and local government institutions and agricultural extension officers	capacity-building activities	formulation, public service delivery, and program implementation. Improved understanding and skills related to climate-resilient agriculture foster institutional awareness and commitment, enabling effective implementation of PBI policies and actions. The contribution of this action is reflected in the proportion of government personnel capable of integrating climate resilience into their institutional roles and functions.
Community Capacity Building on Climate-Smart Agriculture	Increased community capacity related to climate resilience	Data on capacity-building activities, including locations and numbers of participating farmers and community members	Community capacity building strengthens knowledge and skills in implementing sustainable and climate-resilient agriculture as a response to climate change impacts. Through improved resource management, utilization of climate and agricultural data, and adoption of precision agriculture technologies, agricultural productivity can be enhanced. This action complements government capacity building and contributes to increased climate resilience capacity and reduced vulnerability in the agricultural sector.
Improving Access to Agricultural Financing	Availability of climate-adaptive agricultural financing and social protection support	Agricultural financing data; beneficiary data; social protection schemes	Strengthening access to financing and social protection mechanisms reduces the production burden faced by farmers due to climate change impacts and enhances financial resilience in the agricultural sector.
Provision of Alternative Income Sources for Farmers	Availability of alternative income opportunities for farmers	Data on alternative financing; beneficiary data; labor-intensive and livelihood diversification schemes	The provision of alternative income sources and business development opportunities for farmers and their households helps maintain and improve livelihoods while reducing sensitivity to climate hazards. The contribution of this action is reflected in the proportion of farmers with alternative skills and income sources, supporting increased climate resilience capacity.

3.4

Health
Sector Methodology

In the 2025–2029 RPJMN, the health sector contributes to reducing economic losses due to the impacts of climate change through Priority Program (PP) 3 Climate Resilience Development, which is broken down into Priority Activity (KP) 4 with an indicator of a reduction in the percentage of climate-sensitive diseases. This indicator serves as an intermediate indicator in a cascading flow that supports the achievement of cross-sectoral collective indicators at the Priority Program level, given that climate change has the potential to increase the incidence of climate-sensitive diseases and the burden on health services. To support this, the implementation of Core Actions in the health sector has an impact on reducing the incidence of climate-sensitive diseases and its contribution to reducing economic losses due to climate change, as explained in the following figure and table.

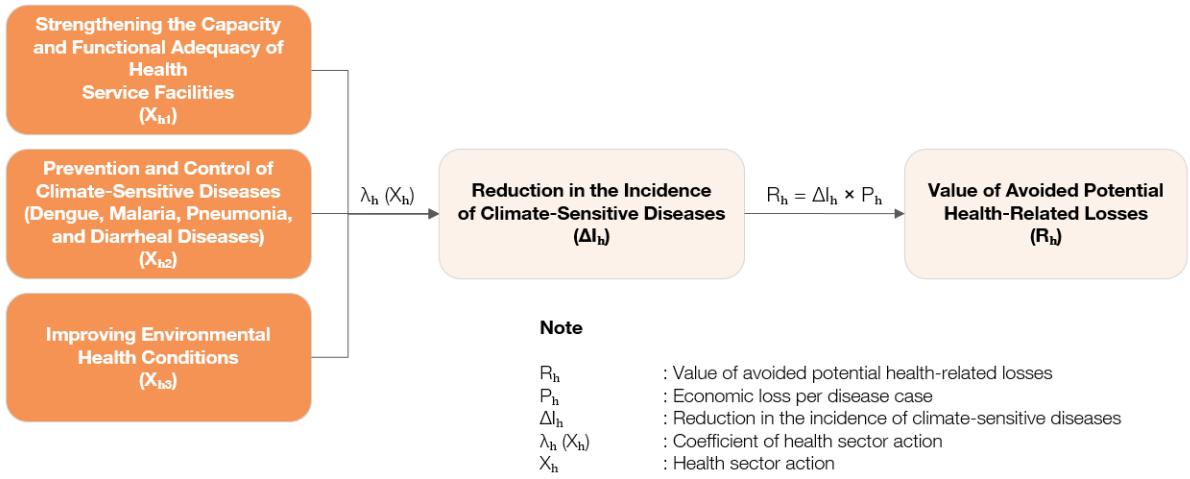


Figure 13. Methodology flow for Climate Resilience Development Actions in the Health Sector

Details of the Methodology for Calculating Achievements in the Health Sector

Core Actions

Table 11. Details of the Methodology for Core Actions in the Health Sector

Action Group	Output Indicators	Data Requirements	Calculation Concept
Provision and Enhancement of Capacity and Adequacy of Health Service Facilities	Increased capacity and adequacy of health service facilities (units/population served)	Primary Data: Number of health facilities with improved capacity and adequacy; Number of population with access to health services before and after facility improvement (persons).Secondary Data: Incidence rate of climate-sensitive diseases; Projected number of disease cases (persons); Cost of health services and treatment (IDR/person)	Enhancing the capacity and adequacy of health service facilities expands community access to healthcare and improves service responsiveness. This supports early prevention and treatment of climate-sensitive diseases, thereby reducing disease risk and lowering healthcare costs borne by communities and the government.
Prevention and Control of Climate-Sensitive Diseases	Reduction in the incidence of climate-sensitive diseases (cases/%)	Primary Data: Number of climate-sensitive disease cases before and after intervention; Coverage of prevention and disease control interventions (area/population).Secondary Data: Historical trends of climate-sensitive disease incidence; Spatially disaggregated disease incidence data; Cost of disease treatment per case (IDR/case)	Prevention and control efforts reduce disease transmission and incidence through promotive, preventive, and vector control interventions. Reduced disease incidence directly decreases demand for healthcare services and treatment costs, contributing to reduced potential economic losses in the health sector.
Improvement of Environmental Health	Improved healthy residential areas (areas/population)	Primary Data: Number of residential areas with improved environmental health quality; Number of population benefiting from a healthy environment (persons).Secondary Data: Trends in climate-sensitive disease incidence; Access rates to clean water and adequate sanitation; Cost of treatment for environmentally related diseases (IDR/person)	Improvements in environmental health reduce community exposure to risk factors associated with climate-sensitive diseases. Healthy residential environments lower the incidence of environmentally driven diseases, reducing healthcare demand and treatment costs and contributing to the reduction of potential economic losses resulting from climate change impacts.

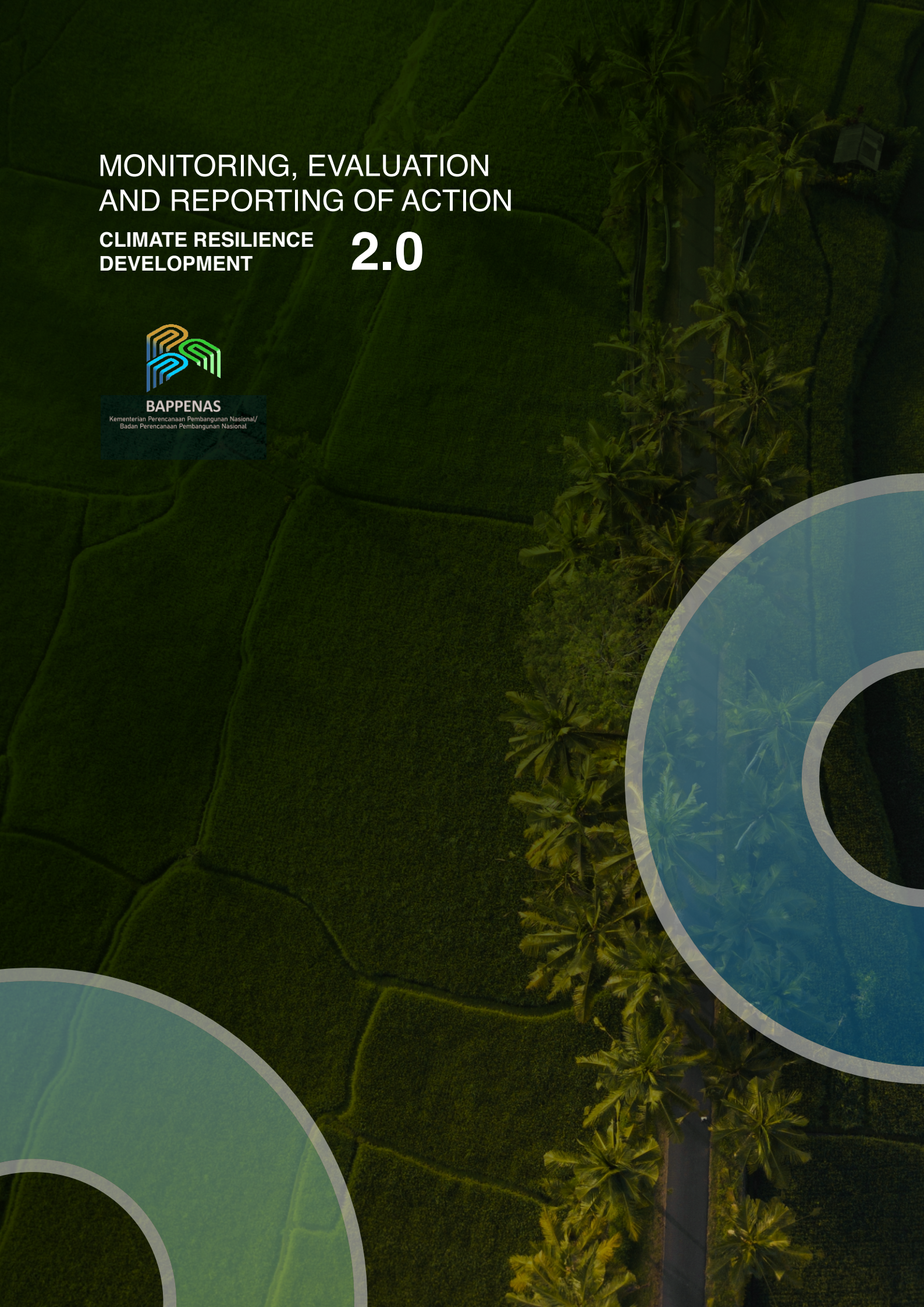
Supporting Actions

Table 12. Details of the Methodology for Supporting Actions in the Health Sector

Action Group	Output Indicators	Data Requirements	Analysis Concept
Climate-Sensitive Health Data and Information Systems	Availability of integrated climate-sensitive health data and information systems	Health data; climate data; spatial data; information systems	Climate-sensitive health risk analysis based on integrated health, climate, and spatial data to support evidence-based planning and decision-making.
Governance and Regulatory Frameworks	Strengthened climate risk–responsive governance and regulatory frameworks in the health sector	Policy and regulatory documents; service standards; compliance data	Integration of climate risk considerations into health planning, regulations, and service delivery standards to ensure consistent implementation of climate-resilient health policies.
Health Financing and Social Protection	Availability of climate-adaptive health financing and social protection mechanisms	Health financing data; beneficiary data; social protection schemes	Strengthening access to financing and social protection to reduce health-related burdens arising from climate change impacts.
Capacity Building of Government Institutions	Improved institutional and human resource capacity within the health sector	Institutional data; human resource data; capacity-building activities	Strengthening planning and implementation capacity for climate-resilient health programs at national and subnational levels.
Community Resilience Enhancement	Increased community participation and resilience to climate-sensitive health risks	Community participation data; geographic coverage; community-based activities	Community empowerment and behavioral change interventions to prevent and control climate-sensitive diseases and enhance community-level health resilience.

MONITORING, EVALUATION AND REPORTING OF ACTION

CLIMATE RESILIENCE DEVELOPMENT 2.0



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