GUIDELINES FOR PREPARING A DESIGN AND MONITORING FRAMEWORK

JANUARY 2019

ASIAN DEVELOPMENT BANK

ADB

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ISBN 978-92-9261-480-5 (print), 978-92-9261-481-2 (electronic)
Publication Stock No. TIM199901-2
DOI: http://dx.doi.org/10.22617/TIM199901-2

Notes:

In this publication, "$" refers to United States dollars.

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ABBREVIATIONS

ADB	–	Asian Development Bank
CDTA	–	capacity development technical assistance
COBP	–	country operations business plan
DLI	–	disbursement-linked indicator
DMF	–	design and monitoring framework
km	–	kilometer
KSTA	–	knowledge and support technical assistance
MFF	–	multitranche financing facility
NSO	–	nonsovereign operation
PAP	–	program action plan
PBL	–	policy-based lending
PPP	–	public–private partnership
PRF	–	program results framework
RAMP	–	risk assessment and risk management plan
RBL	–	results-based lending
RFI	–	results framework indicator
RRP	–	report and recommendation of the President
TA	–	technical assistance
TRTA	–	transaction technical assistance

These guidelines describe how a project-level design and monitoring framework should be developed. The design and monitoring framework is a core link between project design, implementation, and evaluation, and provides the basis for the project performance management system of the Asian Development Bank.

I. The Design and Monitoring Framework: A Tool for Managing for Development Results

Managing for development results is a management approach that (i) focuses on performance and results achievement; (ii) integrates a results-based approach throughout the project management cycle; and (iii) uses continuous learning and evidence-based decision making, including midcourse corrections, to improve performance.

This results-based approach brings many benefits, including (i) strategic alignment from high-level goals to project activities, (ii) a shift in focus to results from activities, (iii) clarity on work priorities to deliver results, (iv) transparency in the measurement of achievements, (v) evidence about performance to aid decision making, and (vi) an information base for learning.

The design and monitoring framework (DMF) is a core element of results-based project management and an important tool for managing for development results.

An essential part of the project management cycle is the formulation of a quality DMF. In this process, a project mission leader must understand the beneficiaries and their problems, and develop possible solutions into a manageable initiative. The basic steps in the project management cycle are as follows.

(i) Identify results (outputs and outcome) and the causal relationships between them;

(ii) identify alignment with the broader sector- or country-level results (impact);

(iii) identify the external factors that could influence success or cause failure (risks);

(iv) select indicators to determine performance and decide on targets to be achieved;

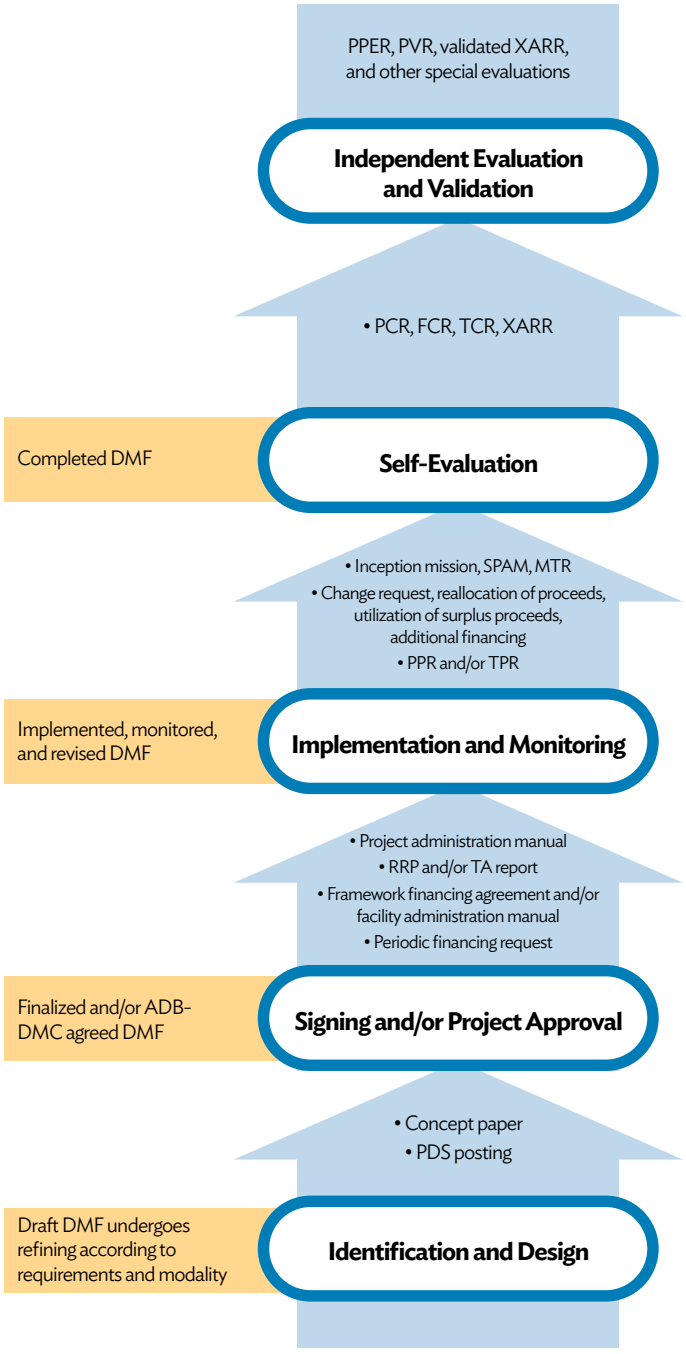
(v) implement activities to deliver outputs;

(vi) measure project performance (monitoring and evaluation);

(vii) report on results achievement and make project management decisions based on evidence of performance; and

(viii) learn about success and failure, and integrate the lessons back into the project cycle.

Figure 1: Design and Monitoring Framework Milestones



ADB = Asian Development Bank, DMC = developing member country, DMF = design and monitoring framework, FCR = facility completion report, MTR = midterm review, PCR = project completion report, PDS = project data sheet, PPER = project performance evaluation report, PPR = project performance report, PVR = project completion report validation report, RRP = report and recommendation of the President, SPAM = special project administration mission, TA = technical assistance, TCR = technical assistance completion report, TPR = technical assistance performance report, XARR = extended annual review report.

Source: Asian Development Bank Strategy, Policy and Review Department.

As the basic source of information about planned performance, the DMF plays a central role in the project management cycle of the Asian Development Bank (ADB). The DMF is attached to project and knowledge and support technical assistance (KSTA) concept papers, and reports and recommendations of the President (RRPs). All DMF indicators and targets are entered into the e-Operations system and tracked and reported on regularly.

Changes to the design and monitoring framework. The DMF is updated throughout the project cycle to reflect all pertinent changes to the project. If the project scope changes, the degree to which the DMF has to be changed determines the approval authority required. The DMF forms the basis of completion reports for all operations that require a DMF in their approval report, and project success is evaluated and rated against the DMF results chain. The DMF-related milestones are shown in Figure 1. Revisions of the DMF during project implementation will generally follow the prevailing procedures in the project administration instructions.

Business processes. The results, indicators, targets, risks, and other DMF information are entered into e-Operations once the project has been prepared, prior to Board approval. If the DMF needs to be updated, the e-Operations DMF records must reflect the changes. Requests to unlock the DMF are submitted to the Results Management and Aid Effectiveness Division, Strategy, Policy and Review Department via e-Operations.

II. Design and Monitoring Framework Structure

The DMF captures critical information about the project in four columns (Figure 2). The top row of the DMF may contain a maximum of three impact statements that the project is aligned with. They are typically derived from a regional, country, or sector strategy. The four columns contain

(i) the results chain, including the inputs, or main resources; the activities or groups of tasks; the outputs delivered by the project; and the outcome it will achieve;

(ii) indicators for measuring results achievement, targets to be achieved, and a baseline of current performance;

(iii) data sources and reporting mechanisms for each indicator; and

(iv) the risks that act against results achievement.

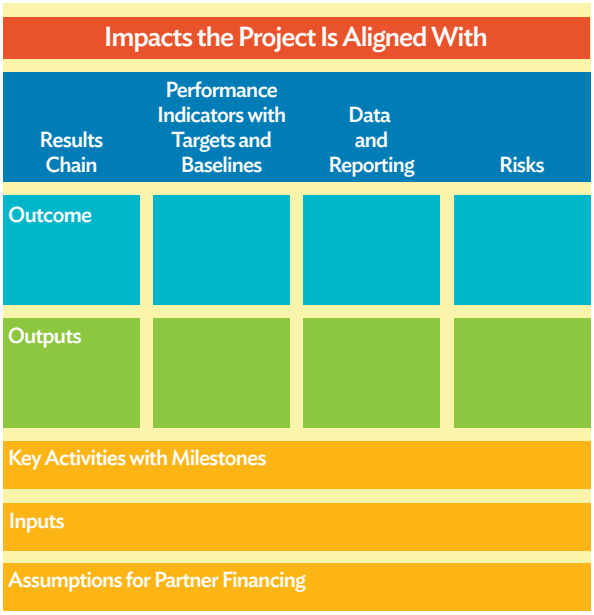
A. Results Chain

The primary purpose of a project is to achieve results that meet people's and/or organizations' needs. A results chain consists of a series of expected achievements, or positive changes, linked by causality. The results chain can be seen as a continuum from inputs to outputs, and to outcomes. Outputs are defined as goods, services, or products delivered by the project, while outcomes are the immediate and direct benefits of the use or application of the outputs. Important pointers when developing a results chain are as follows.

(i) The alignment points for a project's results chain are impact statements, which are typically from higher-level country or sector results. The impact statement aligns the project's outcome to a higher-level development result.

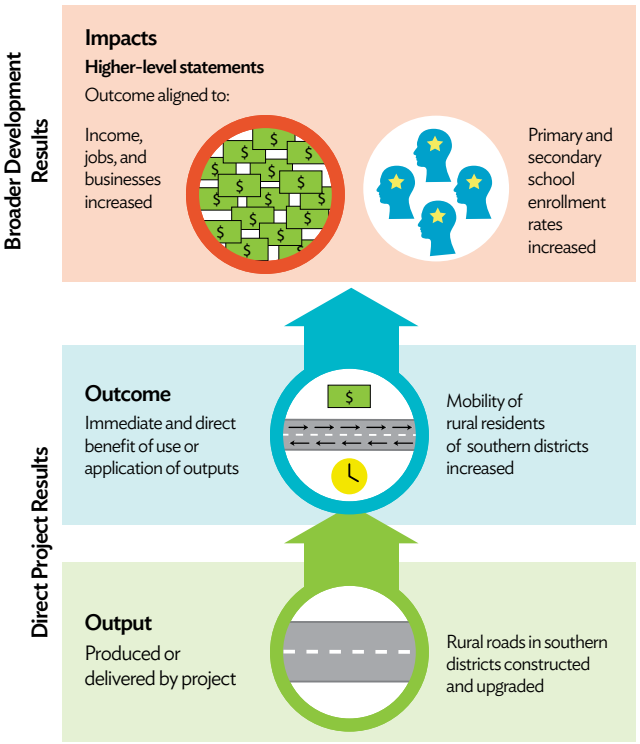
(ii) The basic definitions and impact alignment can be illustrated using the example of road construction (Figure 3). The project delivers the output of 100 kilometers (km) of road, which the beneficiaries use to travel on or send their goods. The immediate and direct benefit for them is increased mobility, perhaps quicker, safer, and cheaper travel—the outcome. This outcome is aligned with higher-level impacts of increased income, jobs, and businesses (from the country's national development strategy),

Figure 2: Design and Monitoring Framework



Source: Asian Development Bank Strategy, Policy and Review Department.

Figure 3: Road Construction Results Chain

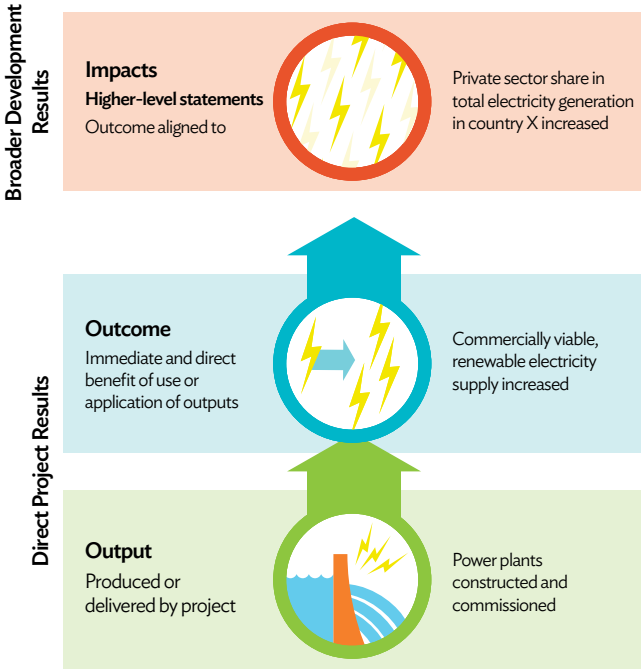


Source: Asian Development Bank Strategy, Policy and Review Department.

and increased enrollment rates in schools (from the education sector strategy). The importance of the results increases moving up the results chain: increased mobility is more important than kilometers of roads; and increased income, jobs, businesses, and enrollment are more important than increased mobility. However, project control and accountability decrease moving up the results chain. The project controls road construction, but it only influences the mobility of people traveling on the road. The project is accountable for output delivery and outcome achievement, but not for impact level results. Attribution also decreases from output and/or outcome to impact. Output and outcomes are attributable to the project. The impact statements of increased income, jobs, businesses, and enrollment are outside the project results chain and are not controlled by or attributed to the project.

(iii) The same results chain applies for nonsovereign operations (NSOs). NSOs may have different types of impact, such as private sector development, but the results relationship is the same (Figure 4).

Figure 4: Nonsovereign Operations Results Chain



Source: Asian Development Bank Strategy, Policy and Review Department.

Table 1 illustrates the differences between the results levels. It contains several concepts, including targets and assumptions for partner financing, which are discussed in subsequent sections of these guidelines.

There are two results chain levels in the DMF: outputs and outcomes.

Table 1: Differences in Results Levels

Results Level	Relation to Project	Source of Result	Timing of Achievements	Control by Project or Beneficiaries	Accountability	Changes during Project Implementation
Impact (not part of results chain)	Aligned with project outcome	Higher-level documents, e.g., national or sector plans	Usually post project	Outside beneficiary control	No direct project accountability	Should not change
Outcome	Directly influenced by project	Needs of beneficiaries	Target level achieved by end of first full year of operation following physical completion, or prior to closing of project	Within the control of beneficiaries	Project accountable for outcome achievement Project success (effectiveness) measured against outcome targets	Major change in scope if material change in outcome
Output	Produced by project	Project deliverables	By physical completion	Within control of project, given inputs, risks, and assumptions for partner financing	Project accountable for outputs	Minor change in scope if no effect on outcome

Source: Asian Development Bank Strategy, Policy and Review Department.

Outputs. Outputs are the products and services delivered by the project to beneficiaries. Outputs are the simplest results level to conceptualize, are usually tangible, and are easy to describe. Outputs are generated by using and transforming inputs through project activities. The management scope of the project is defined by the outputs, as project management by definition cannot extend beyond outputs. There is a close relationship between inputs and outputs; therefore the DMF cannot list outputs for which there is no input (Box 1).

"Project management" should not be included as an output in the DMF because it does not link to the outcome. Instead, a DMF may contain a cluster of activities or a component related to project management. Project management activities support other activities of the project that produce beneficiary-focused outputs.

Nonsovereign operation outputs. NSO outputs are the products and deliverables of the private sector entities supported by ADB. These entities include stand-alone companies, financial intermediaries, and funds.

Outcomes. Outcomes represent the purpose of the project and should describe the immediate and direct benefits of output use or application. Outcome statements should articulate the change the project is expected to achieve (Box 2). A single outcome is required although the statement may contain several different dimensions of performance, such as "efficiency and safety of transport on the north–south road corridor increased."

Project success (effectiveness) is rated at the outcome level in the completion report, although outcome results should be sustained long after the project has closed. For sovereign operations, the project completion report is prepared within 24 months after project completion. To ensure that outcome performance data will be available in time for completion reporting, the DMF articulates the planned level of outcome indicator target achievement in the first full year of operation following physical completion.[1] For projects with nonphysical outputs, the outcome indicator targets should be achieved before project closing.

Nonsovereign operation outcomes. For NSOs, the outcome is often related to two distinct achievements: the commercial viability of the private sector operation, and the immediate and direct benefit of output use or application by beneficiaries.

Box 1: Output Tips

(i) Include major products and deliverables of the project.

(ii) Ensure that together, outputs will be sufficient to achieve the outcome, given risks and assumptions for partner financing.

(iii) Include an output for each set of activities, except project management activities that do not produce an output.

(iv) Phrase outputs in the past tense as already achieved, e.g., "rural roads in the southern districts constructed." Include an action word (e.g., constructed, rehabilitated, established) in the statement.

(v) Outputs must be fully consistent with the cost estimates and financing plan, and the project definition in schedule 1 to the loan or grant agreement.

Source: Asian Development Bank Strategy, Policy and Review Department.

Box 2: Outcome Tips

(i) Include only one outcome statement describing the immediate and direct benefits from using or applying outputs.

(ii) Phrase the outcome in the past tense as already achieved, e.g., "mobility of rural residents increased." The statement must include at least one change word (e.g., increased, improved, enhanced).

(iii) Do not include any cause-and-effect links. Outcome statements should not use the words "through," "by," or "in order to," because these words imply cause-and-effect links; e.g., corporate performance improved through capacity building, graduation rates increased by reducing dropouts, crop yields improved in order to increase farmer income.

Source: Asian Development Bank Strategy, Policy and Review Department.

[1] A sovereign project is deemed complete when all its outputs are completed (i.e., when its facilities are completed and ready to operate regardless of the closure of its financial account). Project Administration Instruction 6.07a provides instructions on timing of project completion report preparation and circulation. For NSOs, the final report (called the extended annual review report) is prepared when the operation reaches early operating maturity. Project Administration Instruction 6.07b provides detailed instructions for NSOs.

For example, an NSO may involve making direct investments that support broad corporate investment programs of a private sector water provider. The outcome would be the demonstrated commercial viability of those water concessions and increased consumption of clean water by beneficiaries.

Impacts. The project's results chain is aligned with impact statements, which are the expected results typically sourced from a government national or sector plan before the project is conceptualized. The impact level in the DMF is separated from the results chain to show that its purpose is alignment, not performance measurement.[2] Impact statements are not measured through indicators or targets. Impacts are long-term in nature and are expected to occur after project closing. The timing of expected impacts is linked to the project duration. In a project of 6 years' duration, impact-level results contribution may be expected in years 9 to 11. For example, a project that takes 6 years to build new transmission lines would have some contribution to the growth of businesses that use electricity only after several years of operation. In a project of a single year's duration, impacts may be expected within a year following completion.

Impact statements are restated from government documents to conform to proper results statement phrasing. Phrase the impact as achieved, e.g., "income, jobs, and businesses increased," and include a change word in the sentence. Do not include more than one level of cause-and-effect links. Be careful not to choose an impact statement that is too high-level, such as "inclusive economic growth achieved" or "poverty reduced." A statement of this nature is too general to show alignment. After each impact statement, include the title of the source document (usually a regional, national, or sector plan) and a reference to a table note with the citation of the impact(s) source document. If the impact(s) has been defined by the project, include "(project defined)" after the impact statement.

Table 2 contains outputs, outcomes, and impacts for operations in common ADB areas of programming, both sovereign and nonsovereign.

Table 2: Results for Operations in Common Areas

Sovereign Operations					
Results Level	**Urban Transport**	**Energy Generation**	**Urban Water Supply**	**Training of Technical and Vocational Education and Training Teachers**	**Financial Intermediation**
Sample impact (Long-term end goal, not part of results chain)	Jobs and economic activity increased	Health, education, jobs, and economic activity increased	Waterborne diseases reduced	Labor skills and productivity increased	Employment in small and medium-sized enterprise sector increased
Outcome (Immediate and direct benefit of output use)	Travel convenience, safety, and affordability for women and men improved	Consumption of electricity in remote communities increased	Consumption of clean, treated water increased	Quality of technical and vocational education and training delivery enhanced	Economically viable small and medium-sized enterprises, managed by women and men, increased
Outputs (Provided or delivered)	Urban rail system constructed	Off-grid solar energy installations constructed	Water distribution and treatment facilities in urban areas rehabilitated	Technical and vocational education and training teacher knowledge and skills improved	Financing to microfinance beneficiaries, including women, through intermediaries increased

continued on next page

[2] Rigorous impact evaluation can still be carried out using the impact statement(s) and results chain from the DMF.

Table 2: Results for Operations in Common Areas (continued)

Nonsovereign Operations					
Results Level	**Capital Expenditure Projects (Group A)**	**Institutional Investments (Group B)**	**Financial Diversification or Refinancing (Group C)**	**Subprojects via Intermediation in Bank (Group D1)**	**Subprojects via Intermediation in Fund (Group D2)**
Sample impact(s) (Long-term end goal, not part of results chain)	Reliability of energy supply improved. Private sector share in energy supply increased.	Quality and reliability of water supply system strengthened. Private sector share in water provision increased.	Private sector share in infrastructure investment increased	Contribution of small and medium-sized enterprises to gross domestic product increased	Health status of population improved
Outcome (Immediate and direct benefit of output use)	Commercially viable energy supply from cleaner sources increased	Commercial viable water provision demonstrated	Commercial viable credit-enhanced debt product demonstrated	Small and medium-sized enterprises lending programs of participating financial institutions increased	Health benefits and financial returns of health care fund achieved
Outputs (Produced or delivered)	Solar power plant commissioned	Concessionaires' water treatment plants and pipelines rehabilitated	Credit-enhanced product bond launched	Financing for small and medium-sized enterprises through participating institutions increased	Health care fund established and capital invested

Note: Groups refer to the project typology for nonsovereign operations from the Good Practice Standards of the Evaluation Cooperation Group, used for assessing nonsovereign operations.

Sources: Asian Development Bank Strategy, Policy and Review Department; and Multilateral Development Banks (MDB) Evaluation Cooperation Group (ECG) Working Group on Private Sector Evaluation. 2006. *MDB-ECG Good Practice Standards for Evaluation of Private Sector Investment Operations, Third Edition.* Washington, DC.

DMFs include two other levels: activities and inputs.

Activities. Activities are the groups of tasks carried out using project inputs to produce the desired outputs. The DMF should only include activities whose completion represents important milestones that will allow implementation progress to be tracked. Policy-based lending (PBL) operations do not require activities. For results-based lending (RBL) operations, the priority program actions of the program action plan (PAP) should be listed under activities (Box 3).

For many projects, including complex ones, project management activities can be included at the end of the activities section of the DMF. The cluster should be titled "project management activities." The activities should summarize routine events and activities of the project implementation team or unit, such as planning, procurement, monitoring and evaluation, and reporting. Activities can also include communicating with stakeholders, providing inputs on strategic and policy issues, and undertaking risk mitigation measures. This cluster can help mission leaders organize project management activities and ensure that key project management concerns are budgeted for. There is no output associated with the project management activities, so they should not be assigned a number.

Box 3: Activities Tips

(i) List key activities for each output. Do not list sub-outputs.

(ii) Link design and monitoring framework activities with "B. Overall Project Implementation Plan" in Section II of the project administration manual.

(iii) Show completion date and milestone per activity.

(iv) Group and number activities by the output they relate to.

(v) Policy-based lending does not require activities.

(vi) Activities for results-based lending should be priority actions from the program action plan.

(vii) Include project management activities as appropriate, such as procuring goods, hiring consultants, reporting, monitoring, evaluation, accounting, and auditing, at the end of the activities row, without a number.

(viii) Include any primary data collection undertaken for the project under project management activities.

(ix) Do not include indicators at the activity level.

Source: Asian Development Bank Strategy, Policy and Review Department.

Nonsovereign operation activities. For NSOs, the activities should include the major tasks related to ADB's interaction with the private sector entity. This could include activities related to the establishment and closing of a private equity fund, the execution date of a loan facility agreement, the disbursement period and related activities, the financial closing dates of transactions, and the construction period for physical infrastructure.

Box 4: Input Tips

(i) Include a summary of the main resources needed to carry out the activities.

(ii) Group inputs by financier.

(iii) Include direct cofinancing.

(iv) Include in-kind contributions for technical assistance by source of funding (except for regional technical assistance).

Source: Asian Development Bank Strategy, Policy and Review Department.

Inputs. Inputs are the main resources that the project uses to undertake the activities and produce the outputs. All financial inputs, as well as in-kind inputs for technical assistance, that will be used for project activities should be listed in the DMF. This includes those from ADB, the government, cofinanciers, beneficiaries, the private sector, and civil society organizations, as applicable (Box 4).

Nonsovereign operation inputs. Inputs for NSOs should include ADB contributions to private equity funds and the contributions of other investors, loans, credit guarantees of ADB and other partners, loan guarantees, and sponsor equity.

B. Risks

The outputs and outcome are dependent to some extent on economic, political, social, financial, environmental, and institutional factors for their achievement. Key factors can be classified as risks and included in the DMF as they affect the results chain. Risks are factors outside the project's control that can hinder its progress from one results level to the next. They are negative statements of conditions, events, or actions that would adversely affect, or make it difficult to achieve, outputs and outcome. Risks fill in the cause-and-effect gaps between results levels. To identify risks consider the following questions.

(i) What are the forces outside the control of the project (i.e., of the executing agency, implementing agency, ADB, and other development partners involved) acting against project success?

(ii) What could make it difficult to achieve the intended results?

Risks fit between the activities and outputs, and outputs and outcome. The logic is as follows.

(i) Given the activities, what are the factors that could hinder reaching the outputs? Activities – risks = outputs

(ii) Given the outputs, what are the factors that could hinder reaching the outcome? Outputs – risks = outcome

1. Registering Risks in the Design and Monitoring Framework

Critical factors for results achievement must be identified, analyzed, and stated as risks in the DMF. A minimum of one risk from activity to output and one from output to outcome is required in the DMF. Two factors should be registered as risks:

(i) Conditions, events, or actions that are necessary to achieve results but are unlikely to happen.

(ii) Conditions, events, or actions that would adversely affect achievement of results and whose effects are significant.

For example, critical factors for the outcome "mobility of people and goods between A and B increased" include deteriorating security conditions, adverse weather events beyond projected parameters, and decreased ability to pay for transport. The analysis would be as follows.

(i) Are security conditions necessary to increase mobility? Yes. Are they likely to remain stable or improve? No. State as risk: Security conditions in rural areas deteriorate.

(ii) Would adverse weather events beyond projected parameters affect mobility? Yes. Are they likely to happen? Yes. State as risk: Worse weather than projected.

(iii) Is the decreased ability to pay likely to constrain mobility? Yes. Is it likely to happen? There is a possibility poor people may not be able to pay for transport in the future, but preparatory studies show it is unlikely to happen. However, if it does happen, it will significantly affect the outcome. State as risk: Ability of poor beneficiaries to pay for road transport decreases.

2. Analyzing Risks

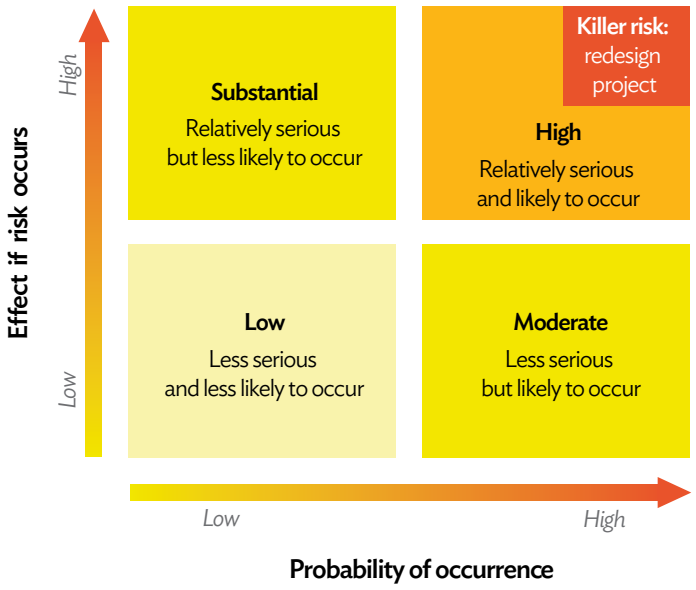
An analysis of risks is important to understand the constraints the project may face. Some risks may be important enough to warrant action to mitigate their potential effects. Others, referred to as "killer risks," may require the project to be redesigned or not undertaken. Figure 5 shows a risk analysis matrix that can be used to categorize risks and select appropriate actions.

Depending on the importance and/or likelihood of occurrence of the risks, the following actions can be taken.

(i) Low risk: Ignore, take no action.

(ii) Moderate: Periodically measure the risk factor, especially for likelihood of occurrence.

Figure 5: Risk Analysis Matrix



Source: Asian Development Bank Strategy, Policy and Review Department.

Box 5: Mitigation Tip

Mitigation refers to actions undertaken to reduce or remove the effects of a risk occurring, or the likelihood of occurrence. Mitigation does not remove the risk. The project can only remove the risk through redesign. Not all risks can be mitigated.

Source: Asian Development Bank Strategy, Policy and Review Department.

Box 6: Risk Tips

(i) Include at least one risk at activity to output and output to outcome levels.

(ii) Risks can be linked to specific outputs if desired.

(iii) Design and monitoring framework (DMF) risks must be negative, uncertain, outside the project's control, and within the vertical logic of activity to output to outcome.

(iv) Do not include as risks in the DMF factors that the project controls, loan covenants, project readiness criteria, risks eliminated through redesign, and planned mitigation measures.

(v) All DMF risks are sourced from Table 4 of the RRP unless there are no qualifying high or substantial risks at a particular result level, in which case a qualifying moderate or low risk from the risk assessment and management plan may be added to the DMF.

Source: Asian Development Bank Strategy, Policy and Review Department.

(iii) Substantial and high: Mitigate effects through design (Box 5). Include design measures to reduce the likelihood of occurrence or the effects if the risk occurs and create a contingency plan to be ready to deal with the consequences of the risk occurring.

(iv) Killer risk: Redesign project.

Risks are analyzed in the risk assessment and risk management plan (RAMP), a linked document to the report and recommendation of the President (RRP).[3] The RAMP lists all major risks to the project and rates them high, substantial, moderate, or low. Include in Table 4 of the RRP all high and substantial risks from the RAMP. Some risks in Table 4 may not qualify for inclusion in the DMF as they may be within the project's control. Review the high, substantial, and moderate risk statements in Table 4 and add to the DMF those that are outside the control of the project. If there are no qualifying high or substantial risks in Table 4, a moderate or low risk may be added to the DMF from the RAMP (Box 6).

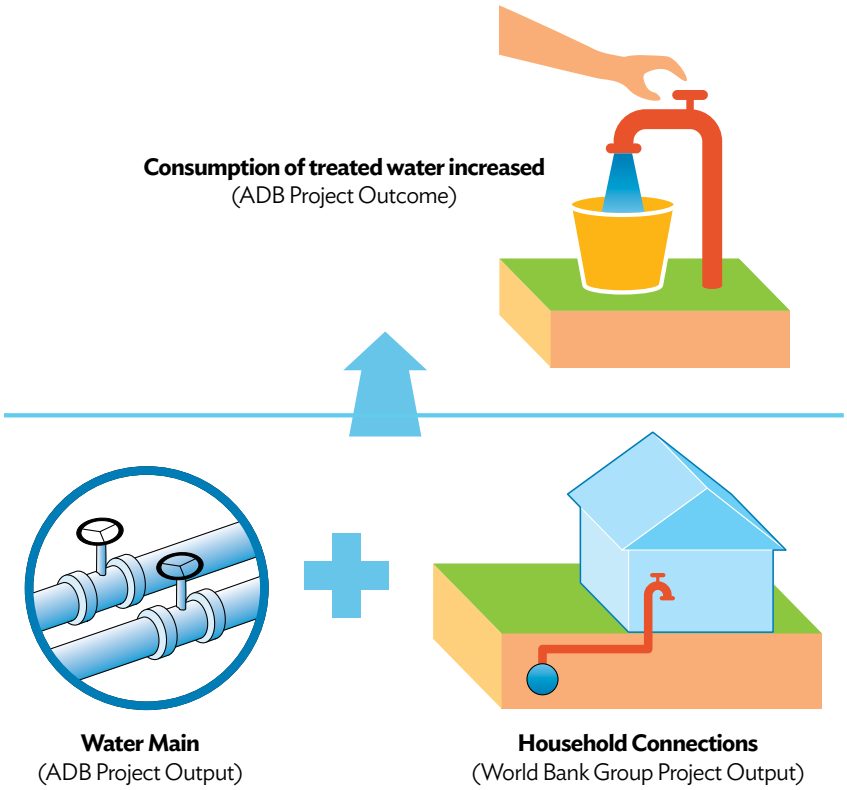
Risks must satisfy four conditions to be included in the DMF: they must be negative, uncertain, outside the project's control, and within the DMF's vertical results logic. Any measure taken or planned that puts a risk within the project's control, or removes the uncertainty about it, also changes that risk to a fact, which should not be included in the DMF. For example, "security conditions" is not a risk; the state of security is a known fact with no uncertainty. However, "security conditions deteriorate" is uncertain and therefore a possible risk. The following types of risks from Table 4 of the RRP and the RAMP are not eligible for inclusion in the DMF because they have been brought within the project's control: a risk that is included as a loan covenant or a project readiness criteria, and a risk that is eliminated by project redesign.

C. Assumptions for Partner Financing

The bottom row of the DMF contains assumptions for partner financing. Parallel cofinancing that is not administered by ADB is an important factor outside the project's control that often assists with outcome achievement. For example, an ADB-supported water project may deliver piped water (output) but not household connections. However, another development partner may be providing financing to connect households. The ADB-supported project outputs, together with the other outputs, should be sufficient to achieve an outcome of "consumption of treated water increased" (Figure 6). When these other outputs are not administered by ADB, are financed in parallel, and are needed for the ADB-supported project to reach its outcome, they should be recorded in the DMF along with the name of the financier. In the example presented in Figure 6, they would be recorded in the DMF as "World Bank Group: 120 km of water supply pipes installed; 250,000 households connected."

[3] The RAMP is a mandatory linked document in Appendix 2 of the RRP. OM C4/OP states that the RAMP should address the public financial management, procurement, and corruption risks based on the preliminary assessment in the project concept paper.

Figure 6: Assumptions for Partner Financing to Reach ADB Project Outcome



Source: Asian Development Bank Strategy, Policy and Review Department

D. Performance Indicators with Targets

Results achievement is measured through indicators, which define success through the use of targets. Indicators are used to determine the status of an expected result using quantitative or qualitative measures (Box 7). The process of selecting indicators clarifies the expected results. Indicators provide a measurable basis for project monitoring and evaluation. The selection of indicators should include stakeholder inputs to ensure that the targets reflect the needs of the beneficiaries.

Existing indicators should be used where possible to reduce the time and costs required to collect data. This includes indicators for which data are already collected by government agencies, academic institutions, civil society organizations, and other sources. However, guard against selecting an indicator solely because it already exists. The primary function of the indicator is to measure the result; so if the result is not being measured by an existing indicator, a new indicator will have to be developed.

Box 7: Tips on Measuring Quality Quantitatively

All indicators should be specified in quantitative terms. However, this does not mean that qualitative measurement cannot take place. Beneficiary satisfaction with government service is inherently qualitative and measures can be expressed quantitatively. For example, a quantitative indicator could be "residents satisfied or highly satisfied with solid waste management services increased to 80% by 2018. (2014 Baseline: 56%)." This indicator captures a qualitative dimension, but expresses it in quantitative terms.

Source: Asian Development Bank Strategy, Policy and Review Department.

1. Selecting Indicators with Targets

Each indicator must have a baseline and a target. The baseline is the most recent status of performance while the target represents the planned level of achievement. All indicators must be specified quantitatively, as in the following example: Cross-border traffic on the north–south road corridor increased to 10.0 million ton-km by 2018 (2010 baseline: 4.6 million ton-km).

DMFs use "SMART" indicators, which correspond to the above specification as follows.

(i) **Specific**—relate to and describe in detail the outputs or outcome the project seeks to achieve (cross-border traffic increased)

(ii) **Measurable**—stated in quantifiable terms (ton-km)

(iii) **Achievable**—realistic in what is to be achieved (requires management judgment: is 10.0 million ton-km by 2018 realistically achievable?)

(iv) **Relevant**—useful for management information purposes (requires management judgment: will knowing the change in ton-km of cross-border traffic be useful to manage the project?)

(v) **Time-bound**—stated with target and baselines, both with dates (10 million ton-km by 2018; 2010 baseline: 4.6 million ton-km)

To be specific, indicators should measure and express quantitatively various dimensions of a result, as follows.

(i) **Quantity**—how much of the result has been delivered (e.g., number, percentage, ratio)

(ii) **Quality**—with what quality (e.g., client satisfaction percentage, quality rating scale, pass/fail, yes/no, error rate, design standards or features in the case of outputs)

(iii) **Timeliness**—when, according to set schedule, and how long (e.g., by calendar date, length of time, number of hours to use the service)

(iv) **Location**—where results are located geographically (e.g., village, state, region)

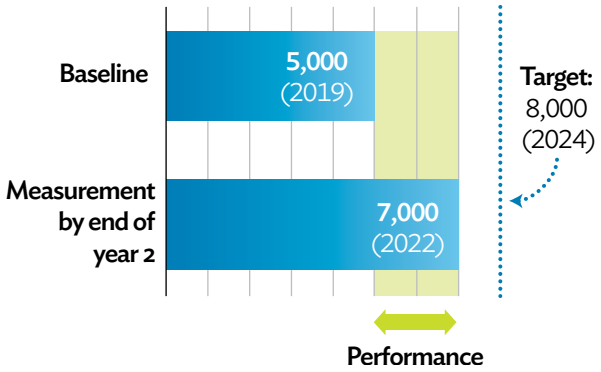
(v) **With whom**—which groups are involved (e.g., ethnic groups, women, people below poverty line)

(vi) **Cost**—at how much cost per unit? (e.g., $/km, $ per application processed)

2. Collecting Baseline Data and Setting Targets

Without a baseline, it is impossible to measure performance. Baseline data should reflect the most recent status of performance. If a project starts in 2020, the baseline data should be for the most recent year; ideally 2019. Transaction technical assistance (TRTA) or a relevant knowledge and support technical assistance (KSTA) can be used to collect baseline data. Figure 7 shows the relationship between targets, performance, and baseline.

Figure 7: Target, Performance, and Baseline



Source: Asian Development Bank Strategy, Policy and Review Department.

Four different types of baselines can be used for an indicator.

(i) **Cumulative baselines** are usually used for outcomes in which additional units will be added to an existing stock or when existing performance can be measured; for example: Residents satisfied or highly satisfied with solid waste management services increased to 80% by 2024 (2018 baseline: 56%).

(ii) **Zero baselines** are usually used for outputs when a project is starting from nothing and adding units; for example: 250 km of road upgraded by 2024 (2019 baseline: 0).

(iii) **Binary baselines** are usually used in policy-based lending when something is to be adopted, approved, or operationalized; for example: transport master plan for capital city adopted by 2025 (2020 baseline: Not adopted).

(iv) **Not applicable.** "NA" is used for outputs or outcomes when a result is the first of its kind, there is nothing to measure against, and the baseline does not exist; for example: 100% of proposals reviewed by investment board by 2022 (2019 baseline: NA [Investment board does not exist yet]); or, at least 95% of workshop participants report improved knowledge of e-procurement platform by 2025 (2019 Baseline: NA [e-procurement platform not yet developed]).

Each indicator must have quantitative targets. Targets should be set taking into account the needs of stakeholders, the baseline, and if available, benchmarks of comparative performance. If an indicator measures more than one dimension of performance, it will need a baseline and target value for each dimension. For instance, in the following example, both the rural and urban dimensions of performance have a separate baseline and target: "24-hour power supply provided for 100% of urban customers and 85% of rural population (2014 baseline: urban 65%, rural 53%)." Both the rural and urban dimensions of performance have a separate baseline and target.

Table 3 lists the typical information needed to set output and outcome targets for a road project.

Table 3: Example of Information Needed to Set Output and Outcome Targets

Information Required	Output Kilometers of Road Built	Outcome Tons of Goods Crossing Border
Knowledge base	Road construction	Trade, trade facilitation, road–trade links, customs, etc.
Baseline	May be set at zero for some projects	Tons of goods crossing border, historical data, could use 3-year average
Resources	Inputs	Other interventions and resources influencing outcome
Target calculation method	Historical or benchmark ratio of output to inputs to determine target (cost per kilometer is determined by historical costs and/or benchmarks)	Multidimensional analysis using many causal factors

Source: Asian Development Bank Strategy, Policy and Review Department.

Output and outcome targets must be quantitative, but they do not have to be a single numerical value. They can be set using a range of options, as in Table 4. Box 8 provides tips on formulating performance indicators with targets.

Table 4: Options for Target Setting

Target Type	Examples	Key Features	Use When:
1. Numerical	Waterborne disease fatalities among poor rural women reduced to 5,000 per year by 2023. (2018 baseline: 10,000)	A point target that is expected to be reached or exceeded	Precise level of performance can be expected
2. Maintained or increased Maintained or decreased	Level of nitrous oxides in urban air maintained or decreased. (2018 baseline: nitrous oxides 90 micrograms per cubic meter)	A floor or ceiling for desired performance in reference to the baseline	Current level of performance is satisfactory, performance improvements are also desirable, but no target amount can be set

continued on next page

Table 4: Options for Target Setting (continued)

Target Type	Examples	Key Features	Use When:
3. At least	Staff with malaria prevention accreditation increased to at least 90%, 100% for female staff (2018 baseline: 78%, 55% female)	A floor for desired performance that does not reference the baseline	Minimum level of target performance can be set and desired performance trajectory is upward
4. No more than	Road accident response time is no more than 20 minutes by 2023 (2018 baseline: 60 minutes)	A ceiling for desired performance that does not reference the baseline	Minimum level of target performance can be set and desired performance trajectory is downward
5. On time or on schedule	Annual project documents submitted by 15 July 2019 (2018 baseline: 5 days late)	A point target that is set with reference to a future date or time	Expected performance is time- or calendar-based
6. Maintained	Road traffic fatalities along corridor maintained at 2018 levels (2018 baseline: 5 fatalities per kilometer)	Baseline performance is to be sustained A range can also be specified, e.g., 3–5 fatalities per kilometer	Current level of performance is satisfactory and no improvement is expected

Source: Asian Development Bank Strategy, Policy and Review Department.

Box 8: Tips on Performance Indicators with Targets

(i) Include at least one indicator for each output and outcome. No indicators are required for impact.

(ii) Align indicator directly with the output or outcome. Ensure that indicators do not measure the next level of result and that they measure all dimensions of the corresponding result statement.

(iii) Assign a letter to each output indicator; e.g., 1a, 1b, 2a, 2b.

(iv) Use stakeholder input where appropriate, especially from beneficiaries, to specify indicators and set targets. For nonsovereign operations, this will be done during the due diligence stage.

(v) State the baseline for each dimension of performance measured by the indicator: current performance level, zero, binary, or not applicable.

(vi) Specify a target for each dimension of performance measured by the indicator using one of the six target types. Disaggregate any indicator that measures people into female and male for baselines and targets.

(vii) Specify indicators quantitatively, even if measuring qualitative dimensions.

(viii) Limit the number of indicators to the minimum possible. Use "need to know" indicators and avoid "nice to know" indicators.

(ix) Identify which indicators from the corporate results framework should be included in the design and monitoring framework. Use other existing indicators where possible, but do not use an indicator that does not measure the result just because it exists.

Source: Asian Development Bank Strategy, Policy and Review Department.

E. Data Sources and Reporting

For each indicator, the DMF must record (i) the title of the publication that will contain the data about the indicator; (ii) the name of the organization that issues the report; and (iii) the frequency of publication (e.g., monthly, annually, biennially) (Box 9). For websites, state "website data" and footnote the website address. For indicators that require primary data to be collected by the project, the data collection method or tool should also be recorded in the DMF; for example, "survey of workshop participants."

Primary data are those that are collected by the project itself (as opposed to secondary data, which have already been collected by a third party, such as a government department, academic institution, international organization, or civil society organization). The data collection activities required to collect the primary data, such as conducting a survey of beneficiaries, should be included in project management activities, and costs and time needs to be budgeted for it. The timing of primary data collection and the responsibility for undertaking it also need to be determined. These roles, responsibilities, and associated deliverables should be detailed in the project administration manual and consultant terms of reference.

Primary data can be collected using a range of methods, including document or administrative data review, literature review, interviews, focus group discussions, surveys and/or questionnaires, expert panel advice, on-site observation, and equipment readings.

Box 9: Tips on Data Sources and Reporting

(i) Be as specific as possible about the data source and reporting mechanism; simply noting "project completion report" is almost always too general. The appropriate data source is critical for collection of valid, quality data and the design and monitoring framework is meant to be instructive and helpful to those responsible for data collection and reporting.

(ii) For all indicators, include the document name, author, and frequency of publication.

(iii) Number each data source or reporting mechanism to correspond to the applicable indicator.

(iv) Cost each primary data collection process. Include outcome-level primary data collection, or primary data collection for new indicators, under project management activities.

(v) Data collection on beneficiaries should be disaggregated into male and female.

Source: Asian Development Bank Strategy, Policy and Review Department.

III. Design and Monitoring Framework Formulation Process

The design of the DMF is critical to the success of the project. The DMF articulates and communicates the planned performance of the project. It relies on a good design process to ensure that the planned results are relevant to the beneficiaries and will meet their needs. Ideally, all stakeholders (beneficiaries and other parties) should be involved in a participatory process to determine the range of existing problems and decide which problems should be addressed through the project. The stakeholders should also be involved in determining the solutions the project will deliver and the targets the project should achieve. Regardless of the process, a project that is designed in isolation from intended beneficiaries is more likely to fail.

ADB projects fall into two broad categories: those with clearly defined and identifiable beneficiary groups, and those with disparate and dispersed beneficiaries. Each category has different implications for participation in project design and implementation. Projects that deliver results to clearly defined and identifiable beneficiary groups include rural and urban water supply and sanitation, irrigation, off-grid solar installations, microfinance, and flood control projects. Such projects require participation and consultation with stakeholders, including beneficiaries, for relevant and appropriate design. Projects that tend to have disparate and dispersed beneficiaries include large infrastructure projects such as a highway, container port, electrical transmission line between two countries, power plant, or wind farm. Their design is not amenable to beneficiary consultation. However, they often affect local populations through their siting, construction, and operation, and therefore can benefit from stakeholder consultation to reduce localized negative effects. In addition, modifications to their design can ensure some benefits accrue to poor or marginalized groups, thus making the project more inclusive.

To formulate a DMF, a project should go through six design steps: (i) select a key country development outcome from the country operations business plan (COBP) country assistance results areas table, (ii) undertake stakeholder analysis, (iii) develop a project problem tree linked to the sector problem tree, (iv) develop a project results chain, (v) formulate the DMF content, and (vi) align the project outputs or outcomes with a government sector objective.[4] A full description of these steps can be found in the Appendix.

A. Select a Key Country Development Outcome

The country partnership strategy includes a results framework that is linked to the COBP country assistance results areas table. This table contains key country development outcomes that ADB projects will support.[5] The outcome specified in the DMF should be aligned with a country development outcome.

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[4] For technical assistance (TA) projects, these steps may not apply.

[5] If a DMF can link at both the sector outcome and output levels, the link should be specified at the output level. For more details, see ADB. 2016. *Revised Guidelines for Country Partnership Strategy Results Frameworks.* Manila.

B. Undertake Stakeholder Analysis

Stakeholder analysis groups people and organizations together and analyzes how they would be affected by the project. It is a tool to identify important and influential stakeholders and understand their interests in relation to the project results. The analysis is used to inform project design and implementation. Stakeholder analysis includes the following steps.

(i) Using the selected results area that the project will address, consider the potential geographic areas and beneficiaries that the project could assist. The project could consider "rural road quality improvement."

(ii) List all the stakeholders involved in the issue (in this case "rural road transport"), grouping them by category (e.g., beneficiary groups, public sector organizations, civil society, private sector, development partner agencies).

(iii) Determine the interests of each group with reference to the results area, "rural road transport."

(iv) Determine how each group perceives problems of the results area (e.g., What are the problems associated with "rural road transport"?).

(v) State the resources—financial and nonfinancial—put forward by each group in support of or in opposition to the results area.

(vi) List the mandates or formal authority that stakeholders must carry out in a particular function, as appropriate.

C. Develop a Project Problem Tree

Each project in sectors in which ADB is active has a summary sector assessment containing a sector problem tree. The sector problem tree identifies key constraints to be addressed by ADB and other actors in the sector. It is a diagram that (i) analyzes the existing context for the problems of the sector; (ii) identifies major problems and constraints associated with the core challenges of the sector; and (iii) visualizes the cause-and-effect relationships in a diagram, which is referred to as a problem tree. Start the design process by selecting the area of the sector problem tree the project will address. This will be closely linked to the results area selected in the first design stage. For example, a sector problem associated with the results area "rural road quality improvement" could be "inefficient and unsafe road transport system." This statement is reformulated to become the core problem for the project. Restate the sector problem so that it describes the problem for the project from the perspective of those it is affecting (e.g., "Travel on rural roads in region x is slow and unsafe"). This may be a different formulation of the starter problem that was used in the stakeholder analysis.

Apply the problem tree tool to the core problem (Appendix). The sector problem tree summarizes the problems across the sector; therefore the project problem tree will need to expand the selected core problem, and its causes and effects. To develop the project problem tree, the following steps can be followed using a visual method such as cards on a pin board or presentation software. Vertical logic is usually used, mirroring the layout of the DMF.

Develop the project problem tree using the following steps.

(i) Specify the direct causes below the core problem and continue to specify causes in levels below until the root causes are reached.

(ii) Specify the direct effects above the core problem and continue to specify effects until the final effects are reached.

(iii) Review and refine the problem tree and the interrelationships between problem, causes, and effects, and adjust as needed.

(iv) Clarify through discussion and consultation that this will be the core problem and causes that ADB will address through this project.

D. Develop a Project Results Chain

Transform the problem and its causes into results statements (future solutions). Converting the problems and causes into results statements produces the cause-and-effect relationship between results levels. Vertical logic is usually used, mirroring the layout of the DMF. Develop the results chain using the following steps.

(i) Convert the core problem into a statement of a desirable condition. If possible, this should capture the solution the beneficiary requires (e.g., "Travel on rural roads in region x is efficient and safe").

(ii) Specify the direct means to achieve this result in the space below, moving all the way down to the root causes. The number of results is not limited to the number of causes, and additional results may be required and added.

(iii) Review and refine the results chain and adjust as needed.

(iv) Select a preliminary project outcome referring to the characteristics of a good project outcome statement. This may be the statement of a desirable condition from step (i), or a revised version of it based on the project's scope and intended outcome; for example, "mobility of people and goods in three rural districts enhanced."

(v) Identify outputs in the space below the preliminary outcome that the project will produce or deliver.

(vi) Adjust the results chain as needed to ensure that the results statements conform to the definitions and are feasible to deliver through the project.

(vii) Clarify through discussion and consultation that this will be the ADB-supported project.

E. Formulate the Content of the Design and Monitoring Framework

Complete the DMF template once the results chain analysis has been finished. Transfer the outcome and outputs into the template. Problems, causes, and effects may be used to formulate risks. Determine the impact(s) that the project is aligned with. Relevant impact statement(s) may be found in the country partnership strategy results framework, or otherwise by directly consulting an official national, sector, or institutional strategy, plan, or framework. Examine and revise the results chain logic as each piece of the DMF is added.

F. Confirm Alignment with Government Sector Objective

The project results chain should be aligned with a government sector objective selected in Step A. It is expected that the DMF outcome would be closely aligned with a key country development outcome in the COBP. However, depending on the project results, the alignment may be closer at the sector output or impact levels.

IV. Application of Design and Monitoring Frameworks in ADB

The DMF is used to cascade corporate-level indicators to the project level, classify projects according to corporate themes and priorities, and provide the structure of the project's economic analysis. The principles of the DMF are the same for different modalities, but their application may differ.

A. Link to Corporate Results Framework

The corporate results framework contains indicators measuring quantities of outputs and outcomes delivered by completed projects in priority areas. Examples include "number of households connected to electricity," "kilometers of roads built or upgraded," and "dollar value of trade finance provided." Where relevant and possible, these indicators are disaggregated by sex (female, male) or geographic location (rural, urban). The indicators are cascaded down to the DMF for both sovereign and nonsovereign operations. For most projects, one or more corporate results framework indicators (RFIs) will be relevant.

All RFIs (including tracking indicators/standard explanatory data indicators (SEDIs)) that apply to the project, and their target values, must be identified in the DMF. This is done by including a note below the DMF table that identifies the link between output and outcome level indicator(s) in the DMF and the corresponding RFI (Figure 8). The RFIs and their targets are then entered into e-Operations, tracked, and target achievement reported on by project completion. As with DMF indicators, targets for RFIs should be revised as relevant during project implementation and any revisions reflected in e-Operations.

There are four main scenarios for linking RFIs to DMF indicators.

(i) If the unit of measure and target for the RFI and DMF indicators are the same (e.g., "microfinance loan accounts opened or end borrowers reached increased to 5,000 [4,000 female, 1,000 male]"), the table footnote linked to the relevant DMF indicator will simply state the corresponding RFI.

(ii) Several indicators in the DMF may link to a single RFI. For example, the DMF may have road construction output indicators with targets specific to each district; e.g., "15 km constructed in District A," "22 km of road rehabilitated in District B," and "8 km of road constructed in District C." In this case, all relevant indicators will refer to the same table footnote that states the single RFI and its target, i.e., "Roads built or upgraded (km). Target: 45 km."

(iii) The DMF indicator and RFI may have different units of measure, but the RFI target can be calculated by converting the DMF target into the RFI unit of measurement. For example, the DMF indicator could be "domestic water for 900,000 project beneficiaries during dry season increased by 10% (baseline: 2 liters/person/day)." This DMF indicator measures the same data as the RFI ("households with new or improved water supply [number]"). The DMF table footnote should state the RFI target and explain the conversion method. In the above example, to determine the RFI target for number of households, the 900,000 project beneficiaries would be divided by the average number of people per household in the project area to determine the number of households with an improved supply of water.

Figure 8: Linking Corporate Results Framework Indicators and Design and Monitoring Framework Indicators

RFI = results framework indicator.

Contribution to the ADB Results Framework:

RFI A: Students educated and trained under improved quality assurance systems. Target: 68,000 (51.5% females). Based on 34,000 graduates per year (x 2 years). Sex disaggregation based on 2018 student population demographics.

Source: Asian Development Bank Strategy, Policy and Review Department.

(iv) The RFI may be a proxy or leading indicator for the DMF indicator. For example, the RFI "students educated and trained under improved quality assurance systems" can be a leading indicator for the DMF indicator "number of graduates from 17 demonstration secondary schools increased to 34,000 annually (50% females) by 2023 (2018 baseline: 20,279 graduates annually; 45% females)." Figure 8 illustrates this scenario.

B. Integration of ADB Priorities in the Design and Monitoring Framework

Strategy 2030 priorities are identified in part through their inclusion in the DMF. During 2019, the ADB project classification system and relevant operations manual sections will be updated to align with Strategy 2030.[6] In the interim, there are some general established links between the DMF and the integration of Strategy 2030 operational priorities. These are as follows:

(i) **Accelerating progress in gender equality.** The two thematic classifications of gender equality—gender equity as a theme and effective gender mainstreaming—depend on DMF content at the output and outcome levels.

(ii) **Tackling disaster risk and climate change.** To be classified as contributing to disaster risk management or climate change adaptation and/or mitigation, a project or program must include specific DMF content.

(iii) **Addressing remaining poverty and reducing inequalities**. The determination of whether a project or program directly targets poverty is based in part on DMF content. Geographic and household targeting will be informed by the results and indicators in the DMF.

(iv) **All other operational priorities.** To be classified as contributing to an operational priority, a project or program should include DMF content specific to the selected priority.

C. Link to Economic Analysis

The economic and financial viability of the project and the sustainability of benefits are assessed at the appraisal stage. The assessment is based on the project structure, usually captured in an early draft of the DMF, which provides the identification and quantification, and enables the valuation of sustained benefits based on the working life of the investment. The outcome results statement, indicators, and target values in the DMF should be aligned with the economic analysis. The target amounts and dates should match the annual benefit stream used in the economic analysis. For example, in an urban rail project, the economic analysis may in part be based on the average daily number of passengers in each year of operation. The benefit stream will include many years of operation in line with the working life of the urban rail system. The DMF outcome indicator could have a target date of the first full year of

[6] ADB. 2014. *Project Classification System: Final Report.* Manila. https://estar.adb.org/eStar/docDownload.action?id=%7B2FDA5A1A-8060-4F9F-BB35-B61C0CD748E1%7D&objectStoreName=ADB.

operation. The target value of the "average daily number of passengers in the first full year of operation" should be the same value in both the DMF and the economic analysis. There must be consistency between the DMF and the economic analysis for all output and outcome benefits articulated in results statements, indicators, and targets.

D. Multitranche Financing Facilities

The multitranche financing facility (MFF) is a flexible financing instrument that provides assistance programmatically to support a medium- or long-term client investment plan. The overall facility is composed of a series of separate financing tranches over a fixed period of time. DMFs must be prepared both for the overall MFF and for each tranche.[7] During implementation, the MFF facility DMF should be updated to reflect any changes required as subsequent tranches are approved.

The main DMF issue to be addressed is the relationship between the results statements in the facility DMF and the tranche DMFs, specifically the link between facility outcome and output, and tranche outcomes and outputs. (The impact[s] should be the same between the facility and the first tranche.[8]) The sector road map for the facility will provide guidance for the specification of the facility outcome and outputs. With the facility results developed, there are two options for the results link between facility and tranches: (i) same level; i.e., facility output = tranche output, facility outcome = tranche outcome; and (ii) cause and effect; i.e., facility output = tranche outcome.

Table 5: Facility to Tranche Design and Monitoring Framework Relationships

MFF Model	DMF Relationship
1. Geographic	Facility output = tranche output
2. Time-Slicing	
Time-Slicing 1. Phased Approach	Facility output = tranche output
Time-Slicing 2. Component Approach	Facility output = tranche outcome
Time-Slicing 3. Project Approach	Facility output = tranche outcome
3. Financial Intermediation	Facility output = tranche output

DMF = design and monitoring framework, MFF = multitranche financing facility.
Source: Asian Development Bank Strategy, Policy and Review Department.

Each MFF must determine which results link option to use based on the specifics of the facility and tranches. The MFFs approved to date typically follow one of three models: (i) geographic, where similar packages of outputs are delivered in different quantities in different locations; (ii) time-slicing, where the facility output is delivered by contract packages sliced across tranches, usually by phases or components, or otherwise by the project(s)s; and (iii) financial intermediation, where the facility output is delivered to beneficiaries via one or more intermediaries. These models can be used to determine the appropriate results link. These models do not limit the design of MFFs, and other models or hybrids of these models may be appropriate. Table 5 shows the typical results relationships for these different types of MFFs.

Model 1: Geographic. In geographic MFFs, the output amount is typically determined by adding up tranche outputs in a bottom-up process. Figure 9 shows the output quantities for water and sewage treatment divided over three locations. There is no synergy or interaction between the various locations.

In this model, the outputs and outcome of the tranches are subsets of the facility outputs and outcome. The indicators are at the same level between facility and tranche (and are additive). Table 6 shows the relationship. The results link, shown in red, is output to output, outcome to outcome.

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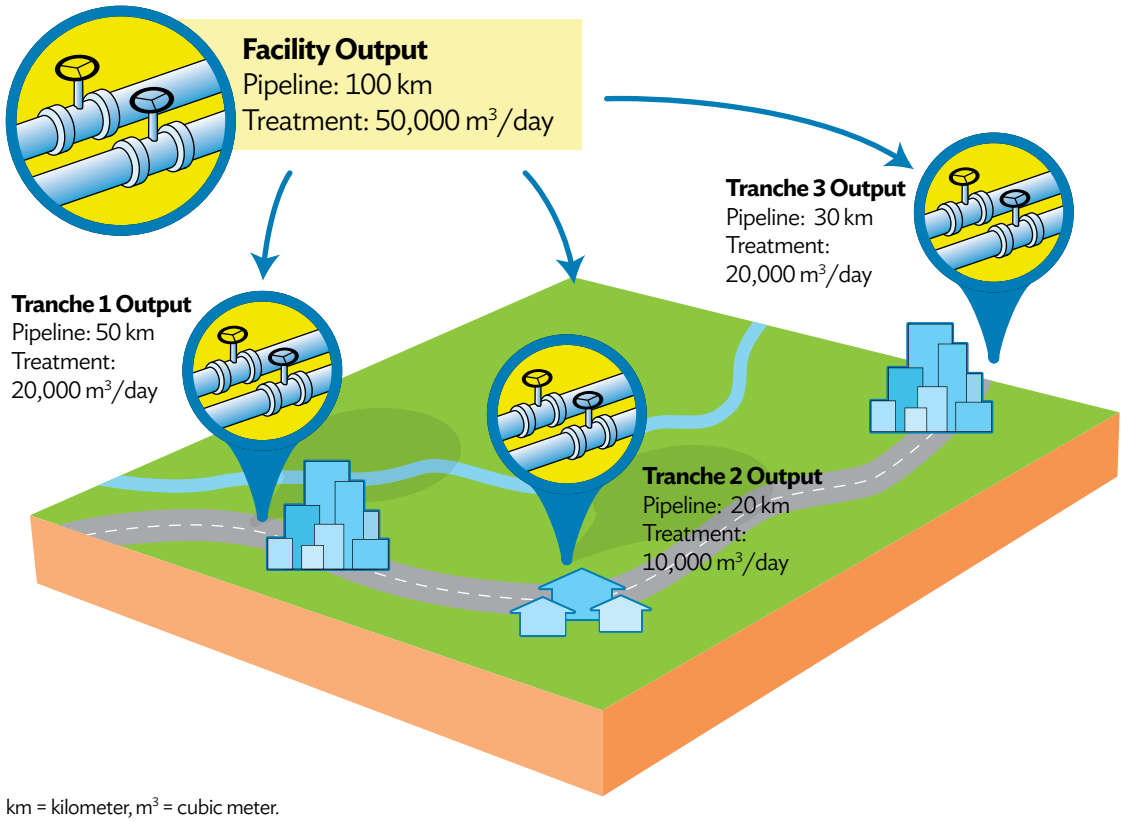
[7] ADB. 2018. Multitranche Financing Facility. *Operations Manual.* OM D14/BP. Manila.

[8] When the DMF for a subsequent tranche is prepared, the impact statement(s) can be updated to align with the most current valid government strategy or plan.

Figure 9: Geographic-Slicing



km = kilometer, m^3 = cubic meter.

Source: Asian Development Bank Strategy, Policy and Review Department.

Table 6: Geographic Facility and Tranche Relationship

Item	Impacts	Outcome	Outcome Indicator	Output	Output Indicator
Facility	Health of residents in two main provinces improved (Health Sector Plan, 2014–2020)	Consumption of clean water in towns A, B, and C increased	Targets for combined achievements of all tranches	Water and sanitation infrastructure in towns A, B, and C constructed	250 km of water pipes constructed 50,000 m^3 of water treated
Tranche		Consumption of clean water in town A increased	Subset of facility outcome targets	Water and sanitation infrastructure in town A constructed	50 km of water pipes constructed 10,000 m^3 of water treated

km = kilometer, m^3 = cubic meter.

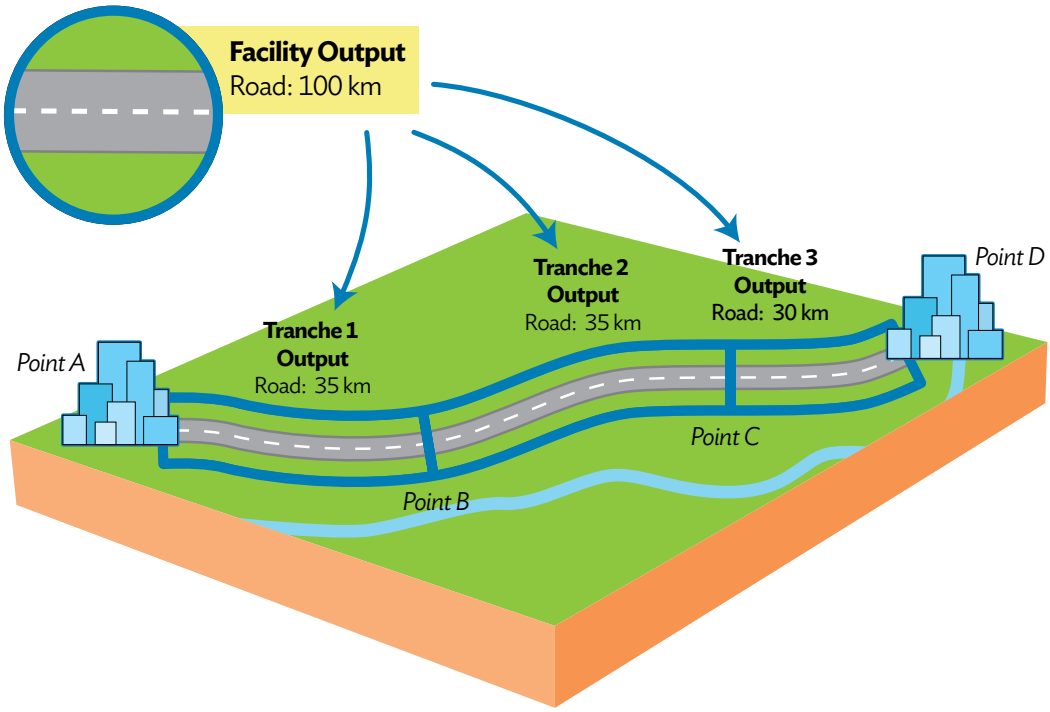
Source: Asian Development Bank Strategy, Policy and Review Department.

Model 2: Time-slicing. There are three common approaches to time-slicing MFFs. The phased approach occurs where the facility is intended to fund a single, large, mostly contiguous piece of infrastructure. The facility DMF output encapsulates the entire infrastructure output, while each of the tranche outputs covers a piece or phase of the overall facility output. Parts of the infrastructure from the first tranches are usable to some extent while the subsequent tranches are still ongoing. The results link between facility and tranche DMFs is output to output—the outputs of the facility and its tranches

are at the same results level and the tranche outputs are a subset of the facility outputs. The amount of each tranche output is specified from the overall facility output in a top–down process. Figure 10 shows the facility output of 100 km of roads divided into three tranches.[9]

Figure 10: Time-Slicing 1: Phased Approach

■ One large project sliced into tranches by sections



km = kilometer.
Source: Asian Development Bank Strategy, Policy and Review Department.

Since the outputs of initial tranches can be used in a beneficial manner (outcome) before all the tranches have been completed, the facility outcome can be at the same level (additive) as the tranche, or the facility outcome may result from synergy among the tranches. Additive facility outcomes of (i) travel time between points A and D, (ii) vehicle operating cost along a road from A to D, and (iii) tons per km of freight from A to D may be divided into tranches as follows.

(i) Travel time between points A and B (tranche 1), B and C (tranche 2), and C and D (tranche 3).

(ii) Vehicle operating cost along road from A to B (tranche 1), B to C (tranche 2), and C to D (tranche 3).

(iii) Tons per km of freight from A to B (tranche 1), B to C (tranche 2), and C to D (tranche 3).

The facility, covering the entire piece of infrastructure, may also have a synergistic outcome that is present only in the final tranche. For example, if there is a manufacturing complex at point A and point D is the border with the neighboring country, then the facility outcome may include manufactured goods crossing the border, which would not be possible until the completion of the third tranche.

[9] The examples of MFF designs in this section are intended to provide illustrative examples for the sole purpose of providing guidance on suitable DMF approaches, they are not intended as guidance for how a MFF should be designed nor do they represent all possible designs.

Table 7 shows the relationship. The results link, shown in red, is output to output, outcome to outcome. The synergistic outcome is shown in green.

Table 7: Time-Slicing 1: Phased Approach—Facility and Tranche Relationship

Item	Impacts	Outcome	Outcome Indicator	Output	Output Indicator
Facility	Value of exports and imports increased by 2017 (Transport Sector Master Plan, 2006)	Additive and/ or synergistic (whole more than parts)	Travel time A to D Tons of cross-border cargo	Additive, outputs of all tranches amassed together (top-down)	100 km of road
Tranche		Subset of facility outcome	Travel time A to B	Subset of facility output	10 km of road

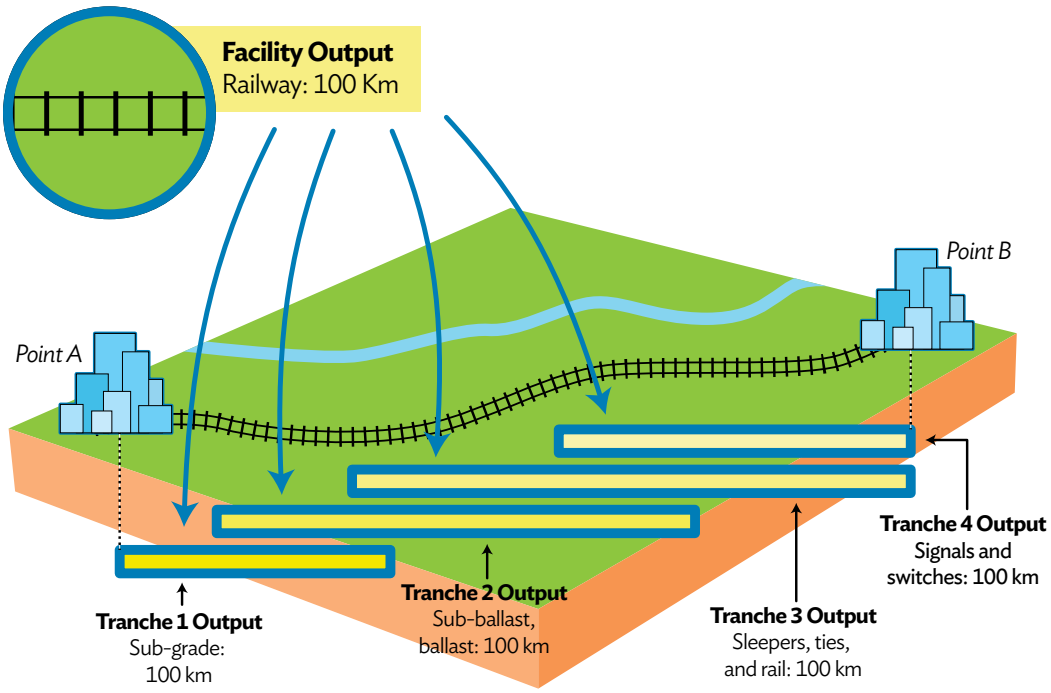
km = kilometer.

Source: Asian Development Bank Strategy, Policy and Review Department.

The second approach to time-slicing involves slicing by components. In contrast to the phased approach, none of the tranche outputs is useable until the completion of all tranches. This model uses the cause-and-effect results relationship where all tranche outputs are causally related to facility outputs. In this case, the facility outputs become the outcome for the tranches. The facility output is divided into phases and is not achieved until all of the phased tranche outputs have been completed. In Figure 11, for example, 100 km of railway is divided into components, rather than into contiguous sections. The output of each phase or tranche is 100 km of each constituent part. Only when all the parts are completed can the facility output be achieved.

Figure 11: Time-Slicing 2: Component Approach

One large project sliced into tranches by components



km = kilometer.

Source: Asian Development Bank Strategy, Policy and Review Department.

Table 8 shows the relationship. The results link, shown in red, is facility output to tranche outcome. Each tranche has the same outcome.

Table 8: Time-Slicing 2: Component Approach–Facility and Tranche Relationship

Item	Impacts	Outcome	Outcome Indicator	Output	Output Indicator
Facility	Value of exports and imports increased by 2017 (Transport Sector Master Plan, 2006)	Use or application of facility output	Ton-km of freight transported	Aggregate, outputs of all tranches combined (top–down)	100 km of rail between A and B
Tranche		Facility output	100 km of rail between A and B	Tranche or contract package deliverable	100 km of subgrade between A and B

km = kilometer.

Source: Asian Development Bank Strategy, Policy and Review Department.

The third approach to time-slicing is to deliver one or more projects over time in a sector or in various sectors. The project(s) are sliced time-wise by contract packages. Each tranche consists of disbursement of a portion of the contract packages. As with the components approach, this model uses the cause-and-effect results relationship where all tranche outputs are causally related to facility outputs. In this case, the facility outputs become the outcome for the tranches. The facility output is divided up by phases and the facility output is not achieved until all of the phased tranche outputs have been completed.

Model 3: Financial intermediation. A financial intermediation project typically consists of tranches where finances flow through intermediaries to beneficiaries. The tranches can consist of repeated amounts to the same set of intermediaries or to different groups of intermediaries and beneficiaries with each tranche. The outputs of the tranche are usable while the subsequent tranches are still planned or ongoing. The results link between facility and tranche DMFs is output to output; the outputs of the facility and its tranches are at the same results level and the tranche outputs are a subset of the facility outputs. The amount of each tranche output is specified from the overall facility output in a top–down process. There is typically no synergistic outcome. If the tranches each fund a part of the same project, then the relationship is facility output to tranche outcome.

E. Results-Based Lending

Results-based lending (RBL) is a pilot modality introduced in 2013 that supports government programs. Under RBL, ADB helps the government design and implement its own programs. ADB links disbursement directly to the achievement of program results. The programs are implemented using the developing member country's own program systems. RBL operations have a program results framework (PRF) with a results chain, indicators, and targets. A program action plan (PAP) containing a limited set of priority actions can also be included in an RBL operation. Specific disbursements are linked to indicators called disbursement-linked indicators (DLIs). DLIs can be indicators in the RBL PRF or the PAP.

The RBL PRF and the PAP are parent documents of the RBL DMF. All DMF results and indicators originate from the RBL PRF and the PAP. Results statements are ideally cited from the PRF but should be adjusted if necessary to align with ADB results chain formulation. Select DMF key performance indicators from indicators in the PRF and the PAP. RBL program indicators (including the DLIs) typically have milestone targets to measure progress over time, while targets in the DMF should reflect key achievements by RBL program completion. The DMF does not need to include all of the DLIs or other indicators in the PRF. Key DMF output indicators should include DLIs, but they do not all need to be DLIs. DMF outcome indicators may or may not be DLIs. The DMF should list the priority actions of the PAP (Figure 12). These should be grouped by output, similar to the activity row in other modalities.

F. Policy-Based Lending

Policy-based lending (PBL) facilitates the implementation of policy reforms. PBL includes a policy matrix that sets out (i) the overall objectives of the reform program, (ii) measures already taken, (iii) key actions to be undertaken under the program and their timing, and (iv) further actions needed over the medium term.[10] Reflecting characteristics unique to the modality, PBL uses a modified DMF template.

The results chain for PBL should be based on the actions to be undertaken by the government as part of the reforms as follows.

(i) Reform areas (outputs) are a summary description of the areas (e.g., legal, institutional, and services) that the key policy actions undertaken under the program are designed to improve.

(ii) Effect of the reform (outcome) describes the benefits from the key policy actions undertaken. A good effect of the reform statement captures the breadth of the reforms supported by the PBL and is a direct result of the completed key policy actions.

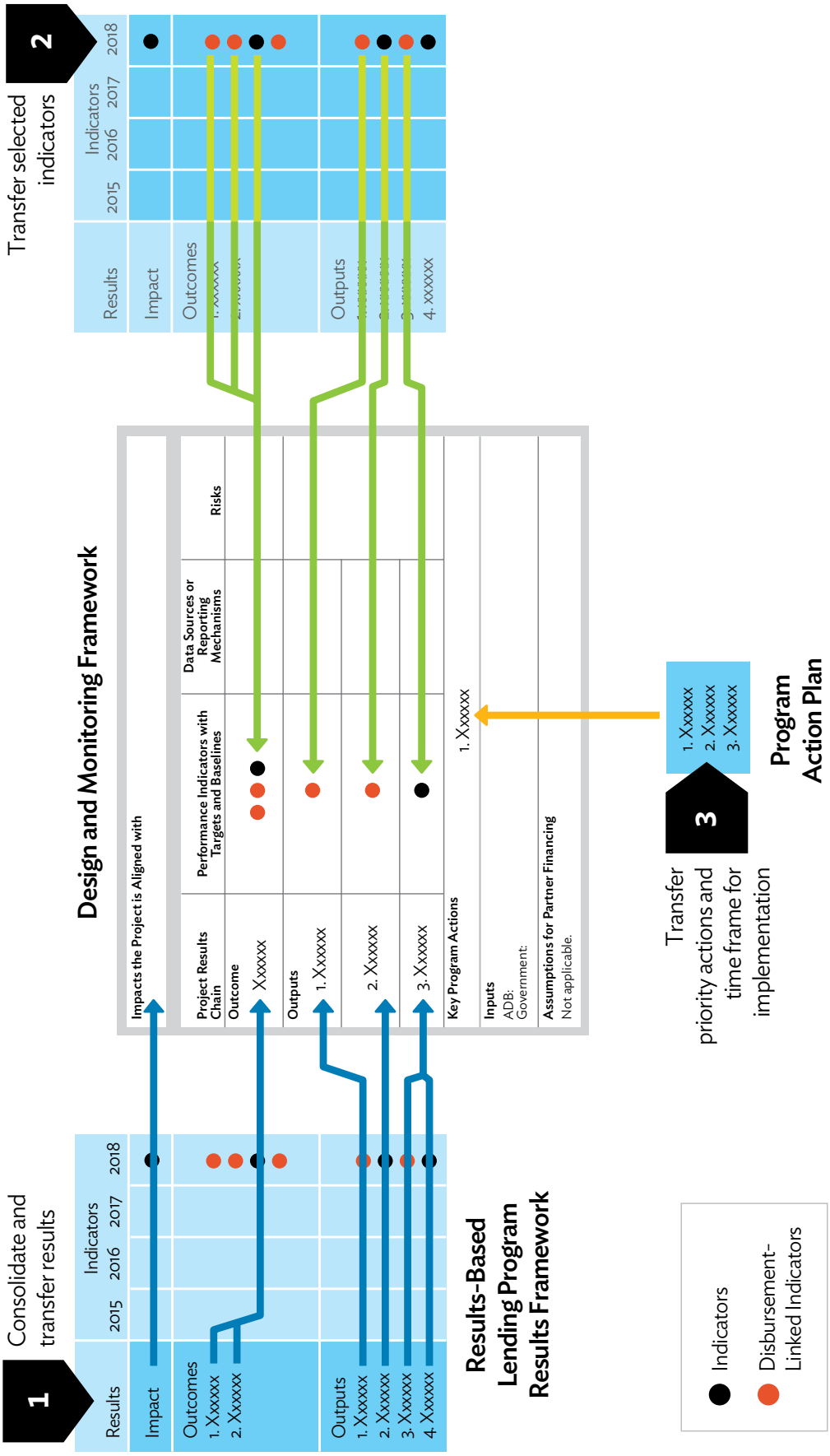
(iii) Country's overarching development objective (impact) is the end benefit of the reform that the PBL is aligned with.

(iv) Activities are not required in the DMF for PBL.

Table 9 shows generic examples of these results chain levels.

[10] ADB. 2013. Policy-Based Lending. *Operations Manual*. OM D4/BP. Manila.

Figure 12: Transferring Results, Indicators, and Key Actions



Source: Asian Development Bank Strategy, Policy and Review Department.

Table 9: Results Chain Alignment and Generic Aspects of Policy-Based Lending

Item	Results Chain	
	Reform Areas	**Effect of the Reform**
Examples	Government legislation addressing nonperforming loans of banks submitted or approved	Nonperforming loans reduced
	Cost recovery increased, subsidies reduced, interest rates rationalized	Competition and private sector involvement increased
Generic statements of policy-based lending results	Means to reduce constraints established or implemented Specific actions undertaken Policy conditions established or implemented Barriers removed	Constraints reduced Effects of actions Effects of policy conditions Effects of barrier removal
	Measures to mitigate negative effects of reforms on population groups approved or undertaken	Negative effects mitigated
	Systems to implement reforms strengthened	Effects of reforms
	Decisions, procedures, decrees, regulations, legislation, processes, plans, laws, policies, or amendments thereof, established, approved and/or issued	Effects of these measures being undertaken—medium-term reform results

Source: Asian Development Bank Strategy, Policy and Review Department.

The effect of the reform is measured with key performance indicators, and the key policy actions completed are stated in the DMF grouped by reform area. Both should be formulated in the format of SMART indicators.

ADB has four PBL products: stand-alone PBL, programmatic approach PBL, special PBL, and the Countercyclical Support Facility. DMF development and the results chain will differ slightly depending on the type used.

- Stand-alone PBL can have a single tranche or multiple tranches. Regardless of the number of tranches, there is one DMF and one policy matrix. Single-tranche PBL will follow the examples in Table 9. For stand-alone PBL with multiple tranches, the effect of the reform indicators and key policy actions targets under each reform area are expected to be achieved by the end of all tranches. The conditions for tranche release (triggers) will be predominantly at the reform area level for the initial tranches but could extend to the effect of the reform level for the final tranches. Target dates in the DMF align with the tranches; the target dates for tranche 1 policy actions in the DMF must precede the target dates for tranche 2 policy actions, and so forth.
- In programmatic approach PBL the results chain will also follow the examples in Table 9. The multiyear programmatic approach concept paper describes the effect of the reform that will be reached through all subprograms. The concept paper therefore includes a DMF for the programmatic approach and identifies (i) the effect of the reform for the full program as well as the indicative performance indicators proposed to measure this effect; (ii) the reform areas through which the effect of the reform will be achieved; and (iii) the indicative policy actions to be taken under subprogram 1, as well as any indicative policy actions expected be taken under subsequent subprograms that are known at concept stage. The report and recommendation of the President (RRP) for each subprogram contains a DMF that restates the effect of the reform with performance indicators for the entire program and the reform areas and key policy actions specific to the particular subprogram.
- For special PBL and the Countercyclical Support Facility, typically the DMF will not link to sector results because these types of support are usually neither predicted nor planned. Countercyclical support PBL usually features investment in public infrastructure or social safety nets at the reform area level, with the benefits of use of the infrastructure or the social safety nets measured at the

effect of the reform level. Other common reform areas include development expenditures and macroeconomic management measures.

When transaction technical assistance (TRTA) is provided to support the achievement of PBL results, the TRTA outputs are most often already reflected in the key policy actions identified in the PBL DMF. However, in exceptional cases where the TRTA will deliver key outputs or outcomes that are not already captured in the DMF of the associated PBL, these should be measured by adding indicators to the PBL DMF.

G. Other Modalities

Sector loans. The design of a sector loan guides the formulation of the outcome statement. The sector or subsector development plan should inform the DMF outcome and indicators. Sector loans are used to finance a large number of subprojects in the sector or subsector in support of the sector development plan. In the context of the DMF, each subproject deliverable or cluster of subproject deliverables represents an output.

Sector development program. A single DMF is approved for both the PBL and investment loans. It is a hybrid of an investment operation DMF and a PBL DMF. The effect of the reform/outcome level includes performance indicators for the completed sector development program. The reform areas/output level include key policy actions of the PBL program (as per guidance in section III.F) and output indicators of the investment loan. Key activities of the investment loan are listed with milestones.

Emergency assistance loans. Emergency assistance loans are generally treated like project loans. Emergency assistance loans require a DMF. Their outputs generally include mitigation of immediate losses to priority assets, capacity, or productivity and range from rebuilding high-priority physical assets to restoring economic, social, and governance activities after emergencies.

Policy-based guarantees. The policy-based guarantee is a new modality introduced in 2018. It is similar to PBL but provides a guarantee in support of commercial lenders' financing to the government, rather than a direct loan to the government. Policy-based guarantees require a DMF, which is developed following the same approach and template as the DMF for PBL.

Small expenditure financing facility. The small expenditure financing facility is a pilot modality introduced in 2018 that finances multiple small activities to enhance project readiness and/or to support the sustainability of completed projects. A partial DMF is prepared for the facility RRP and subsequently updated to incorporate new activities—and as required, new outputs—as new facility activities are approved.

Project readiness financing facility. The project readiness financing facility is used to develop projects and improve their readiness. It does not require its own DMF because the activities it finances lead to the development of operations with their own DMF.

Transaction advisory services. Transaction advisory services are provided to governments on a costed basis. They are designed to provide governments with high-quality technical advice on public–private partnership transactions. They do not require a DMF.

Public–private partnership standby financing facility. The public–private partnership (PPP) standby financing facility is a pilot modality introduced in 2018 that supports PPP projects from sovereign operations for which the government owes a financial obligation over a long concession period. The business processes for this modality are under development and it remains to be determined whether a DMF will be required.

H. Additional Financing

Additional financing requires a revised DMF as part of the approval documentation. The RRP for additional financing requires that the project restate its results and indicators, and clarify whether they have changed on account of the additional financing. The RRP contains a revised DMF, which compares the current project (before additional financing) to the project with additional financing. To accommodate this comparison, the DMF for additional financing can be up to 5 pages long.

I. Major and Minor Change

A major change materially alters or fundamentally affects the scope and project outcome as approved by the Board. A minor change is defined as any change with respect to an ADB-approved project that does not result in a major change.[11] Major and minor change may require a revised DMF as part of the approval documentation. The revised DMF compares the current project (before the change) with the updated project following the major or minor change. The DMF shows the change in terms of content added, deleted, or amended. Proposed changes should be clearly identified. If desired, the DMF template used for additional financing can be used.

J. Cofinancing

Cofinancing is included in the DMF either as an input or an assumption (Table 10). Cofinancing is included as an input in the DMF with corresponding outputs if it is administered by ADB on a contractual basis with joint or parallel procurement packages. If administration is collaborative with joint procurement packages, cofinancing should also be included as an input in the DMF with corresponding outputs. If administration is collaborative with parallel procurement packages, cofinancing should be included in the last row of the DMF as "assumptions for partner financing." Outputs that are not administered by ADB but are necessary to reach the DMF outcome should be listed, along with the financier.

Table 10: Inclusion of Cofinancing in the Design and Monitoring Framework

Administration	Procurement	
	Joint Procurement	Parallel Procurement
Contractual (with administration)	Include cofinancing as an input with corresponding outputs	Include cofinancing as an input with corresponding outputs
Collaborative (without administration)	Include cofinancing as an input with corresponding outputs	Cofinancing included as an assumption in the last row of the design and monitoring framework

Source: Asian Development Bank Strategy, Policy and Review Department.

K. Technical Assistance

There are two main types of TA: knowledge and support TA (KSTA) and transaction TA (TRTA).

Knowledge and support technical assistance is stand-alone TA not directly linked to other ADB-financed projects. Among other purposes, it can be used for developing capacity; providing policy and technical advice; and generating, disseminating, and using knowledge. KSTA requires its own DMF.

The KSTA completion report is circulated within 1 year of the end of TA activities. This means that the outcome indicators will have to measure short-term outcomes or use "leading" indicators, which measure preliminary indications of outcome.

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[11] The Project Administration Instructions detail the change in scope processes.

Depending on the design of the KSTA, the impact statement(s) may not reach as high as sector results and may therefore be defined by the project or sourced from an institutional strategy instead of from a national development or sector strategy. The same applies for regional KSTA impact statement(s), which may link to the regional or subregional strategy, plan, or framework of a regional organization (including ADB); or, possibly, to another type of higher-level strategy, such as a United Nations agreement.

Transaction technical assistance is TA that: (i) directly benefits a project, which is, or will be financed by ADB (e.g., by providing project preparation, project implementation capacity support, policy advice toward PBL), or (ii) helps develop a PPP as part of transaction advisory services. TRTA, including TRTA cluster and facility, does not have its own DMF. Rather, any significant final results delivered by the TRTA should be integrated into the DMF(s) of the related sovereign operation(s). There are several options for integrating TRTA results, depending on the significance of the TRTA's results for the operation(s) it relates to:

(i) **No incorporation required.** The TRTA may not deliver any results that are considered significant final results in the context of the DMF results chain of the associated operation. For example, this is the case where the TRTA's outputs are focused on project preparation or deliverables that will help deliver the associated project's outputs but are not major final outputs in the context of the associated operation. In these cases, no TRTA-specific results statements or indicators will be integrated into the DMF of the associated operation.

(ii) **Output-level integration.** If the TRTA's outputs constitute a significant and unique output in the context of the associated operation, then an output statement specific to the TRTA should be added to the DMF of the associated operation along with one or more performance indicators (Figure 13, Option 1). The output statement should be a summary statement that encapsulates the specific TRTA outputs identified in the TA report. This level of integration is relevant, for example, if the TRTA will deliver institutional capacity building outputs that are considered significant final outputs in the context of the associated operation. If the associated operation's DMF already contains an output statement that captures the TRTA output, performance indicator(s) specific to the TRTA should be inserted under the relevant output statement(s) in the main operation's DMF (Figure 13, Option 2). The output and/or indicator(s) can be preceded by a heading such as "By [year]: [name of TRTA]", to distinguish the TRTA's output and/or indicator(s).

(iii) **Outcome-level integration.** If the TRTA will lead to the achievement of a significant outcome-level result that aligns with the outcome of the associated operation, an outcome indicator specific to the TRTA should be included in the associated operation's DMF.

(iv) **Activities and inputs integration.** The TRTA's budget, financier and source of funds should be added to the DMF of the associated operation. As relevant, the TRTA's activities, or a summary of these, can be added as well.

For TRTA approved before or alongside its associated operation(s), TRTA results can be incorporated into the associated operation's DMF as it is developed. For TRTA associated with an operation already under implementation, TRTA results are added to the associated operation's DMF through a change-in-scope process. This can be done either at midterm review or during any review period before project closing.

Common technical assistance results chains. The TA projects that ADB typically finances can be grouped into three general focuses: providing policy and technical advice; supporting capacity

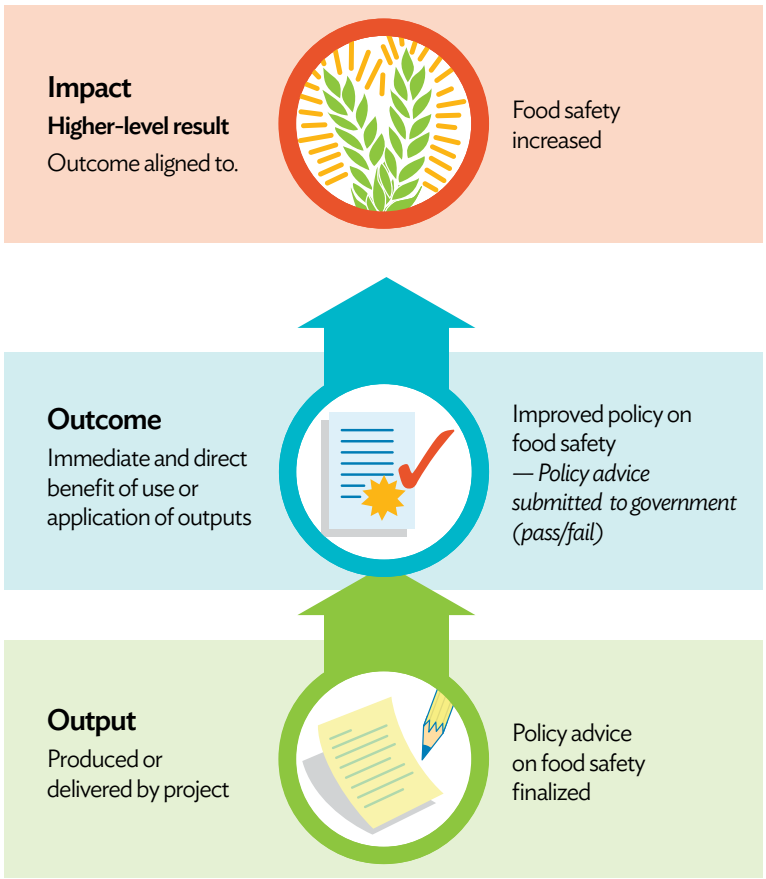
Figure 13: Options for Output-Level Integration of Transactional Technical Assistance into Design and Monitoring Framework of Associated Operation

OPTION 1	Results Chain	Performance indicators with Targets and Baselines
	Outputs	
	1. City A to city B highway constructed	1a. 58 km of national road from city A to city B constructed by 2022 (2018 baseline: 0)
	2. Institutional capacity of Ministry of Transport improved	**Under TRTA [####]** 2a. At least 100 Ministry of Transport staff (of which at least 40% female) with increased knowledge on integrating gender into transport and road safety design by 2021 (2018 baseline: 0) 2b. National guidelines on gender mainstreaming in transport projects published by 2022 (2018 baseline: no guidelines exist)

OPTION 2	Results Chain	Performance indicators with Targets and Baselines
	Outputs	By 2020:
	1. Pipeline of public-private partnership projects (PPP) supported and expanded	1a. Twelve national PPP projects approved by Ministry of Finance (2017 baseline: not approved) 1b. At least three PPP feasibility studies at the subnational level completed (2017 baseline: 0) **Under TRTA [####]** 1c. Manual on probity in PPP projects approved by the Ministry of Finance by 2021 (2017 baseline: no manual exists)

Source: Asian Development Bank Strategy, Policy and Review Department.

Figure 14: Technical Assistance Providing Policy and Technical Advice



Source: Asian Development Bank Strategy, Policy and Review Department.

development; and, promoting knowledge generation, dissemination, and use. A single TA project design may include one or more of these general focuses.

TA focusing on providing policy and technical advice is typically centered on the provision of advice, which recipient governments then consider for adoption and implementation. Figure 14 shows a typical results chain for TA providing policy and technical advice, with a leading outcome indicator measuring preliminary indications of use.

For TA providing capacity development, the results chain is significantly different depending on whether the recipient of capacity development is an organization or individuals (who may be from multiple organizations). The results chain will also differ depending on whether the capacity development involves assistance in implementation. This can be thought of as the difference between "hand over" with no assistance for implementation, and "hand-holding" where implementation is assisted on an ongoing basis. Training is usually "hand over," while implementation assistance is usually "hand-holding." Table 11 captures these differences.

Figure 15 shows a typical results chain for a TA providing capacity development, with a leading outcome indicator measuring likelihood of knowledge and skills application.

Some TA projects are concerned with knowledge generation, dissemination, and use, with respect to a variety of audiences. Figure 16 shows a typical results chain for knowledge dissemination through a conference, with a leading outcome indicator measuring likelihood of application of knowledge. Indicators for TA that supports research and development should be drawn from the ADB guidelines,

Table 11: Capacity Development Recipients and Implementation Support

Item	No Implementation Support (Hand Over)		With Implementation Support (Hand-Holding)	
	Outputs	**Outcome**	**Outputs**	**Outcome**
Organization recipient	Models, manuals, guidelines, regulations, processes, systems, plans, policies, etc., produced. Knowledge and skills enhanced	Models, manuals, etc., applied, implemented, undertaken, enacted, enforced, etc. Knowledge and skills applied	Models, manuals, etc., produced and implemented Knowledge and skills enhanced and applied	Overall performance of organization enhanced
Individual recipients	Knowledge and skills enhanced	Knowledge and skills applied	Knowledge and skills enhanced and applied	Overall performance of individuals enhanced

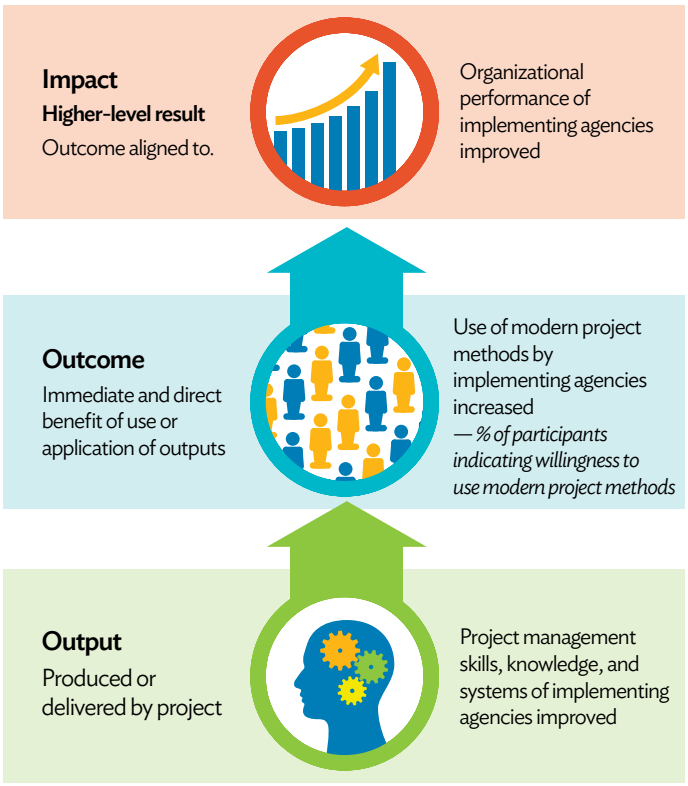
Source: Asian Development Bank Strategy, Policy and Review Department.

Crafting a Knowledge Management Results Framework.

Indicators for capacity development and knowledge-focused TA projects should measure knowledge and skills enhanced at the output level. Table 12 contains generic indicators of knowledge and skills enhancement.

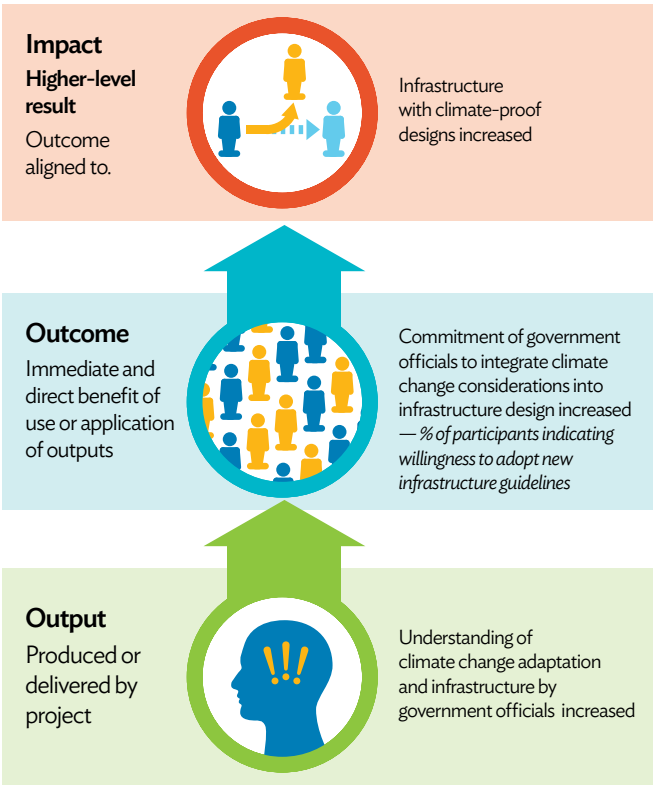
Technical assistance cluster. A TA cluster embodies the same types of results chain as its component TA projects, so it is not considered a distinct type of TA for DMF purposes. However, since a cluster is composed of subprojects, for KSTA, each subproject has a separate DMF. The relationships between the overall cluster results and those of each subproject follow the same link as MFFs and are either cluster output to subproject output (Figures 17 and 18) or cluster output to subproject outcome (Figure 19). Impacts are the same for the cluster and all subprojects. In Figure 17, a single cluster output is divided across multiple subprojects. In Figure 18, each cluster output is assigned to a separate subproject.

Figure 15: Technical Assistance Supporting Capacity Development



Source: Asian Development Bank Strategy, Policy and Review Department.

Figure 16: Technical Assistance Supporting Knowledge—Conference



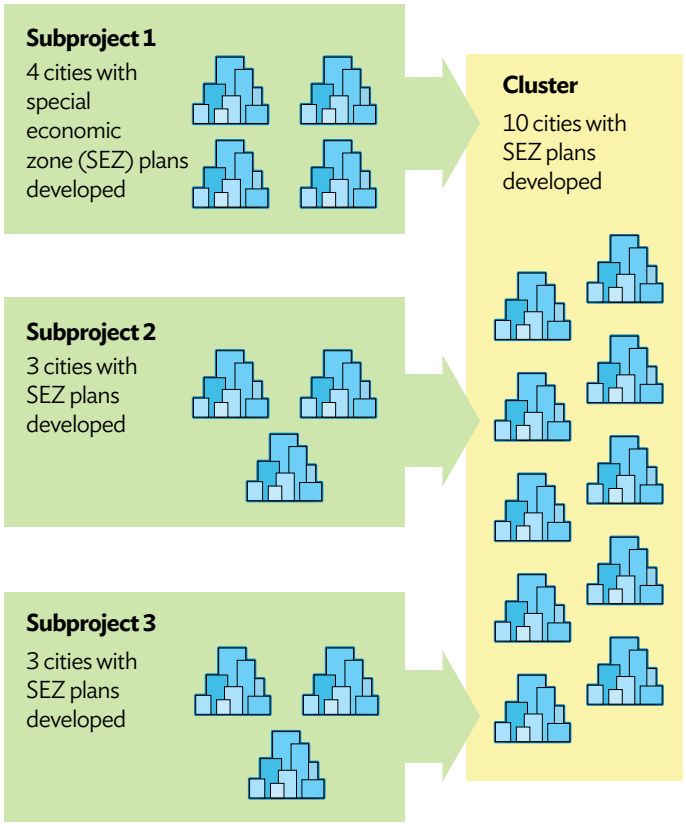
Source: Asian Development Bank Strategy, Policy and Review Department.

Table 12: Suggested Generic Indicators for Knowledge and Skills Enhancement

Do not use by itself—Only measures activity and not a meaningful result	Use—Measures learning
Number of training events or conferences Number of people trained or attending conference Number of person-days of training delivered	Number or percentage of participants passing test Number or percentage of participants reporting awareness, knowledge or skills in subject area(s) improved (ideally via a survey) Number or percentage of participants demonstrating improved awareness, knowledge or skills in subject area(s) (typically as assessed by the trainer or a subject-matter expert)

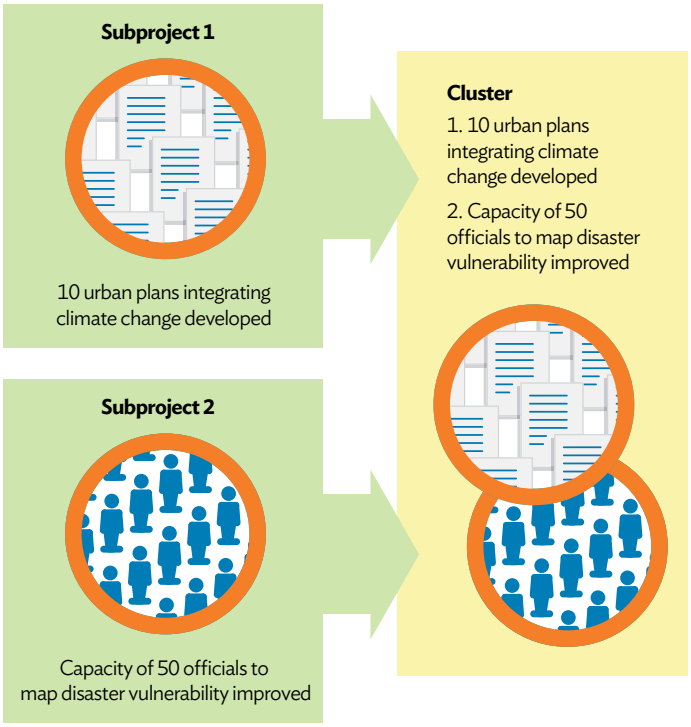
Source: Asian Development Bank Strategy, Policy and Review Department.

Figure 17: Cluster Technical Assistance Output to Subproject Output (additive)



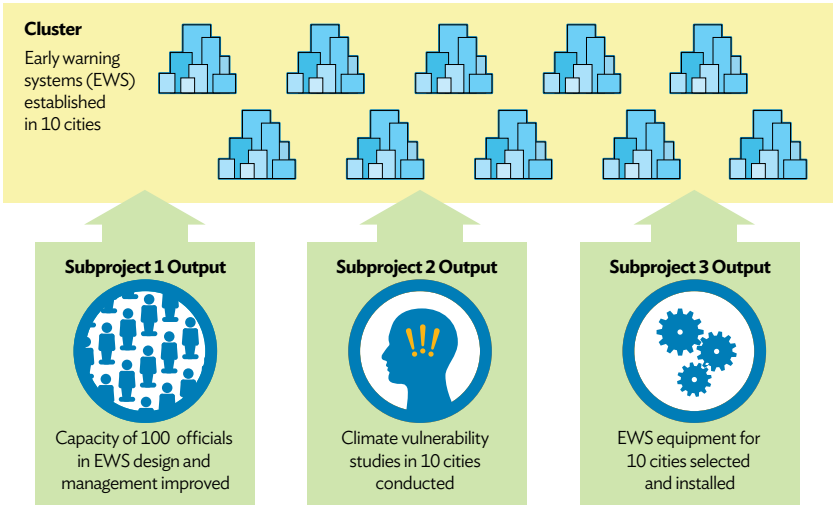
Source: Asian Development Bank Strategy, Policy and Review Department.

Figure 18: Cluster Outputs Assigned to Subprojects (additive)



Source: Asian Development Bank Strategy, Policy and Review Department.

Figure 19: Cluster Output to Subproject Outcome (causal)



Source: Asian Development Bank Strategy, Policy and Review Department.

APPENDIX
Design and Monitoring Framework Methodology

A. Overview of Design and Monitoring Framework Formulation Process

Projects define an agreement between borrowers, beneficiaries, and the Asian Development Bank (ADB) on project results and causal links between result levels, risks, and indicators and targets to measure performance. ADB's design and monitoring framework (DMF) approach distinguishes between the DMF design process and the DMF itself. The process refers to the steps involved in designing a project—analysis of stakeholders, problems, and results, and formulating results chains. The DMF provides the format in which the results of this process are summarized and presented. Not all projects will go through the project design process. However, if possible, project design should be validated through this type of process.

There are several reasons why the DMF is founded on a participatory approach. First, projects must be designed to respond to the needs of beneficiaries (people or organizations) in relevant and appropriate ways. Beneficiaries are the most knowledgeable about the problems they face and how to address their needs. Projects cannot be properly designed to address problems and provide solutions to meet needs without involving beneficiaries. Second, project stakeholders will be more committed to implementing a design they helped to create. Finally, a group process usually produces a higher-quality, more relevant DMF, as groups can make better decisions than any one individual. The participatory process could involve the borrower, executing and implementing agencies, other government organizations, civil society organizations, the private sector, beneficiaries, and the ADB project team and consultants.

The DMF formulation process is undertaken once a results area has been selected from the sector results framework. The basic steps are as follows:

(i) **Stakeholder analysis.** Identify and define the role of stakeholders who can significantly influence or are important in a particular context, e.g., a development problem or sector.

(ii) **Problem analysis.**

  (a) Identify the development problem or issue to be addressed.

  (b) Define the nature and underlying causes of the core problem.

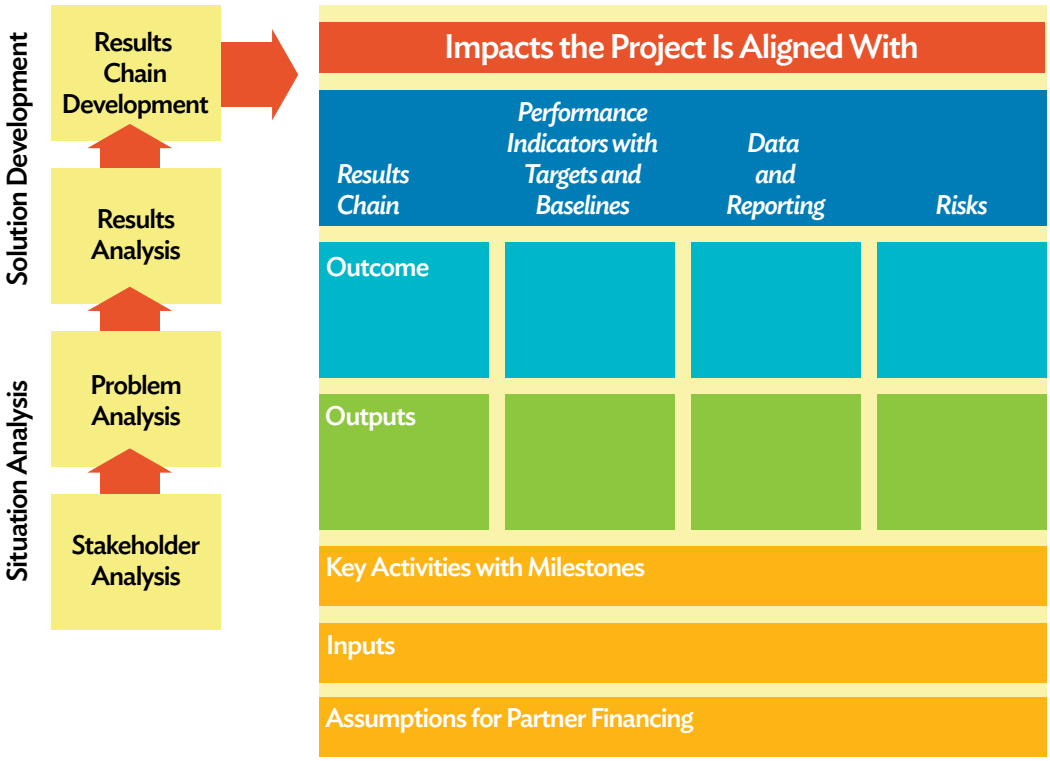
  (c) Clarify the effects of the problem.

(iii) **Results analysis.** Identify improvements that may be made within a given time frame and determine the scope of the proposed project.

(iv) **Results chain development.** Assess the feasibility of achieving each link in the results chain before deciding to include it in the project design.

Steps (i) and (ii) comprise the situation analysis, while steps (iii) and (iv) correspond to solution development (Figure A1). Once the results chain has been developed, the DMF content can be formulated and the project can be linked to a sector output.

Figure A1: The Process to Produce a Design and Monitoring Framework



Source: Asian Development Bank Strategy, Policy and Review Department.

For sovereign operations, the starting point of the analysis should be the summary sector assessment in the country partnership strategy and the country operations business plan country assistance results area table. The country operations business plan country assistance results area table contains government sector objectives. The results of the project should be closely aligned with one government sector objective. A project proponent should also be identified at this stage. Disaster response projects are exceptions to this process.

Nonsovereign operations will link to a sector summary found in the country partnership strategy or a government document. For technical assistance (TA) projects, the link may be to the summary sector assessment, a regional strategy, or another high-level strategy.

B. Situation Analysis

1. Stakeholder Analysis

Overview. The stakeholder analysis is the first diagnostic tool and the first step in DMF development. It plays an important role in identifying the development problem, and helps clarify which people and organizations are directly or indirectly involved in or affected by a specific development problem. It also helps identify which groups are supportive and which may oppose the project strategy and subsequently obstruct project implementation. The analysis provides a sound basis for taking appropriate actions to gain the support of opponents and to get key supporters more involved.

Stakeholder analysis is best done in workshop or brainstorming sessions. The process should include representatives of different stakeholder groups identified by the borrower, resident mission, and project team. Workshops should be led by an experienced facilitator. The composition of stakeholder groups depends on the nature of the project, and may include the borrower, executing agency, implementing agency, other government agencies, civil society organizations, private sector representatives, beneficiaries, and development partners. This tool increases the consensus around the eventual project by considering a broad range of different viewpoints. It also builds ownership on the part of the borrower, beneficiaries, and other stakeholders. It is particularly important to involve those who might have negative or opposing views on the development problem, and to ensure their concerns are reflected in the analysis. This will minimize disruption to implementation and helps to ensure ownership of the eventual project.

Stakeholder analysis is a dynamic process that provides a sound basis for the problem analysis. Stakeholder analysis should be updated and refined throughout the project cycle because it fulfills different functions at different stages. During problem identification, it serves as a preliminary mechanism to identify important and influential stakeholders and draws attention to how to involve them in the analytical and planning process. During project formulation, it supports design decisions and risk analysis.

Process. Initial stakeholder analysis should be carried out in a facilitated workshop or brainstorming session with a selection of stakeholders. The workshop can include a mixed group of stakeholders or representatives of a single group. If there are power dynamics that may prevent certain groups from expressing their views, then it is probably best to hold workshops with these groups separately, at least initially. The project proponent and the ADB mission leader may need to undertake the exercise separately, especially for groups opposed to resolving the potential problem. While the following steps are generic, they may not be able to be carried out formally with each stakeholder group.

Using the selected results area that the project will address, consider the potential geographic areas and beneficiaries that the project could assist. For example the project could consider "rural road quality improvement."

Prepare a blank stakeholder analysis table as follows.

Stakeholder Analysis Table

Stakeholder (1)	Stakeholder's Interest (2)	Perceived Problems (3)	Resources (4)	Mandate (5)

List all the stakeholders involved in the issue (in this case, "rural road transport"), grouping them by category (e.g., beneficiary groups, public sector organizations, civil society, private sector, development partner agencies) (column 1).

Discuss the interests of each group with reference to the issues the project will address. Record how and why they are involved (column 2).

Clarify how each group perceives problems associated with the issue as clearly as possible (column 3). The problem phrase should be a negative statement linked to the results area. If possible, express the problem in terms of the effect on the potential users or beneficiaries (e.g., for the issue of "rural road transport" the problem should be stated as "travel is long, uncomfortable, and expensive" [correct], rather than "no road maintenance system" [incorrect]).

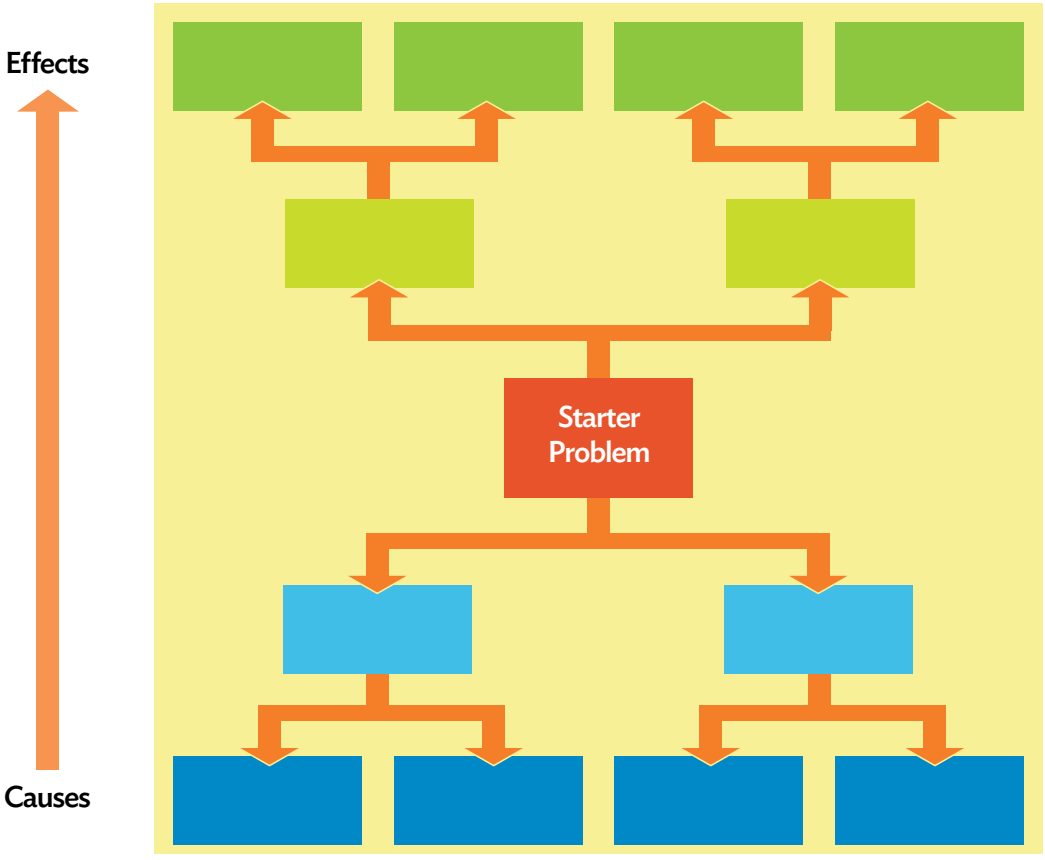
State the resources—financial and nonfinancial—put forward by each group in support of or in opposition to the problem (column 4). Formal organizations have both financial and nonfinancial resources, while population and civil society groups have predominantly nonfinancial resources. These can include labor, political influence, votes, readiness to strike, and public pressure.

List the mandates or formal authority that stakeholders must carry out in a particular function (column 5). Generally, population groups, such as low-income groups, farmers, and women, do not have mandates.

2. *Problem Analysis*

Overview. Problem analysis, through the development of a problem tree, is the second diagnostic tool applied in the situation analysis. This tool is used to (i) analyze the existing situation surrounding a given problem context, (ii) identify the major problems and constraints associated with the problem, and (iii) visualize the cause–effect relationship diagrammatically as a problem tree (Figure A2). The figures in these guidelines use vertical cause–effect logic, mirroring the vertical logic of the DMF.

Figure A2: Simplified Problem Tree



Source: Asian Development Bank Strategy, Policy and Review Department.

The participatory development of the project problem tree builds on the sector problem tree diagnosis and helps clarify the problem that the project will address. This is usually undertaken during concept paper preparation and the associated reconnaissance mission.

Process. The problem analysis is performed with the participation of the key stakeholder groups identified during the stakeholder analysis. It can be carried out in a half- to 1-day workshop, depending on the nature and complexity of the development problem. The problem analysis can also be performed in a series of smaller stakeholder workshops and the results of each merged into a comprehensive problem tree. It is the responsibility of the ADB mission leader to find a suitable way to involve the stakeholders effectively, taking into consideration the country and project context. Generally, the problem analysis is performed through the following steps.

(i) **Starter problem.** The starter problem is identified and written as a negative situation—not the absence of a solution. If possible, the starter problem should capture the way the problem is experienced by the beneficiary. For example,

- People—Travel in rural areas of the district is time consuming, uncomfortable, and expensive.
- Organization—The department is unable to fix potholes within a week of being notified.

The starter problem is at the center of the problem tree diagram (Figure 2). Stating the starter problem is neither simple nor obvious. It may take several sessions to agree on what constitutes the starter problem, and it is important that a consensus is reached. ADB mission leaders should refer to stakeholder analysis, in particular the column "perceived problems" to understand the situation and develop the discussion. The starter problem may have a different formulation, or be at different level, than the problem that was used in the stakeholder analysis.

(ii) **Direct causes.** Using vertical logic, the problems that are the direct causes of the starter problem are added to the problem tree under the starter problem. Only existing problems, not anticipated future problems, should be included.

(iii) **Direct causes to root causes.** Step (ii) is repeated using direct causes as problems, and the direct causes of each of these problems are determined and placed below. The process is continued until the analysis is exhausted and very specific root causes are identified. The number of problems at each level is not restricted, and is determined by the nature and complexity of the sector and development problem identified.

(iv) **Direct effects.** The direct effects of the starter problem are placed above the starter problem of the problem tree.

(v) **Direct effects to final effects.** Step (iv) is repeated using direct effects as problems, and the effects of each of these problems are determined and placed above each statement.

(vi) **Review and refine.** The problem tree and the interrelationship of problems, causes, and effects at different levels are analyzed and adjusted accordingly. To check the logic, the question "why" can be asked to move upward from one statement to the next.

Dos and Don'ts. When stating the problem, make sure that it is (i) stated as a negative condition (not the absence of a solution), (ii) owned by a stakeholder or group, and (iii) specific and clear. For example, "rural road maintenance by district road authorities does not meet national quality standards" is better than "poor quality of road maintenance."

Avoid the following when stating problems.

(i) "Lack of" problems; for example, "lack of bank branches in rural areas." This could mislead that physical branches are the only solution. Instead, specify "rural people do not have access to financial services." This leads to a more open discussion where mobile banking might be a solution, rather than bank branches.

(ii) Stating problems too general; for example, "corruption." Instead, specify the systems and conditions that divert funds.

(iii) Phrasing solutions as problems; for example, "no training." Specify the negative condition only; for example, "Ministry of Transport staff are unfamiliar with good practices for inclusive road design."

(iv) Grouping cause and effect together; use only one level per problem.

(v) Indirect cause–effect links; use only close and direct links.

Other issues to keep in mind when formulating the problem tree include the following.

(i) Make sure that the preconceived problems or solutions of particular stakeholders, including the ADB team, do not dominate the problem analysis.

(ii) During problem tree formulation, the same problem may be stated twice within the problem hierarchy. This should be seen as an indication that the problem analysis needs to be further refined to tighten the phrasing of problems so that they are different.

(iii) It is unlikely that the first formulation of the statement or sections of the problem tree will be correct. Problem statements may need factual verification. Cause–effect links may need verification through research or further consultation with stakeholders or technical experts. A second or third key problem may need to be added to the analysis to give the complete picture. Different stakeholders may also need to be consulted as new issues are uncovered during the analysis. Consequently, the starter problem is just that—a starting point. All parts of the tree should be revised during the process.

C. Solution Development

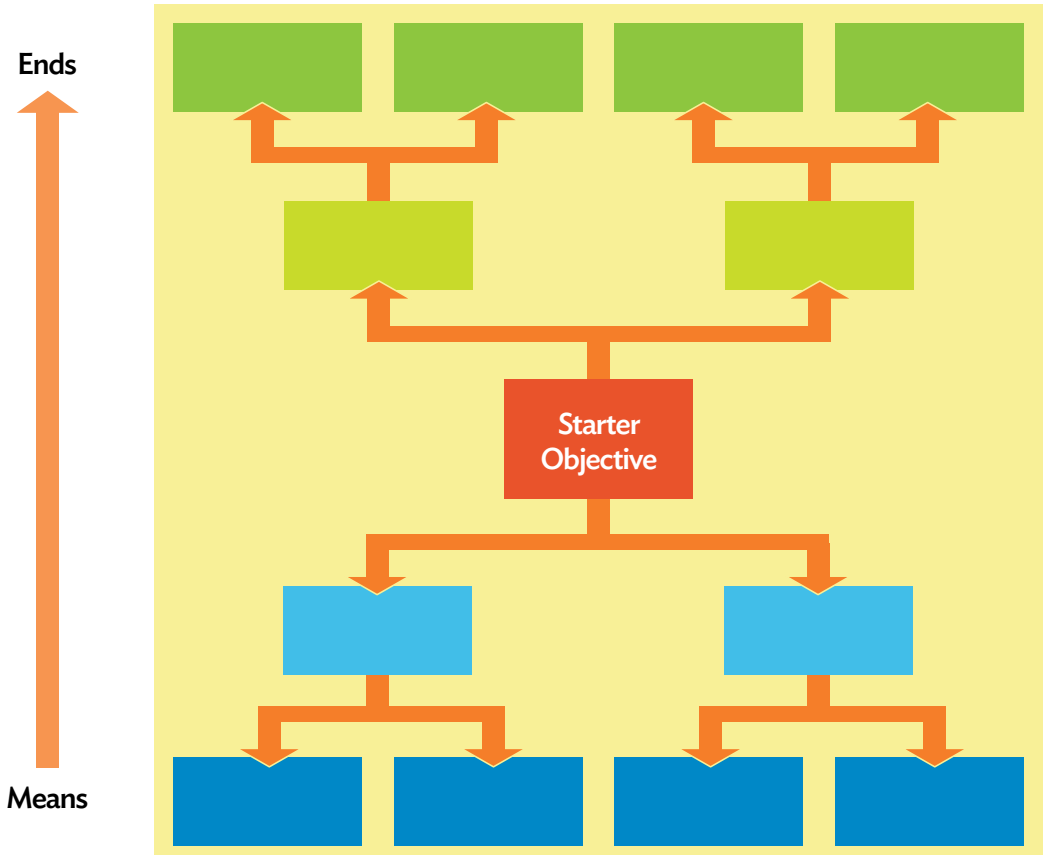
The situation analysis identified the starter problem using stakeholder analysis and used problem analysis to develop a problem tree. The next phase is to develop a solution by specifying the desired future situation. This is also referred to as the project identification phase. It relies on two analytical tools: results analysis and results chain development.

1. Results Analysis

In the results analysis, the problems identified in the problem tree are transformed into results—future solutions to the problem. The problem tree is based on the cause–effect relationship between the problems at different levels of the problem tree. Converting the problems into results produces the means–ends relationship between the results. Results analysis (i) describes a situation after the problems have been resolved, (ii) identifies means–ends relationships between positive statements, and (iii) visualizes these in a diagram referred to as a "results tree."

The results analysis gives a picture of the future changed state (Figure A3). It facilitates the identification of solutions that are implementable, draw on lessons learned, and are promising (innovations, and new approaches to old problems). The results analysis helps stakeholders document what will be required to achieve the changed state and what needs to go into planning the change.

Figure A3: Simplified Results Tree



Source: Asian Development Bank Strategy, Policy and Review Department.

Process. The results analysis and the formulation of the results tree involve the following steps.

(i) **Starter result.** The central problem is reformulated into a desirable condition, or "starter result." This is not simply a conversion of the negative expression into a positive one. If possible, the starter result should capture the solution the beneficiary requires. For example,

(a) People

- Problem: Travel in rural areas of the district is time consuming, uncomfortable, and expensive.
- Starter result: Mobility of people and goods in three rural districts areas enhanced. (Not: Rural road surfaces are smooth and drain well.)

(b) Organization

- Problem: The department is unable to fix potholes within a week of being notified.
- Starter result: Roads are maintained according to national standards. (Not: Potholes are fixed within a week.)

(ii) **Means to achieve.** The potential direct means for achieving the starter result are placed below it. This can involve analyzing problem statements and converting them into positive statements.

(iii) **Convert down to root causes.** Repeat step (ii) at the next level down in the problem tree. Determine the means for achieving each of the results above (direct means) and place them

below. The number of results is not restricted to the number of problems identified in the problem tree.

(iv) **Convert effects.** Above the starter result are placed positive statements that flow directly from the starter result. Each problem is examined and converted into a positive, desirable statement.

(v) **Convert up to final effects.** All of the negative effects of the starter problem are reformulated into positive statements, or results statements, up to the final effects.

(vi) **Review and revise.** All results statements are reviewed to ensure that all means–ends relationships are valid, none are missing, and the logic is complete.

Dos and Don'ts. The results statement should represent improved conditions and be realistically achievable based on information generated during the stakeholder analysis.

Other questions and issues to keep in mind when formulating the results tree are as follows.

(i) Has anything been left out in the problem analysis that will need to be addressed to achieve the desired improved condition?

(ii) Are there things the stakeholders are doing, and can do more of, to achieve the results?

(iii) What do the stakeholders need to improve the effectiveness of their solutions?

(iv) What are the possible risks and how can they be addressed?

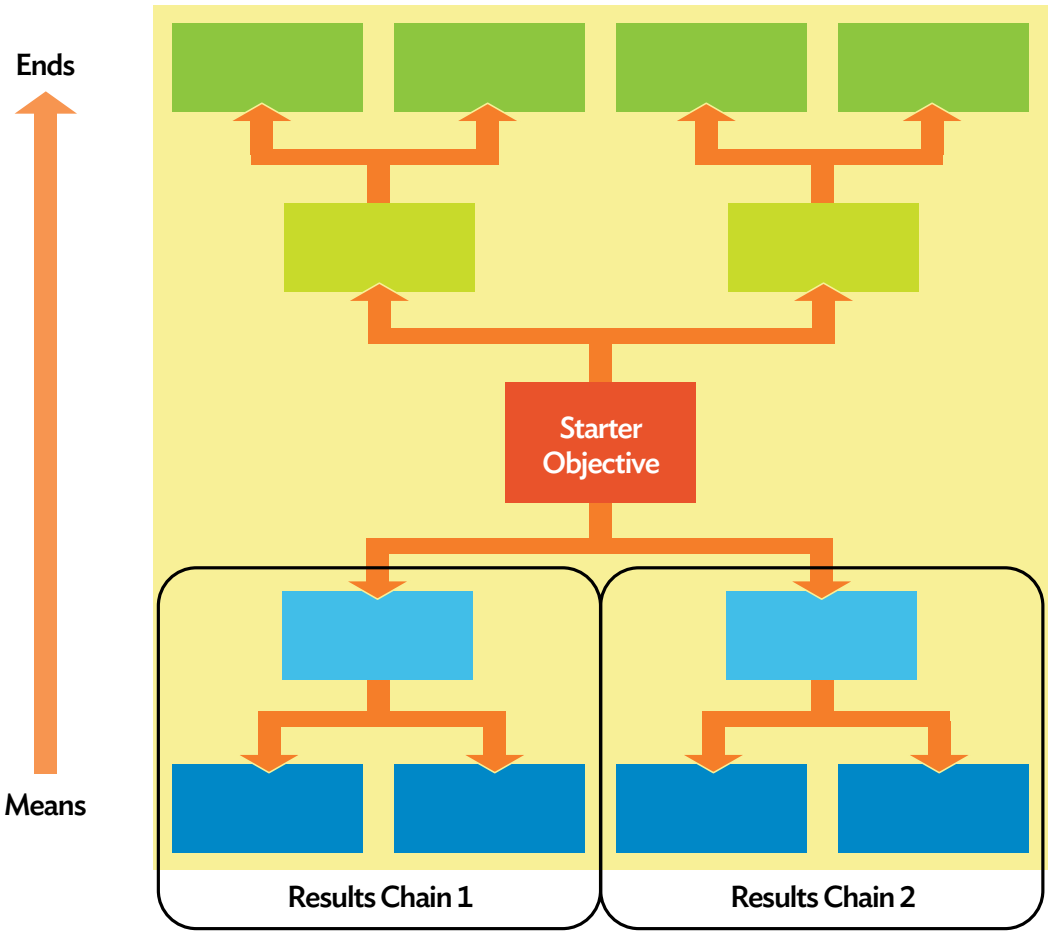
(v) Will the results have any negative effects? What other options could achieve the same improved condition?

Before finalizing the design, clarify and resolve, to the extent possible, a range of open-ended questions that may arise about the political, socioeconomic, environmental, or technical feasibility of the results.

2. Results Chain Development

The purpose of results chain development is to agree on a project strategy and define the outcome and outputs that will be included in the project (Figure A4). Bear in mind that while the ADB DMF consists of two results levels plus impact, in reality the cause–effect relationships form a continuum of results. The results chain analysis converts the continuum of results in the results tree into a two-level DMF results chain plus impact. Important conditions, events, or actions that do not form part of the project's results chain but would adversely affect achievement of results and are outside the project's control may become risks. The project proponent needs to be clear at the outset of this stage what can and cannot form part of their project. They also need to be clear about what outputs they can and cannot deliver. Other stakeholders with project implementation capacity also need to be clear on these issues.

Figure A4: Simplified Results Chain Development



Source: Asian Development Bank Strategy, Policy and Review Department.

The results chain is developed as follows.

(i) **Select a preliminary project outcome.** Referring to the characteristics of an outcome defined in section II of these guidelines, select a result as the preliminary outcome statement. Note that this does not have to be the original starter problem turned into starter result. That statement might be too high on the results chain for the project proponent. A result at a lower level in the results tree may be more appropriate as an outcome. Only one outcome should be identified for each project.

(ii) **Identify results chains below outcome.** Highlight the major means–ends sections of the results tree that describe the main strategies to achieve the outcome. These are the cause–effect paths that will be needed for outcome achievement. Each results chain should be thoroughly discussed with the appropriate stakeholders. Each stakeholder group, the executing agency, and the project team need to clearly understand how moving forward with a particular results chain will affect them—directly or indirectly. During this analysis, it is essential to consider whether the results chain is likely to lead to the project outcome, taking into account the available resources, capacities of the executing agency, interests of the beneficiaries, political feasibility, and other considerations affecting successful implementation of the results chain.

(iii) **Identify results chain owners.** Results chain owners are stakeholders that have the most influence on, and vested interest in, achieving changes in the results chains. They may be (a) the holders of the official mandate for improving undesirable conditions; (b) stakeholder groups that need to coordinate their regular tasks and resources to achieve a change; or (c) individuals who wield official or unofficial power to advocate for, champion, or lead a change process. This information should be available from the stakeholder analysis. The project proponent is one of the main owners of the results chains in the analysis. They should identify which results chains include outputs that they can deliver. Stakeholders with project implementation capacity can also identify results chains they can take on, based on outputs that they can deliver. Other stakeholders, especially the beneficiaries, may also own parts of the analysis.

(iv) **Reassess outcome.** The outcome of the project is confirmed by analyzing the results chains and owners. Keep in mind that parallel financing in line with the results of the project can lead to the selection of an outcome that is higher on the results chain. If a results chain owner is unable to commit to its achievement, consider whether the strategy for achieving the results chain should be improved so the results chain owner stands a better chance of success. Solutions may come from expert knowledge, best practices, and lessons learned from other projects or programs. If the results chain owner accepts this new strategy, then this results chain branch is included in the project's scope. If the results chain owner cannot accept the strategy, then these results chains will have to be excluded from the project, and the outcome should be revised and the project scope narrowed to exclude the results chain branch.

(v) **Identify outputs.** The project proponent identifies the outputs they can produce or deliver that have a direct cause–effect relationship with the outcome statement. Other stakeholders that can deliver outputs do the same.

(vi) **Confirm project scope.** Delineate the boundaries of the project by identifying which clusters of outputs will be taken on by the project proponent. If other outputs are being "owned" by other stakeholders, then identify those as well. This can be done on the results tree by drawing a line around the different projects, indicating clusters of outputs that lead to a mutual outcome. (It may be the case that multiple stakeholders choose different outcomes and therefore projects that do not converge on the same outcome.)

(vii) **Confirm ADB project selection criteria.** These may be economic, financial, socioeconomic, environmental, technical, and institutional, including ADB's safeguards and other applicable ADB policies. Add or omit criteria as necessary.

(viii) **Conduct assessment and feasibility studies.** Carry out necessary assessment analysis and feasibility studies during the project preparation phase.

(ix) **Finalize project.** Following the review of the assessment and feasibility studies, decide on the most appropriate strategies and results chain to be pursued under the proposed project. This last step is usually taken during the latter part of the project preparation phase. The collective involvement of the borrower, executing agency, other key stakeholders (as appropriate), and ADB is critical at this stage. The final decision should be based on consensus to ensure ownership of the proposed project and to maximize the probability of achieving the desired results.

When selecting results chains that will make up the project, be aware that (i) the decision to pursue just one or a combination of results chains through a single project or program will depend on how closely they depend on each other for achieving the desired outcome; and (ii) if agreement cannot be reached on how the project design should be formulated, then it may be necessary to return to the results tree, and perhaps even the problem tree, and rethink them.

Other issues to keep in mind when finalizing the project include the following.

(i) Does it conform to local laws, policies, and procedures?

(ii) Are the requisite expertise and capacity available to carry it out?

(iii) Is it affordable and cost-effective, and is the necessary financing available?

(iv) Is it socially acceptable to the target beneficiaries?

(v) Is it likely to result in any negative externalities that will require mitigation?

(vi) Is it supported by other investments and projects that are ongoing or planned by the government, ADB, or other organizations?

(vii) What are the major risks, and how can they be mitigated?

D. Completing the Design and Monitoring Framework

Once the results chain analysis has been finished, the DMF template can be completed using the following steps.

(i) **Refine outcome statement.** The starting point for preparing the DMF is the outcome statement from the completed results chain analysis. Adjust the wording to conform to ADB results statement articulation. Ensure the statement captures the planned change.

(ii) **Clarify impact statements.** Clarify the impact statements the project will be aligned with. The statements should be sourced externally from a national plan or sector strategy and can be reformulated as needed.

(iii) **Decide on outputs.** Decide which outputs are necessary and sufficient to achieve the project outcome. Revise the results chain logic. Errors in the logic may only be evident once the levels of the results chain have been specified. Check that there is a cause–effect relationship between output and outcome.

(iv) **Include risks.** Add risks for the two levels of the results chain (inputs and activities to outputs, outputs to outcome). The problem tree, results tree, and results chain analysis are sources of external factors that could be listed as risks. Revise the results chain logic. Risks fill in the cause–effect gaps between results levels. Completing the risks may allow results to be specified at a higher level leading to changes in the results chain logic.

(v) **Select performance indicators and targets.** Select indicators for each result, and devise targets for each indicator. Number each indicator to correspond to the result it is measuring. Revise the results chain logic. The selection of indicators and targets may lead to reconsideration of the results chain, particularly the outcome. The process of trying to set an outcome target that is achievable by the end of the project may lead to restatement of the outcome, with changes to the outputs and risks.

(vi) **List data collection and reporting mechanisms.** For each indicator, list the data collection methods for primary data collection and the reporting mechanisms for secondary data. Number each method or mechanism to correspond to the indicator it is measuring.

(vii) **Determine activities.** Determine the key activities necessary to produce the output. Do this sequentially for each output and number them accordingly. Agree on milestones for each activity and include them in brackets with the activities.

(viii) **Revise the results chain logic.** Consideration of the activities may lead to adjustment of the outputs. This may then require that the results chain is reexamined and adjusted.

(ix) **List inputs.** List the inputs required to carry out the activities by source (e.g., ADB, government, and beneficiaries). Do not repeat the details provided in the cost and financing plans.

(x) **List assumptions for partner financing.** List the outputs necessary to reach the DMF outcome that will not be administered by ADB.

Guidelines for Preparing a Design and Monitoring Framework

These guidelines describe how to develop a design and monitoring framework (DMF) for an Asian Development Bank (ADB) project. The DMF communicates the planned performance of a project. As a link between project design, implementation, and evaluation, it provides the basis for the project performance management system. The purpose of these guidelines is to help improve the quality and consistency of DMFs across ADB.

About the Asian Development Bank

ADB is committed to achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty. Established in 1966, it is owned by 67 members—48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

ADB

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