COST ESTIMATION IN SOVEREIGN OPERATIONS

TECHNICAL GUIDANCE NOTE

FEBRUARY 2022

ASIAN DEVELOPMENT BANK

ADB

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ABOUT THIS PUBLICATION

This guidance note is issued by the Procurement, Portfolio, and Financial Management Department of the Asian Development Bank (ADB) to assist ADB staff and consultants and staff of executing and implementing agencies in preparing, updating, and presenting cost estimates and financing plans for sovereign loans and grants financed or administered by ADB.

The following is a list of guidance materials on financial due diligence issued previously by PPFD, showing the phases in the ADB project cycle to which they apply.

	Year Issued/ Updated	Processing			Implementation	Project Closing
		Concept Stage	Fact Finding	RRP	Reporting	PCR
Cost Estimation in Sovereign Operations	2022	✓	✓	✓	✓	✓
Financial Analysis and Evaluation	2019	✓	✓	✓	✓	✓
Financial Due Diligence for Financial Intermediaries	2018	✓	✓	✓	✗	✗
Financial Management Assessment	2015	✓	✓	✓	✗	✗
Guidance on Using the APFS Checklist	2015	✗	✗	✗	✓	✓
Project Financial Reporting and Auditing	2015	✗	✗	✓	✓	✓

APFS = audited project financial statement, PCR = project completion report, RRP = report and recommendation of the President.

Objective

This guidance note describes and explains the process of preparing and updating cost estimates for sovereign operations financed with ADB loans or grants, or administered by ADB.

Living Document

This guidance note will be revised as needed. Various ADB policies and regulations (operations manual, project administration instructions, staff instructions) referred to in this guidance note are subject to revision from time to time. The reader is advised to consult the latest version of those documents.

The Reader

Readers are expected to use this guidance note to suit their needs. It is assumed throughout that the reader is a professional with basic financial knowledge, who is involved in activities supported wholly or in part by ADB-financed or ADB-administered sovereign operations.

FAQs

Frequently asked questions, clarifications, examples, additional information, links to training, and other useful resources are available on the ADB website.

Legal Concerns and Order of Priority

Legal agreements govern the legal relationship between borrowers and ADB. If there is any discrepancy between this guidance note and legal agreements, the latter will prevail.

ACKNOWLEDGMENTS

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ABBREVIATIONS

ADB	–	Asian Development Bank
APFS	–	audited project financial statement
COL	–	concessional OCR lending
DMC	–	developing member country
ERCD	–	Economic Research and Regional Cooperation Department, ADB
FCDI	–	financial charges during implementation
IDC	–	interest during construction
LIBOR	–	London interbank offered rate
MFF	–	multitranche financing facility
OCR	–	ordinary capital resources
PAI	–	project administration instruction
PAM	–	project administration manual
PFR	–	periodic financing request
PPP	–	purchasing power parity
RBL	–	results-based lending
RRP	–	report and recommendation of the President
TA	–	technical assistance

EXECUTIVE SUMMARY

The 1965 Agreement Establishing the Asian Development Bank (ADB) requires ADB to "take the necessary measures to ensure that the proceeds of any loan made, guaranteed or participated in by the Bank are used only for the purposes for which the loan was granted and with due attention to considerations of economy and efficiency" (Article 14.11). To make certain that ADB operations meet this mandate and support the broader objectives of poverty reduction, inclusive economic growth, environmental sustainability, and regional integration, robust cost estimates must be prepared, presented, and updated during project processing. Robust cost estimates provide an objective basis for reaching sound investment decisions, including assessing whether adequate funds are available for the investment and whether the financial benefits exceed the expected and incurred costs.

As a guiding principle, ultimate ownership of the cost estimates should remain with the borrower. Cost estimates are prepared during the concept stage, refined throughout processing, updated during implementation, and validated at completion. All costs involved in delivering the expected outputs of the project as defined in the legal agreement should be considered.

Professional and unbiased judgment should be employed when estimating project costs. During processing, there is a normal tendency to overestimate project costs by inflating physical or price contingencies. Such overestimates limit ADB resources for other projects and may impose unneeded commitment charges on the borrower. Underestimated costs, on the other hand, may lead to insufficient funding, such that the project scope has to be curtailed or efforts must be made to find additional financing sources during implementation. Cost estimation requires the exercise of a high degree of country, sector, and project experience, as well as skill and professional judgment, and the integration of inputs from technical, safeguard, and financial experts.

The preparation of cost estimates varies by lending modality. Investment projects, which account for a majority of ADB operations, call for detailed cost estimates for effective project management. For results-based lending programs, a program-level expenditure framework covering all expenditures to be incurred within the program boundary must be drawn up. But cost estimates are not a requirement for financial intermediation loans, as the actual investment cost is not known at the time of approval. Nor are they required for policy-based loans, whose size is determined by development financing needs.

During implementation, costs should be compared with appraisal estimates to detect significant variations. Cost estimates are dynamic, and must be reviewed and updated at least once a year, and during the midterm review. From these reviews, savings that may be canceled or used to expand the project scope, or additional financing that may be needed to implement the entire project, can be identified.

Cost estimates should be validated after the project is completed. The actual project cost should be compared with the cost at appraisal, taking into account any approved revisions during implementation. Lessons should be drawn from this assessment for improving the cost estimation process in future projects.

A financing plan should be prepared. It should cover all sources—including direct funding from ADB, as well as ADB-administered (partially or fully) cofinancing and counterpart financing, but excluding cofinancing not administered by ADB. The total financing plan should match the total project cost, including financial charges during implementation.

Preparing, updating, and monitoring robust cost estimates is an integral part of good project design and management, and will support the achievement of Strategy 2030's seven operational priorities across all sectors. Financial sustainability is more likely if the projects are implemented as designed. The designed services can be delivered to the beneficiary population over the economic life of the investment, and the intended development impact can be achieved.

I. Introduction

1.1 Strategy 2030 of the Asian Development Bank (ADB) looks ahead to sustained ADB efforts to put an end to extreme poverty, and expand its vision of achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific.[1] One of the seven operational priorities of Strategy 2030 is strengthening governance and institutional capacity in ADB's developing member countries (DMCs) (Operational Priority 6, or OP6) to promote the creation of an enabling environment for sustainable growth.

1.2 OP6 mandates ADB to support executing and implementing agencies in strengthening their capacity to plan, design, finance, and implement ADB projects. Preparing and updating cost estimates are key steps in the due diligence process of assessing and monitoring the expenditures incurred and financing needed to meet the project development objectives. Robust cost estimates help ensure that ADB's interventions are cost effective and contribute efficiently to its broad development objectives as well as those of its DMCs.

1.3 This guidance note is intended to guide ADB staff, consultants, executing agencies, and implementing agencies in preparing, presenting, and updating cost estimates and financing plans for ADB-financed projects. The approach and methodology presented on these pages is based on international good practice and, if consistently applied, should lead to more robust cost estimates and facilitate the effective monitoring of ADB-financed projects.[2]

1.4 This guidance note applies to sovereign projects financed or administered by ADB through any combination of loans, grants, and technical assistance. It does not apply to policy-based loans, which provide budget support for development expenditure and do not require cost estimates. Professional judgment must be exercised when preparing project cost estimates, and the principles laid out in this guidance note may be adapted when developing, presenting, and monitoring cost estimates for any project. However, specialist guidance should be sought where necessary—for instance, in defining project cost categories, determining appropriate physical and price contingencies, or dealing with other complex situations. **Appendix 1** contains a glossary of major terms used in this guidance note.

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1 ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific*. Manila.

2 ADB. 2014. Financial Management, Cost Estimates, Financial Analysis, and Financial Performance Indicators. *Operations Manual*. OM G2. Manila.

II. Cost Estimates: Guiding Principles and Structure

A. Cost Estimates

2.1 **A cost estimate is an approximation of a project's probable cost.** Cost estimates are prepared at the concept stage, refined throughout processing, updated during implementation, and validated at completion (see Figure 1).[3] The cost estimate should identify the cost components needed to support effective project management (including monitoring of costs and physical progress during implementation).

Figure 1: Evolution of Cost Estimates during the Project Life Cycle

Project Identification	Project Concept	Processing/Due Diligence	Implementation	Completion
• Prepare ballpark estimate of costs and financing requirements	• Prepare initial cost estimate and financing requirements	• Prepare and review feasibility study • Identify cost structure (outputs, components, categories) • Develop procurement plan • Estimate contingencies and financial charges during implementation • Refine cost estimates and financing arrangements	• Update procurement plan • Monitor and report actual costs against estimates • Update cost estimates and financing arrangements	• Assess actual costs against cost estimates (accuracy and efficiency)

Source: Asian Development Bank.

[3] The corresponding financing plan is prepared at the concept stage, and refined during the processing and due diligence phases. However, financing plans are revised only after cost savings or additional financing proposals are approved.

B. Guiding Principles

2.2 **Coverage.** The cost estimate for a project is an estimate of the total cost to be incurred in delivering all outputs defined in the legal agreement. It should exclude the cost of outputs covered entirely through cofinancing that is not administered by ADB, unless those outputs are part of the project scope in the legal agreement.

2.3 **Ownership.** While the cost estimates are prepared with the support of the project team and consultants, ultimate ownership of the cost estimates remains with the borrower. Project cost estimates should be prepared from the perspective of the project and be acceptable to the borrower. They should be sufficiently detailed to facilitate project financing control and enable effective implementation and monitoring.

2.4 **Local currency basis.** Detailed cost estimates should be prepared in local currency units.[4] Budget allocations in a country are denominated in the local currency, and borrowers can allocate funds in the budget for the project only if the amounts are similarly denominated. Estimating costs in the local currency will also facilitate project monitoring and supervision, as the accounting systems and financial reports of executing/implementing agencies are usually maintained in local currency units. Moreover, the costs must be expressed in local currency for incorporation into the economic analysis, the project cost–benefit analysis (if required), and the project financial projections. Project costs are translated into United States (US) dollar equivalents,[5] summarized, and presented in the report and recommendation of the President (RRP) and linked documents.[6]

2.5 **Use of executing/implementing agency's accounting systems.** When determining how project cost estimates are to be structured and presented in the RRP, the accounting structure of each executing/implementing agency and its capabilities for accurate reporting and audit of project accounts must be

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[4] Detailed cost estimates may need to be stated in foreign currency units (e.g., United States [US] dollars) in exceptional situations, such as the following: (i) costs are expected to be mainly direct or indirect foreign exchange costs; (ii) there is no reliable and accurate reference domestic price (e.g., for new technologies); (iii) market exchange rates are substantially different from official exchange rates; or (iv) domestic inflation rates are high, unstable, and unpredictable, and exchange rates are difficult to estimate with confidence.

[5] A majority of ADB loans are denominated in US dollars. However, if the ADB loan is made in another currency (e.g., euro or yen), the cost estimates should be presented in the loan currency, and not in US dollars. For guidance on the exchange rates to be used in the conversion from foreign to local currency, refer to Section IIG of this guidance note.

[6] In this document, unless the context requires otherwise, "RRP" also refers to periodic financing requests or other documents seeking approval for ADB financing from the Board or Management, such as technical assistance reports.

considered. Project expenditure categories must conform to the agency's regular chart of accounts and accounting system. The chart of accounts may have to be modified for the proper accounting of project expenditures. The processing team should discuss these requirements with the financial management team of each executing/implementing agency, and develop a mapping table linking the individual heads of accounts from each chart of accounts to the project expenditure categories in the cost estimates.

2.6 **Financial reporting and aggregate project financial data.** To facilitate comparability between cost estimates in the project administration manual (PAM) and in financial reports during implementation, project financial reporting (whether in periodic progress reports or in annual project financial statements) should adopt the same cost categories as those used in the PAM. Where there is more than one executing/implementing agency, each one should adopt these same cost categories in its project financial reports, and the borrower should obtain the financial reports of all executing/implementing agencies to arrive at the aggregate project financial data for submission to ADB.

2.7 **Relevance of accounting basis.** The costs incurred during implementation and reported in the audited project financial statements (APFSs) should be prepared on the same basis as that used in developing the cost estimates in the RRP and the PAM.[7] The basis of accounting (cash or accrual) adopted by the executing/implementing agency must be considered. If the cash basis of accounting is used, only transactions involving cash payments and receipts will be recognized and accounted. In-kind contributions (e.g., land or assets contributed by the government, exempted taxes and duties) cannot be reflected in the accounts as these are noncash transactions. In such cases, the value of noncash costs should be estimated and reported in the RRP and the PAM, together with the basis of estimation. During implementation, the actual value of these noncash transactions should be reported in notes to the financial statements, following the same basis of estimation as that used at appraisal. However, if the executing/implementing agency adopts the accrual basis, noncash transactions can be accounted through journal entries.

2.8 **Foreign exchange and local currency costs.** Project cost estimates should differentiate between foreign exchange and local currency costs,[8] as (i) prices are likely to vary between local and international markets, considering variations in tax rates between import and local sales taxes, freight, customs, etc.; (ii) price contingencies are computed differently, according to the market

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[7] Results-based loans have project implementation documents, instead of a PAM.

[8] This is a continuation of current practice. The detailed cost estimate model should provide details of foreign exchange and local currency costs. This breakdown is not required to be presented in the RRP, but only in the PAM table that shows detailed cost estimates by expenditure category. Samples of detailed cost estimate models are available on ADB's Financial Management Resources webpage.

of procurement (local or foreign); (iii) having on hand the detailed assumptions behind the cost estimates will facilitate project management; and (iv) this approach could highlight the susceptibility of the project to foreign exchange risks during implementation.

2.9 **Timeliness.** If the cost estimates are prepared

- less than 6 months before the project is presented to the ADB Management or Board, the cost estimates are acceptable;
- 6–12 months before presentation, the cost estimates should be revised through indexation,[9] unless the project team concludes that the base cost has not changed materially in the interval; or
- more than 12 months before presentation, the cost estimates should be reappraised, unless there is evidence that the base cost has not changed materially in the interval.

2.10 **Link to the procurement plan.** To the extent possible, the preparation of cost estimates for the part under ADB financing should be based on the procurement plan for the project. The timing of contract awards, expected delivery of goods and services, and disbursements to suppliers and contractors should be considered in preparing the cost estimates.

C. Main Project Cost Elements

2.11 Cost estimates comprise the following:

- **Base cost.** Prepared on the basis of a detailed estimate of inputs, by expenditure category for each output/component.
- **Contingencies.** Comprising separate physical and price contingency allowances. Physical contingencies are computed as a percentage of the base cost. Price contingencies are computed by applying cumulative cost escalation factors to the sum of the base cost and physical contingencies.
- **Financial charges during implementation.** Based on interest and other financing charges applicable to all financing sources, including the ADB loan.

[9] An escalation factor, reflecting actual price changes since the date of the cost estimates, should be applied to the base cost estimates.

D. Base Cost Estimates

2.12 The base cost is computed for each project output by expenditure category and by implementing agency, and stated in local currency units at prices in effect on the date of estimation. It should include all project-related costs regardless of financing source or eligibility for ADB financing, but exclude physical or price contingencies, which are estimated separately.

2.13 The detailed base cost estimates should be computed by multiplying the quantitative estimates of project inputs by the estimated unit cost for each line item of cost. The quantity of each input should be based on the highest probability estimate. Allowances for increases above this most likely scenario are to be incorporated into the physical contingency. In some cases, inputs within the same expenditure category can be grouped for purposes of estimating unit quantities and costs. For example, the unit cost of a water transmission main, expressed as a cost per meter of constructed pipeline, might be estimated on an aggregate basis comprising the cost of goods, equipment, and labor, and then multiplied by the length of the pipeline to derive the base cost. **Appendix 2** presents an example of an extract from a detailed cost estimate model.

2.14 For each output and expenditure category, the base cost should be allocated over the implementation period, in keeping with realistic expectations of when the expenditure is likely to be incurred.

Components of Base Cost

2.15 Examples of cost categories for an infrastructure project, and of the types of items that would be included under each category, can be found in **Appendix 3**. In addition, the following should be considered in preparing the base cost:

- **Incremental recurrent costs.** Depending on the nature of the project and the desired outcomes, incremental costs of a recurrent nature may be critical elements of total project costs. Among these costs are salaries of government employees assigned exclusively to the project,[10] textbook or medicine purchases, and project management office administrative costs. Recurrent costs should be itemized in the detailed cost estimates, estimated on the basis of price and quantity, and presented as a separate line item in the detailed cost estimates.
- **Audit costs.** The estimated costs and financing arrangements for the audit of project financial statements and other financial reports required under ADB-financed projects should be included in the

[10] Project cost estimates are inclusive and should reflect all incremental costs associated with the project. This does not mean, however, that all project costs are eligible for ADB financing.

detailed cost estimates. These costs will normally be determined by reference to market rates. ADB's project team staff will review the reasonableness of the estimated cost.

- **Taxes and duties.** The base cost estimates should include taxes and duties. Taxes and duties within the borrower's territory may be payable or exempt. Exempt taxes should be included in cost and financing tables only if the executing/implementing agency follows the accrual basis of accounting and its accounting system is capable of recording and presenting these taxes in the annual project financial statements. If the accounting system is on a cash basis, exempt taxes should be reported through a footnote, as the accounting system will not be able to recognize and account for a noncash transaction during implementation. The amount of taxes and duties included in the base cost estimate should be identified separately in a footnote (clearly identifying any exempt taxes), to facilitate project economic analysis and an assessment of the scale and reasonableness of taxes and duties charged to the project. Taxes and duties include excise tax, sales tax, value-added tax (VAT), goods and services tax, and import and customs duties. Taxes and duties are estimated by applying prevailing tax rates to the related cost categories. Operations Manual J6 requires local taxes and duties to be included in the total project cost.[11]
- **Project management, capacity development, and consulting services.** Project management, capacity development, consulting services, and institutional development costs should be estimated on the same unit cost and quantity basis as that used for capital goods, such as civil works and equipment. Input quantities are normally estimated in terms of person-months by individual position or by skill group. Supporting costs, such as airfare, per diems, local travel, office equipment, office supplies, and communications, would then be estimated in relation to labor inputs or to the duration of the services. For example, per diems are estimated in relation to person-month inputs, airfare is based on travel requirements, and office supplies, communications, and other costs may be estimated monthly over the duration of the services. For services requiring international expertise, airfare and per diems may be quite substantial. Moreover, there can be large variations in airfare depending on the country of residence of the international experts. Airfare should be based on the maximum that could realistically be expected. For per diems, ADB's standard rates should be assumed.[12]

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11 ADB. 2017. Staff Instruction on Business Processes for Loan Disbursement. *Operations Manual*. OM J6. Manila.

12 The ADB project team should provide details on standard per diem rates.

- **Retroactive financing of project costs.** Certain project costs may be financed retroactively by ADB. Costs proposed for retroactive financing should be included in the cost estimates.[13]
- **In-kind contributions.** Some projects have expenditures that are incurred and financed in kind (e.g., labor for the construction of small-scale irrigation works, or land contributed by the government). In-kind contributions should be included in the cost estimates only if these can be reliably identified, measured, and recorded. Where cash-based accounting is used, the accounting system does not recognize noncash transactions, and the project financial statements would therefore not reflect in-kind contributions. In such cases, or where there is subjectivity in the measurement of in-kind contributions, such contributions should be included as a footnote in the PAM cost tables. However, if the accrual basis of accounting is used, in-kind contributions can be included in the cost tables and shown as a separate category or subcategory within the detailed cost estimates in the PAM. The underlying assumptions should be explained clearly in the PAM.
- **Safeguard-related costs.** ADB's Safeguard Policy Statement requires the inclusion of budgets in the relevant safeguard planning documents, such as environmental management plans, resettlement plans, and indigenous people's development plans.[14] These safeguard-related costs should be taken into account in the project cost estimates. The costs of environmental management, impact mitigation measures, and monitoring measures, for instance, are identified in environmental management plans and are often covered by construction contracts, otherwise they should be included separately in the project cost estimates.
- **Attributable costs.** These are costs such as transport, storage, staff, and operational expenditure needed to achieve the output/outcome of the project but common to a broader government program/project of which the ADB-supported project is a part.[15] Attributable costs that are defined as part of an output, and funded by ADB or by the government counterpart, should be included in the project cost estimates.

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13 For details on retroactive financing, refer to ADB. 2017. Retroactive Financing. *Operations Manual*. OM H4. Manila.

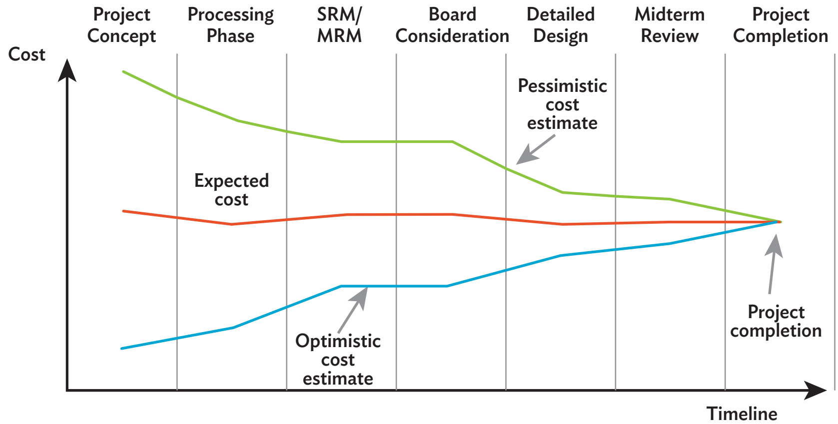
14 ADB. 2009. *Safeguard Policy Statement*. Manila.

15 In a vaccination project, for instance, these costs may cover the purchase of syringes or the costs of transporting the vaccine to beneficiaries. The procurement may be made in bulk for the broader government program, and a part used for the ADB-supported activities. As these costs are essential to achieving the ADB project outcome, a proportional share of such costs should be included in the project's cost estimates.

E. Contingencies

2.16 **Figure 2** illustrates uncertainty throughout a project's life. Cost estimates at the concept stage are subject to a wide range of uncertainties that will be resolved gradually during the processing stages (culminating in Board consideration), but achieve better clarity at the detailed design stage. By the midterm review stage, the cost estimates are likely to be much more definite, as procurement would have been largely completed, and the actual cost is established at project completion. Physical and price contingencies are intended to provide a buffer against such uncertainty.

Figure 2: Project Life Cycle with Indicative Uncertainty Curves



MRM = management review meeting, SRM = staff review meeting.

Source: Asian Development Bank.

Physical Contingencies

2.17 Physical contingencies provide a buffer for the uncertainty associated with variations in the quantities and categories of expenditures. The greater the uncertainty, the higher the physical contingency allowance. As uncertainty may differ significantly between project components and subcomponents, or between expenditure categories, different contingency rates can be applied. Uncertainty typically varies over the life cycle of a project, declining as it progresses from the concept to the feasibility stage, and then to detailed design, procurement, and implementation. ADB's experience has been that physical contingencies normally range between 5% and 10% of the base cost. However, where more significant levels of uncertainty remain—for example, in projects involving marine work, tunneling, dam construction, and road construction in difficult soil conditions—a higher physical contingency provision is warranted.[16] As project readiness financing loans/grants and small expenditure financing facilities have gained wider adoption, and loan proceeds from prior tranches of the multitranche financing facility (MFF) have been used, detailed engineering designs have often been completed more quickly, before loan approval, compared with technical designs and cost estimates based on feasibility studies financed with technical assistance grants. Because the designs, and hence the cost estimates, are generally also better in quality, a lower physical contingency allowance may be sufficient in such cases.

2.18 Physical contingencies are calculated as a percentage of base cost for each output and expenditure category. As with the base cost, physical contingencies should be estimated separately for foreign exchange and local currency costs.

Price Contingencies

2.19 Price contingencies provide a buffer for price increases over the project implementation period due to inflation, foreign exchange rate movements, or expected real price increases. Price contingencies have foreign and local components. Foreign price contingencies reflect the potential impact of international inflation on foreign-sourced goods and services; local price contingencies, the potential impact of local inflation on locally sourced goods and services. The inflation rates used are those recorded and regularly updated by ADB's Economic Research and Regional Cooperation Department (ERCD).[17] However, if the prices of key inputs in a particular DMC are expected to behave erratically or to rise faster than inflation, and using standard cost escalation factors would lead to underestimation of price contingencies, forward commodity prices should be considered and ERCD's guidance should be sought.

2.20 Price contingencies are calculated as a percentage of the sum of the base cost and physical contingencies for each component, subcomponent, and expenditure category, where the percentage is the compounded inflation rate applicable to foreign exchange and local currency costs. **Appendix 4** shows how compounded cost escalation rates are computed.

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[16] For instance, a higher physical contingency may be warranted for components with design–build contracts, compared with components being implemented under engineering, procurement, and construction contracts.

[17] These are available from ADB's intranet. External parties should request the ADB project officer to provide the cost escalation factors. In exceptional circumstances where the borrower requests the adoption of inflation rates that are different from the ERCD's rates, the project team should consult with ERCD.

F. Financial Charges during Implementation

2.21 ADB financing is provided through three main channels—regular ordinary capital resources (OCR) loans, concessional OCR lending (COL), and Asian Development Fund grants. At present, OCR loans are fixed-spread loans with a variable base rate,[18] a maturity premium (if applicable), a commitment fee, and a surcharge on the funding cost margin. COL loans carry a fixed rate of interest, and Asian Development Fund grants are provided without charge. ADB also arranges cofinancing, through loans or grants, on terms set by its cofinanciers. ADB may levy other charges as well, such as an administrative fee on cofinancing or a front-end fee, and offer rebates and surcharges, in accordance with the prevailing policy.

2.22 Financial charges during implementation (FCDI) comprise all financial charges during project implementation on loans or other forms of credit extended to the project by ADB, cofinanciers, or other financiers. Key considerations pertaining to FCDI are discussed below.

Interest during Construction

2.23 Interest during construction (IDC) applies to project loans, sector loans, the investment component of sector development programs, and financial intermediation loans. In accordance with international accounting standards, interest expenses incurred during the construction period are considered project costs. Such interest may be paid in cash by the project entity in each period as it falls due, or be capitalized (financed through the loan itself). IDC should be calculated and can be added to the project cost up to the point at which the facilities are expected to be completed and begin to produce benefits. At that point, interest becomes an expense charged against current operations, and may no longer be added to the project cost. IDC is not necessarily charged over the full project implementation period for all project outputs, as certain outputs (or parts of outputs) within a project may come into service before the completion of the overall project.[19]

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[18] The London Interbank Offer Rate (LIBOR) was phased out on 31 December 2021. On 1 January 2022, ADB shifted to an alternative reference rate mechanism. For the US dollar, this is based on the secured overnight financing rate (SOFR).

[19] FCDI should be included as a project cost only up to the point where the project starts commercial operation, following accounting standards for capitalization of financial charges. Once the project is operational, the interest and other financial charges on loans should be financed from the project's own revenues or other source of funds for recurrent cost financing. ADB allows capitalization of FCDI: the ADB loan may finance the interest, which will then be used to repay ADB over the loan repayment period. Capitalization exposes the borrower to the foreign exchange and interest risks for an extended period. Prudence is advised in limiting the use of this feature only up to the time before commercial operation.

2.24 IDC is computed from the project's perspective while estimating the weighted average cost of capital or while capitalizing the IDC, following international accounting standards. Where ADB financing is on-lent on different terms and conditions (for example, a premium is added to ADB's lending rate or a discount is applied), the IDC should be computed using the on-lending rate, and the arrangements set out in a footnote in the detailed cost estimates.[20]

2.25 In the case of ADB's lending from its ordinary capital resources adopting the flexible loan product, the interest rate should be the 5-year (period should correspond to the implementation period) fixed swap rate for the loan currency plus ADB's effective contractual spread, plus the applicable surcharge on the funding cost margin plus the applicable maturity premium. The base rate for interest rate computation will be based on the alternative reference rates, but the methodology for interest computation remains the same. Indicative lending rates for loans under ADB's flexible loan product will continue to be published by the Treasury Department. If the fixed swap rate is not published for a particular tenor, the project team may seek specific data from the Treasury Department for cost estimation.[21]

2.26 IDC should be calculated on the basis of the average outstanding loan balance in each year up to the point at which the facilities under construction are expected to be completed and put to use. The average outstanding balance is the average of the loan balance at the start and the end of each year. Where IDC is capitalized, the loan balance in succeeding years would include the principal drawdowns and the capitalized interest from preceding years. Annual IDC is estimated as follows:

$$IDC_t = \frac{B_{t0} + B_{t1}}{2} \text{ x } i$$

where

IDC_t = interest during construction in year t
B_{t0} = loan balance at the start of year t
B_{t1} = loan balance at end of year t
i = interest rate

2.27 Total IDC is the sum of the annual IDC during the project implementation period. The example given in Table 1 shows how the IDC is calculated. For a COL loan, the fixed rate of interest charged by ADB would be applied instead of the fixed swap rate, without any spread or maturity premium.

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20 If an ADB loan is to be provided as a grant or at a concessional rate to the project, the full amount charged by ADB should still be part of the cost estimate, to ensure that the borrower allocates sufficient resources to fund the subsidized portion of interest and other costs. If a premium is to be charged, this should be disclosed in the footnote to the cost tables in the RRP and the PAM.

21 With the phaseout of LIBOR, and the introduction of the flexible loan product on 1 January 2022, ADB's Treasury Department will publish the floating and fixed rates for the alternative reference rates.

Table 1: Calculation of Interest during Construction (Example)
($ million)

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Loan Balance						
Opening balance	0	76	232	360	400	400
Drawdown	76	156	128	40	0	400
Closing balance	76	232	360	400	400	800
Average balance	38	154	296	380	400	
Interest Rate						
5-year US dollar fixed swap rate	1.59%	1.59%	1.59%	1.59%	1.59%	
Contractual spread	0.50%	0.50%	0.50%	0.50%	0.50%	
Maturity premium	0.10%	0.10%	0.10%	0.10%	0.10%	
	2.19%	2.19%	2.19%	2.19%	2.19%	
Formula	[38 X 2.19%]	[154 X 2.19%]	[296 X 2.19%]	[380 X 2.19%]	[400 X 2.19%]	
Interest during construction	0.83	3.37	6.48	8.32	8.76	27.76

Source: Asian Development Bank.

Commitment Charges

2.28 ADB applies commitment charges (currently 0.15% per year) to undisbursed loan balances for regular OCR loans, but not for COL loans. The undisbursed balance should be estimated as the average of the projected undisbursed balance at the start and at the end of each year during the project implementation period. The estimated annual commitment charges are calculated as follows:

$$CC = \frac{U_0 + U_1}{2} \text{ x } R$$

where

$CC =$ commitment charges
$U_0 =$ undisbursed loan balance at the start of the year
$U_1 =$ undisbursed loan balance at the end of the year
$R =$ rate

2.29 The total commitment charges are the sum of the annual commitment charge amounts due over the project implementation period. For OCR loans, the commitment charges are considered a foreign exchange cost. An example showing how the commitment charges are calculated can be found in **Table 2.**

Table 2: Calculation of Commitment Charge (Example)
($ million)

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Loan Value	400					
Undisbursed opening	400	324	168	40	0	
Disbursed	76	156	128	40	0	
	324	168	40	0	0	
Undisbursed average	362	246	104	20	0	
Charge rate (%)	0.15	0.15	0.15	0.15	0.15	
Formula	[362 X .15%]	[246 X .15%]	[104 X .15%]	[20 X .15%]	[0 X .15%]	
Commitment Charge	0.54	0.37	0.16	0.03	0.00	1.10

Source: Asian Development Bank.

G. Exchange Rates and Cost Escalation Factors

2.30 Though ADB provides its loans in foreign currencies for the most part, project costs comprise both foreign exchange and local currency elements. To arrive at the correct size of the foreign currency funding requirements, projected exchange rates (perhaps for more than one foreign currency) that are neither excessively over- or underestimated must be adopted. Options for such projections involve (i) using a constant exchange rate, (ii) applying the purchasing power parity (PPP) theory, or (iii) employing another suitable method in consultation with ERCD. A constant exchange rate is warranted where the country follows a fixed exchange rate policy. In any other circumstances, a constant rate may lead to material over- or underestimation of the loan size. The PPP method is appropriate where the exchange rate is determined by market forces. If neither of these two options is considered suitable, ERCD's guidance may be sought.

2.31 Many ADB DMCs follow a market-determined exchange rate (albeit with some controls). Consequently, the PPP theory is most commonly adopted for exchange rate projection. The annual change in the exchange rate between the local currency and a foreign currency is the same as the ratio between the local and foreign inflation rates. For example, if the foreign inflation rate is 4% while the local rate is 7%, purchasing power parity is maintained if the local currency depreciates against the foreign currency as follows:

$$\frac{1.07}{1.04} - 1 = 2.9\%$$

2.32 Given PPP, the projected exchange rate in each year over the project implementation period is calculated as follows:

$$\mathrm{ER}_{t+1} = \mathrm{ER}_t \text{ x } \frac{(1 + \mathrm{L}_{t+1})}{(1 + \mathrm{F}_{t+1})}$$

where

$$\begin{aligned} \mathrm{ER}_{t+1} &= \text{exchange rate in year } t+1 \\ \mathrm{ER}_{t} &= \text{exchange rate in year } t \\ \mathrm{L}_{t+1} &= \text{local inflation in year } t+1 \\ \mathrm{F}_{t+1} &= \text{foreign inflation in year } t+1 \end{aligned}$$

2.33 The inflation rates to be used are available on ADB's intranet. External parties should request the ADB project officer to provide the cost escalation factors. **Appendix 4** illustrates the calculation of compounded cost escalation rates.

2.34 Projecting future exchange rates by applying PPP may not be appropriate in all cases. Exchange rates do not move precisely in line with PPP, particularly in the short term. PPP assumes that goods and services are tradable between countries, but project inputs comprise a mix of tradable and non-tradable goods and services. The theory also assumes that exchange rates are wholly market determined, but exchange controls and other forms of currency management by governments and their central banks limit the role of the market in determining rates. Consequently, inflation rate differentials often do not fully determine exchange rate movements. The project team is advised to exercise professional judgment and consult with ADB's Procurement, Portfolio, and Financial Management Department (PPFD) and ERCD as appropriate.

III. Cost Estimates During Processing

A. General Considerations in Cost Estimate Preparation

Preparation of Cost Estimates

3.1 The following steps are typically taken when preparing cost estimates (also see the text box below):

- Identify the project scope and outputs and/or components.
- Identify and define appropriate cost categories (considering the executing and/or implementing agency's own accounting, classification, and project reporting systems).
- Estimate the local and foreign currency base costs, given the unit costs and quantities required.
- Allocate the base cost, in local and foreign currency, to each year and each executing/implementing agency over the project implementation period, on the basis of the implementation schedule and the projected cash flow requirements.
- Compute the local currency equivalent of the foreign currency cost in each year by applying the projected exchange rate for that respective year.
- Compute the physical and price contingencies and financial charges during implementation, in local currency.
- For presentation in ADB documents, convert project cost estimates (base cost, contingencies, and financing charges) in each year to loan currency equivalents either by applying the average exchange rate for the period or by translating each year's cost estimate at the projected exchange rate for that respective year.

Box: Top Tips for Preparing Cost Estimates

- Identify and document the basis for, and the assumptions underlying, the cost estimates. This will ease the review process and facilitate revisions.
- Don't leave preparation just to the financial consultant. Inputs are needed from all the technical experts, including safeguards experts.
- Ensure that the cost estimates are consistent with the procurement plan and safeguards documents. The project documentation and budgets must be mutually coherent.
- Confirm the appropriateness of the foreign exchange rates for the different currencies used.
- Ensure full government or executing/implementing agency knowledge and ownership. Consultants and Asian Development Bank (ADB) staff may support the preparation of cost estimates, but the government or the executing/implementing agency is ultimately responsible for allocating resources from the budget.
- Ensure that the cost estimates are prepared using commercially available spreadsheet software for which ADB has a license (use of proprietary software of consultants is discouraged), such as Excel with simple formulas. The use of complex macros or formulas in the model should be minimized, as these may be difficult to comprehend or audit.
- Ensure that the consultants hand over the digital copy of the cost estimate model with formulas enabled after removing any external data linkages (PDF files or printed versions are not acceptable). These files should be saved in ADB's common cloud-based storage (e.g., SharePoint), as they are needed for review and updating.
- Audit the digital model to ensure mathematical accuracy. Arithmetic errors and inconsistences can hide significant project design inconsistencies.

Presenting Cost Estimates in the Report and Recommendation of the President and the Project Administration Manual

3.2 Cost estimates in the RRP main text are summarized and presented (in million loan currency equivalents) in the summary cost estimates table, in three parts:

- Part A – Base Cost, presented by output or component (e.g., irrigation component, agriculture extension component, project management component);
- Part B – Contingencies, presented as a single line item incorporating physical and price contingencies; and
- Part C – FCDI presented as a single line item incorporating all applicable financing charges during project implementation.

3.3 Only summarized costs are shown in this table. A breakdown between foreign exchange and local currency costs is not required. Footnotes to the table should succinctly indicate the basis for the cost estimates, the amount and financier(s) of taxes and duties included in the project costs, the assumptions used in computing physical and price contingencies, and the basis for computing FCDI.

3.4 Besides the summary cost estimates in the RRP, detailed cost estimates are presented in the PAM.[22] Where there is more than one executing and/or implementing agency, cost tables should be prepared for each agency and aggregated to arrive at the project's cost table, in order to facilitate effective project management, monitoring, and reporting. To ensure that the detailed cost estimates provide sufficient information to support project management (by the executing and/or implementing agency) and oversight by ADB, they should be presented by expenditure category (e.g., civil works, equipment, land acquisition, consulting services) and by executing/implementing agency. The table showing the detailed cost estimates by expenditure category should be presented both in local currency units and in equivalent loan currency to enable the executing and/or implementing agency and ADB to track cost estimates against financial projections and/or financial internal rate of return computation, if applicable.

B. Additional Considerations for Specific Lending Modalities

3.5 Multitranche financing facilities (MFFs) are of two varieties: (i) several standalone projects within an overall investment program, or (ii) time slices of a single investment project.[23] If each periodic financing request (PFR) represents a standalone investment with its own design and monitoring framework and scope, cost estimates will be prepared as described in the preceding paragraphs for each PFR. If the MFF is time-sliced and all contracts would be awarded during the first PFR, with subsequent PFRs having to be approved to continue financing those contracts already awarded, the RRP will present the total project cost, and the total cost estimate should be prepared up front. The PAM will provide details of the project cost allocated to each PFR. For MFFs where different tranches adopt different modalities (e.g., investment, financial intermediation), the cost estimate for each modality should be followed.

3.6 In results-based lending (RBL) for programs, ADB financing is not linked to specific transactions or input costs but is an integral part of total RBL program

[22] In this document, unless stated otherwise, "PAM" also refers to facility administration manuals, grant implementation manuals, project implementation documents, etc.

[23] ADB. 2018. Multitranche Financing Facility. *Operations Manual*. OM D14. Manila.

financing, which would include financing from the DMC's own resources and from cofinanciers.[24] Instead of detailed cost tables, an expenditure framework covering all activities and related expenditure of the RBL program within the RBL boundary should be prepared. It may be supported by a medium-term expenditure framework and should be part of the government program. The expenditure categories in the framework should be sufficiently specific as to allow an estimation of the costs of implementing the RBL program. Further, the costs within the RBL boundary should be clearly distinguishable from expenditures beyond the RBL boundary (of the broader government program), to enable financial reporting on the RBL program as required by ADB. Experience shows that it is useful to define the RBL expenditure framework (and therefore the RBL boundary) on the basis of the budget heads (chart of accounts) used by the government. The project team should assess the available budget heads and, if required, discuss with the government and the executing and/or implementing agency the possibility of modifying and/or adding budget heads to enable the accurate capture of the RBL expenditure.[25]

3.7 In financial intermediation loans, the ADB loan is on-lent through a participating financial institution to a subborrower, who then contributes equity and also possibly additional borrowings to finance the subprojects.[26] As subprojects would usually be identified during implementation on the basis of agreed selection criteria, a reliable cost estimate cannot be prepared at the time of loan approval. The RRP should have only the summary financing plan table, and no cost table.[27]

3.8 Under a sector loan, the borrower or the executing and/or implementing agency is responsible for identifying, prioritizing, formulating, appraising, approving, and implementing subprojects in accordance with technical, financial, and economic appraisal criteria, including social and environmental criteria, mutually agreed on between ADB and the borrower or the executing and/or implementing agency.[28] Sector loan preparation is usually based on an assessment of a representative sample of eligible subprojects, with subsequent subprojects to be selected on the basis of criteria defined in the loan agreement. Cost estimates for sector loans are usually prepared by extrapolating the cost estimates for the sample subprojects, and should be revised as and when the additional subprojects are identified. These estimates of sector loan costs depend on the

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[24] ADB. 2021. Results-Based Lending for Programs. *Operations Manual*. OM D18. Manila.

[25] Where a part of the RBL expenditure will be incurred by entities other than a general government sector unit (e.g., state-owned enterprises), the expenditure and chart of accounts of those entities should also be assessed.

[26] ADB. 2003. Financial Intermediation Loans. *Operations Manual*. OM D6. Manila.

[27] However, if the financial intermediation loan has investment-type components (e.g., procurement of equipment or software systems, capacity development, or consulting services) besides the on-lending component, a cost estimate will have to be prepared for those components, but no cost estimate would be needed for the on-lending component.

[28] ADB. 2003. Sector Lending. *Operations Manual*. OM D3. Manila.

individual subproject costs and financing plans, which will be known only during implementation. The cost estimates for each subproject should be prepared following the principles and guidance in this technical guidance note.

3.9 Emergency assistance loans are investment projects (though processed in an expedited manner). Accordingly, cost estimate preparation, presentation, updating, and monitoring should follow all the principles for cost estimates for investment projects as described in this guidance note.[29] The cost estimates may have to be revised during the early stages of implementation, as procurement and safeguard documents may be finalized after approval, and a higher initial allocation for contingencies may be required.

C. Cost Estimates for Additional Financing

3.10 Additional financing may be needed to finance a change in scope, a cost overrun, or some other financing gap.[30] If there is a change in scope, the original project should be reassessed to identify any savings or unused proceeds that can be reallocated to the revised scope. In case of a cost overrun or financing gap, the underlying reasons should be assessed and taken into consideration when preparing cost estimates for the additional financing. These cost estimates should be disclosed and presented separately from estimates for the original project in the project documents.

[29] ADB. 2021. *Revised Emergency Assistance Loan Policy*. Manila.
[30] ADB. 2018. Additional Financing. *Operations Manual*. OM H5. Manila.

IV. Cost Estimates During Implementation

A. Reviewing Cost Estimates

4.1 Significant variations between costs estimated during project preparation and those actually incurred continue to be a major issue of concern in ADB operations. The quality and reliability of cost estimates can vary widely across projects, agencies, sectors, and countries. **Appendix 5** provides a checklist to guide the review of cost estimates during project preparation.

4.2 The base cost estimates should be prepared using market prices for the various project inputs prevailing at the time of preparation. Where possible, unit cost estimates should be compared with contract prices for ongoing or actual projects. While such information is generally available in larger DMCs for basic infrastructure projects, it may be less available in smaller DMCs or for less-typical projects. Where contract prices are available, ADB staff may need to assist the project consultants and the staff of the executing and/or implementing agency in gaining access to this information. The borrower and/or consultant should provide the basis for determining market prices in the documentation submitted to ADB.

4.3 Significant variations from actual prices in the prescribed (by the government or another authority) standard rates (schedule of rates) on which unit cost estimates are based, due to delays in updating the schedules, give particular cause for concern. DMC-specific factors may also create a bias toward over- or underestimating costs. Usually, inflating physical and/or price contingencies leads to a bias toward inflating base cost estimates, as overestimates tend to be viewed as creating less project risk than underestimates. This is particularly true in countries where the budgetary process for addressing cost overruns is complex or lengthy. Overestimation of costs has significant consequences. It (i) results in oversized loans (and associated commitment charges), (ii) preempts the country's borrowing headroom, and (iii) reduces the total available resources (loans and grants) that ADB can provide to all its developing member countries. The savings obtained are often canceled after several years or may prompt expansions in the scope of an ongoing project to use up the savings.[31] Underestimation of

[31] Such scope changes are usually considered "minor" and may not undergo the rigorous assessments made during project appraisal. This may lead to a reduction in the viability or sustainability of the overall investment, or to the diversion of resources to lower-priority activities merely because the money is available.

costs, on the other hand, can lead to funding shortages, which may necessitate either a reduction in project scope or a scramble to find additional financing during implementation.

4.4 The projected expenditure profile should be carefully reviewed to ensure that it is realistically achievable. Reviewing the experience of past and ongoing projects financed by the government, ADB, or other donors provides a good basis for such an assessment. There is a tendency to prepare implementation schedules that are optimistic relative to experience. Expenditure profiles based on overly optimistic implementation schedules can result in an underestimation of the price contingency component of total project costs. Delays in contract awards and disbursements compared with appraisal targets can significantly lower the project performance rating.

B. Reporting, Monitoring, and Updating Cost Estimates

4.5 Project Administration Instruction (PAI) 5.01 provides a format for the project progress reports to be submitted by the executing and/or implementing agency. The report content requires (in section A) information on the total estimated project cost and financing plan, and (in section B) the reestimated costs to completion. As a matter of good practice, controls and reporting mechanisms should be established during the processing to provide the needed information. It is recommended that a template for the progress reports be agreed on with the executing and/or implementing agency for the project and attached to the memorandum of understanding for the fact-finding mission. The ADB project team should review the progress reports and, if changes are needed because of variations in estimated versus actual costs, take the needed actions (reallocation within ADB loan categories, request for additional financing because of project cost overruns, cancellation of loan surplus, etc.).

4.6 Project cost estimates will continue to be refined throughout project implementation and, in particular, once detailed design is complete. These estimates should be reviewed at least once a year during implementation, and an in-depth assessment should be made during the midterm review. The results of the review should be documented in the associated quarterly progress report coinciding with the annual review, and in the aide-mémoire of the midterm review mission. The annual audited project financial statements (APFSs), which must be submitted within 6 months of the financial year-end, will also be monitored closely to identify potential changes in the cost estimates. The entity responsible for monitoring and updating the cost estimates should be clearly identified in the project management arrangements (PAM section III). Project cost estimates at the fact-finding stage should be updated, at least during detailed design (if applicable) or when necessary for reallocating contingencies to actual expenditure categories.

4.7 Throughout implementation, expenditures should be accounted on the same basis as at appraisal to retain comparability with the appraisal estimates. The total project cost, including counterpart financing and expenditure on components financed by cofinanciers, should be the basis for monitoring. The percentage of expenditure (actual to budget) should closely track the percentage of physical completion. **Appendix 6** provides a sample tracking sheet that executing and/or implementing agencies can use in monitoring project financial performance throughout implementation.

4.8 ADB review missions are expected to review project implementation progress, review actual project expenditures and assess whether the project can be completed within the original cost estimates, identify any cost overruns or savings that may materialize, and ascertain the need to reallocate loan proceeds between categories or to cancel surplus loan proceeds.[32] Any adjustments required should be described in the mission's aide-mémoire, and the tracking sheet (confirmed by the mission) should be attached.

4.9 Actual expenditures should be reviewed and monitored against project cost estimates to enable the early detection of[33]

- cost overruns,[34] leading to a reduction in the scope of the project and/or a search for additional financing; or
- cost underruns, making it possible to either expand the scope of the project and/or identify savings that may be reallocated or canceled.

4.10 Any changes in project scope, or in the processing of additional financing to address cost overruns, should comply with the provisions of ADB's project administration instructions (PAI 5.02–5.06)[35] and ADB's operations manual.[36] Cost overruns and underruns should be calculated and presented in both foreign and local currency.

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32 ADB. 2018. Project Administration Missions. *Project Administration Instructions*. PAI 6.02. Manila.

33 A cost overrun (or underrun) is the amount by which the actual cost exceeds (or is less than) the budgeted, estimated, original, or target cost.

34 For examples of indicators of cost overruns, see: United States Government Accountability Office. 2009. *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*. Washington, DC. pp. 287–288 (available from http://www.gao.gov/products/GAO-09-3SP).

35 ADB. 2018. Project Cost Overruns for Loan Projects. *Project Administration Instructions*. PAI 5.05. Manila.

36 ADB. 2018. Additional Financing. *Operations Manual*. OM H5/BP. Manila.

V. Cost Estimates at Completion

A. Reporting Cost Estimates at Completion

5.1 At completion, the appropriateness of the cost estimates is assessed on the basis of accuracy at formulation (overruns or underruns) and efficiency in the use of funds (cost utilization against outputs delivered).[37] To aid this analysis, expenditures incurred are compared with the last approved cost estimates and include cost movements during the intervening period (e.g., reallocations, cancellations, and additional financing). Changes in cost estimates must be supported by approvals, and all deviations must be discussed and explained in the project completion report (PCR).

5.2 Generally, the assessment of actual project costs versus cost estimates is done for each project component: overruns or underruns are analyzed by expenditure item in each component, to provide an objective and measurable basis for analyzing the use of funds. Any shifts in cost by category that will affect the project's economic and financial returns must be discussed.[38]

5.3 Project costs are analyzed in totality (including ADB and counterpart financing) and presented in loan currency terms. Presentation in special drawing rights (SDR) or in local currency with the loan currency equivalent may be made, but must be consistent with the approval currency. In all cases, the actual project costs must be fully reconciled with the actual ADB disbursements, the APFSs, and the updated financial evaluation and analysis (if applicable).

5.4 Changes in financing structure (additional financing, or changes in financing percentage) are discussed to provide an overview of the impact of changes in implementation arrangements on costs and financing. For example, additional financing may have resulted from overruns or project redesign, or weak institutional capacity may have triggered a shift in financing sources.[39]

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[37] ADB. 2019. Project Completion Report and Extended Annual Review Report (Project Completion Report for Sovereign Operations). *Project Administration Instructions*. PAI 6.07. Manila.

[38] An overrun is typically explained by price escalation and/or weak design estimate. An underrun is normally caused by changes in design/scope or weak institutional capacity that was not foreseen at appraisal. The underlying drivers of an overrun/underrun must be discussed relative to the delivery of outputs.

[39] For more details, refer to ADB. 2016. *Guidelines for the Evaluation of Public Sector Operations*. Manila.

B. Presenting Cost Estimates in the Project Completion Report

5.5 Cost estimates and the actual project costs are presented in the following sections of the PCR:[40]

- **Basic Data**. The approved cost estimates, any changes in those estimates, and the actual project costs incurred are presented in tabular form for a concise presentation of the accuracy of cost estimation at appraisal, and the level of actual spending (and activities) that would be required to achieve completion.
  - Cost estimates are tabulated and compared with actual project costs, with the following breakdown:
    - Base cost – by expenditure item, and by project component;
    - Contingencies – single line item; and
    - FCDI – single line item.
  - A tabular presentation of cost estimates compared with actual project costs, by financing source.
  - A tabular presentation of cost estimates compared with actual project costs, by currency component (foreign exchange and local currency).
- **Evaluation of Design and Implementation.** As a minimum requirement, a detailed discussion of the components of the cost estimates, the drivers of the changes in project costs, and the financing source(s) is included in this section. The discussion should focus on the key results documented in project performance reports, monitoring reports of the executing/implementing agency, and any interim change requests. However, the project team should not be limited by these. Given the changes that have taken place from approval to completion, an updated financial analysis, assessing the impact of the revised costing on the project's viability and sustainability, is of paramount importance.

[40] ADB. 2019. Project Completion Report and Extended Annual Review Report (Project Completion Report for Sovereign Operations). *Project Administration Instructions*. PAI 6.07. Manila.

C. Other Presentation Requirements

5.6 Detailed cost estimate tables are included in the PAM in accordance with the prescribed template.

5.7 These cost estimates, and the actual working models used to prepare them, must be retained as part of ADB's official project preparation documentation. Digital copies of relevant cost models should be retained in ADB's cloud-based file storage systems (e.g., SharePoint folders) for the project, and be available to support project implementation, the processing of any changes in scope/additional financing, and the preparation of the project completion report and proactive integrity reports (where applicable).

VI. Preparing and Presenting Financing Plans

A. Preparing the Summary Financing Plan

6.1 The financing plan identifies the various sources of financing for the project—ADB, cofinanciers (if any), commercial lenders, government contributions, investors' equity purchases, funds generated internally by the project entity, and contributions from project beneficiaries, but excluding any funding from cofinancing not administered by ADB. The total project cost (comprising base cost, contingencies, and FCDI) should be fully funded through the financing plan, without any gaps.

6.2 Where in-kind contributions are recognized, these should be included in the cost estimates and financing plan only if the executing/implementing agency uses an accrual-based accounting system. For cash-based accounting, in-kind contributions should be disclosed through footnotes to the cost and financing plan table, with a clear explanation of the basis. The assumptions used in computing the value of in-kind contributions should be described in the PAM.

6.3 The proposed financing arrangements for each expenditure category should consider ADB's cost-sharing and expenditure eligibility policy and staff instructions.[41]

B. Presenting the Financing Plan

6.4 **Summary financing plan.** The summary financing plan, presented in the RRP, identifies each source of financing for the project together with the amount of such financing, expressed in its equivalent value in the loan currency. The sum of financing provided from all sources must equal the estimated total project cost.

[41] ADB. 2017. Cost Sharing and Eligibility of Expenditures for ADB Financing. *Operations Manual.* OM H3/BP. Manila.

6.5 **Detailed financing plan presented in PAM (detailed cost estimates, by financier).** A more detailed presentation of financing arrangements is to be provided in the PAM, in a table showing the detailed cost estimates by financier. This table will be presented in loan-currency equivalents and give a breakdown of financing sources by expenditure category. Separation of foreign exchange and local currency costs is not required.

Appendix 1: Definitions

Collar or **Interest rate collar** – A combination of a ceiling (or upper limit) and a floor (or lower limit) on a floating interest rate.

Components – A collection of costs grouped for finance or administrative purposes (e.g., a wastewater treatment plant, or road rehabilitation and upgrading). Components are not necessarily outputs.

Country cost-sharing ceilings – Financing parameters that indicate the maximum share of aggregate costs the Asian Development Bank (ADB) will finance with respect to the portfolio of projects in a developing member country, over the period of the prevailing country partnership strategy for that developing member country.[1]

Expenditure category – The classification of project inputs according to expenditure type. Expenditure categories may include civil works, equipment and materials, land acquisition and rights-of-way, recurrent costs, and consulting services, contingencies, and financing charges.

Financial charges during implementation – The interest, commitment charges, premium on cap and collar, if any, and any other financial charges on ADB loans or loans from government and/or cofinanciers of an ADB-financed project.

Financing plan – A document identifying the different sources of financing for the project, the amounts to be provided by each financier, and the overall percentage of total project cost financed by each financier. The summary financing plan is included in the report and recommendation of the President.

Foreign exchange costs – The sum of (i) direct foreign exchange costs (payments for goods and services made in currencies other than the currency of the borrower); and (ii) indirect foreign exchange costs (the cost of the imported components of goods, works, and services purchased locally). Some examples are the cost of petroleum products used on a construction site and purchased locally, the cost of imported iron ore in locally manufactured and processed steel, and the depreciation cost of imported machinery used in the local manufacture of cement.

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[1] ADB. 2017. Cost Sharing and Eligibility of Expenditures for ADB Financing. *Operations Manual*. OM H3/BP. Manila.

Implementation period or **Construction period** – The period of project/construction implementation. It is also the period before major benefits of the project/construction begin to accrue.

Local currency costs – The local currency value of all goods and services that are procured for the project within the country, excluding indirect foreign exchange costs.

Nominal prices – The expression of monetary amounts (revenues and costs) in future price values that include the effects of expected general price inflation.

Outputs – The physical and/or tangible goods and/or services delivered by the project.

Physical contingency – An allowance to reflect possible increases in the base cost estimates of a project due to changes in quantities, methods, and/or implementation period.

Price contingency – An allowance to reflect forecast increases in the base cost estimates for a project due to changes in unit costs for the various components and/or elements after the date of preparation of the base cost estimates.

Project – The project or program for which the ADB has agreed to make the loan, as described in the loan agreement. For the cost estimates, the financing plan, and reporting, the project expenditures should include all activities and inputs needed to achieve the development objective financed with ADB loan proceeds and/or other funds.

Purchasing power parity – The theory that exchange rates between the currencies of two countries are in equilibrium when the currencies have the same purchasing power in both countries. The exchange rate between the countries should therefore be equal to the ratio of the price level of a fixed basket of goods and services in the countries. To maintain equilibrium, the exchange rate between the two countries will change by the ratio of the inflation rates in these countries for the identified basket of goods and services.

Real prices – The expression of monetary amounts (revenues and costs) in which any expected change in the general price level is omitted. When applied to project costs, all costs are expressed in terms of the price prevailing as of a single date. Expected changes in relative prices are incorporated in the cost estimates through the application of price contingencies. An alternative term is "constant prices."

Recurrent costs – Costs incurred during project implementation for goods and services that are consumed during a budget year, and must be regularly replaced.

Retroactive financing – ADB financing of expenditures incurred by the borrower under loan or recipient of grant financing before the related loan or grant takes effect.

Taxes and duties – Taxes and duties include value-added tax, goods and services tax, customs or import tariffs, and other taxes and duties that are identifiable and determinable as the final tax amount at the time of the transaction. This excludes income taxes, withholding taxes, and any other taxes and duties that are not identifiable and determinable as a final tax amount at the time of the transaction.

Appendix 2: Extract from Detailed Cost Estimate Model (Example)

Table A2: Loan 1234-AKS: Integrated Urban Development in Central Aksala Detailed Base Cost as of 27 June 2021

Reference	Item	Unit	Quantity	Cost/Unit (AKP)	Cost (AKP)
1	No. 1 Road				
1.1	**Roadworks**				
1.1.1	Motor vehicle lanes (slip)	m^2	12,060	310.00	3,738,600.00
1.1.2	Sidewalk	m^2	5,360	180.00	964,800.00
1.1.3	Curbstone	m	2,680	85.00	227,800.00
1.1.4	Dark side stone	m	2,680	45.00	120,600.00
1.1.5	Signs and markings	m	1,340	145.00	194,300.00
1.1.6	ATC and lights	System	1	500,000.00	500,000.00
1.1.7	Electronic communications	System	1	100,000.00	100,000.00
1.1.8	Video monitoring system CCTV	System	1	50,000.00	50,000.00
	Subtotal (1.1)				5,896,100.00
1.2	**Bridge Engineering**				
1.2.1	Bridge engineering	m^2	260	5,000.00	1,300,000.00
	Subtotal (1.2)				1,300,000.00
1.3	**Drainage Engineering**				
	Reinforced concrete pipes D1000	m	1,229	1,300.00	1,597,700.00
	Subtotal (1.3)				1,597,000.00
1.4	**Sewerage works**				
	HDPE double wall corrugated pipe D500	m	1,106	850.00	940,100.00
	Subtotal (1.4)				940,100.00

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Table *continued*

Reference	Item	Unit	Quantity	Cost/Unit (AKP)	Cost (AKP)
1.5	**Streetlighting**				
1.5.1	Street dedicated box changes 1 x 5 0 kV	Seat	2	70,000.00	140,000.00
1.5.2	Arm 1 2 m steel rod road lights N G150	Cover	36	4,800.00	172,800.00
1.5.3	Lamp cable VV-1kV-4 x 25 + 1 x 16	m	1,610	122.04	196,484.40
1.5.4	Plastic pipe φ 5 0	m	1,610	12.00	19,320.00
1.5.5	Lights lead on the line BV-500V-2x2.5	m	540	5.50	2,970.00
	Subtotal (1.5)				531,574.40
	Subtotal (1)				1,0265,474.40

ATC = Automatic Traffic Controller, AKP = Aksala Pesos, BV = Breakdown voltage, CCTV = closed-circuit television, HDPE = High Density Polyethylene, kV = kilovolt, m = meter, m^2 = square meter.

Source: Asian Development Bank.

Appendix 3: Cost Categories for an Infrastructure Project (Example)

Table A3: Cost Categories for an Infrastructure Project

Category	Description
Civil Works	• Earth moving, excavation, cut and fill, grouting etc. • Concrete work including rebar and formwork (e.g., foundations, building components, tanks, and bridge components) • Metal fabrication (building framework, tanks, and other metal structures, etc.) • Building construction on roads, embankments, pipelines, etc. • Landscaping, planting, fences, etc. • Plumbing, electrical wiring, and other utility services • Other construction services • The cost of special purpose construction equipment will normally be included in construction contracts and considered a civil cost (e.g., earthmovers, cranes, arc welding equipment, and site dewatering pumps).
Materials	• Major purchases of project materials that are procured separately from associated construction services (e.g., aggregate, rock, steel, cement, sand, wood, rebar, pipes, asphalt, seedling trees, grass seeds, and paving blocks)
Equipment, Vehicles, Furniture	• General-purpose vehicles (cars and trucks, etc.) • General-purpose tools (e.g., landscape and building maintenance equipment) • Office furniture and equipment (desks, cabinets, computers, copiers, and phones, etc.)
Capital Goods	• Electrical equipment (e.g., motors, pumps, controllers, electrical panels, telecommunication antennae) • Mechanical equipment (e.g., overhead cranes, water and wastewater treatment process equipment, meters and other measuring devices, gates, refrigeration, heating and air conditioning) • Special-purpose vehicles for project operations (e.g., bulldozers and compacters used in a landfill operation, and warehouse vehicles) • Other larger machinery and equipment manufactured off-site

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Table *continued*

Category	Description
Research and Development	• Scientific investigations (e.g., water quality modeling, bench test of a treatment process, archaeological investigation, and survey of flora and fauna) • Technical support services (e.g., agricultural extension and small business) • Demonstration projects (e.g., crop production, soil conservation, and water harvesting)
Consultancy and Training (Consulting Services)	• Any costs relating to consultant services during implementation
Other Training (Training and Fellowships)	• Technical training for project operations (training in water or wastewater treatment, SCADA, and hydrological modeling for reservoir operations, etc.) • Training in ADB procedures • Training in project and enterprise management (finance and accounting, etc.) • Other training (e.g., participatory methods, WUAs, and IWRM)
Land Acquisition and Resettlement	• Land purchase • Compensation for loss of assets and livelihood • Cost to resettle displaced persons (new housing, new land, retraining, moving costs, and costs to assist the host community, etc.) • LAR monitoring
Environmental Protection	• Any costs of construction and procedures relating to environmental protection during project implementation
Taxes and Duties	• VAT and other taxes and duties on works, equipment and goods, and services
Project Management and Others	• Project reporting, project audits • Project accounting and financial management • Funds for the purchase of initial inventories of materials and supplies and for the financing of startup activities for project administration and operation (no double-counting with other items) • Implementation of management software and methods (e.g., accounting software and project management procedures) • Assistance in developing new institutions (e.g., WUAs) • Any costs related to bid document preparation • Any other costs relating to project management

ADB = Asian Development Bank, IWRM = integrated water resources management, LAR = land acquisition and resettlement, SCADA = supervisory control and data acquisition, VAT = value-added tax, WUA = water user association.

Source: Asian Development Bank.

Appendix 4: Computation of Price Contingencies (Example)

Assumptions

The base cost in Aksala pesos (AKP) 500 million comprises foreign exchange costs (55%) and local currency costs (45%). The base cost estimates are as at 1 July 2021. The foreign and local inflation rates used as the basis for the foreign and local price contingencies are given in Table A4.1.

Table A4.1: International and Local Inflation Rates[a]

Scope	2021	2022	2023	2024	2025
International	1.5%	0.7%	0.0%	0.5%	0.5%
Local	3.2%	4.7%	4.6%	4.5%	4.5%

[a] Base year = 2021; ADB cost escalation factors as at 28 June 2021. Based on varied rates per country.

Source: Asian Development Bank.

Calculation

The base cost in each year over the 5-year project implementation period is multiplied by the compounded price contingency in each year to derive the price contingency amount in each year. Given that the price basis for the base cost is 1 July 2021, the contingencies for 2022 are calculated by taking one-half of the 2021 inflation rate and one-half of the 2022 rate. This brings the price basis to 1 July 2022.[2] The foreign price contingency is computed as follows:

$$FPC_{2022} = \left(\frac{F_{2021}}{2} + \frac{F_{2022}}{2}\right)$$

$$FPC_{2022} = \left(\frac{1.5}{2} + \frac{0.7}{2}\right) = 0.011 = 1.10\%$$

where

$$\begin{aligned} FPC_{2022} &= \text{foreign price contingency for 2022} \\ F_{2021} &= \text{foreign inflation rate in 2021} \\ F_{2022} &= \text{foreign inflation rate in 2022} \end{aligned}$$

[2] Alternatively, if the price basis was 1 October 2021, the contingency for 2022 would be calculated by taking one-quarter of the 2021 rate and three-quarters of the 2022 rate.

The price contingency for 2023 is then calculated as follows:

$$\mathrm{FPC}_{2023} = (1 + \mathrm{FPC}_{2022}) \times \left(1 + \frac{\mathrm{F}_{2022}}{2} + \frac{\mathrm{F}_{2023}}{2}\right) - 1$$

$$\mathrm{FPC}_{2023} = (1.011) \times (1.0035) - 1$$

$$\mathrm{FPC}_{2023} = 0.0145 = 1.45\%$$

where

FPC_{2023} = foreign price contingency for 2023
F_{2022} = foreign inflation rate in 2022
F_{2023} = foreign inflation rate in 2023

Using this methodology, the price contingences to be applied in each year are given in Table A4.2.

Table A4.2: Foreign and Local Price Contingencies

Scope	2021	2022	2023	2024	2025
International	0.00%	1.10%	1.45%	1.71%	2.22%
Local[a]	0.00%	3.95%	8.78%	13.73%	18.85%

[a] Based on Aksala cost escalation factor.
Source: Asian Development Bank.

Appendix 5: Project Cost Estimates Review Checklist

This checklist should be applied with judgment.

Table A5: Project Cost Estimates Review Checklist

No.	Item	Yes	No	Remarks
	RRP MAIN TEXT			
	Table 1: Cost Estimates			
1	• Presentation is consistent with RRP template	o	o	
2	• Consistent with design and monitoring framework (outputs/ components)	o	o	
3	• Numbers in table consistent with numbers in the text	o	o	
4	• Contingences are reasonable	o	o	
5	• Financial charges during implementation are reasonable	o	o	
6	• Arithmetically correct (numbers add up)	o	o	
7	• Total consistent with summary financing plan	o	o	
8	• Consistent with detailed cost estimates in the PAM	o	o	
	Table 2: Financing Plan			
9	• Presentation is consistent with the RRP template	o	o	
10	• Numbers in table consistent with numbers in the text	o	o	
11	• Arithmetically correct	o	o	
12	• Consistent with Detailed Cost Estimates by Financier in the PAM	o	o	
13	• Financing sources are confirmed	o	o	
	Design and Monitoring Framework (Inputs)			
14	• Presentation is consistent with the template	o	o	
15	• Numbers are consistent with Tables 1 and 2 and the detailed cost estimates in the PAM	o	o	
16	• Arithmetically correct	o	o	

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Table *continued*

No.	Item	Yes	No	Remarks
PROJECT ADMINISTRATION MANUAL				
	Section IV. Costs and Financing			
17	• Location of digital model stated. Confirm digital model has been uploaded to ADB's cloud-based storage (SharePoint)	o	o	
18	• Reasonableness of cost estimates assessed, considering (i) the reliability of cost estimates for previous projects in this DMC and/or sector; (ii) the levels of cost categories vis-à-vis other comparable projects, for instance, the relative size of the capacity development component; (iii) cost norm comparisons, where applicable, for instance, comparable cost per km of road; and (iv) reconciliation of the cost estimates with the procurement plan	o	o	
19	• Description of cost categories included	o	o	
20	• Key assumptions stated	o	o	
	Summary Cost Estimates and Financing Plan			
21	• Table 1 (Summary Cost Estimates) and Table 2 (Financing Plan) and explanatory text are presented according to the RRP	o	o	
	Table: Detailed Cost Estimates by Expenditure Category			
22	• (Ideally) presented in both local currency unit and foreign exchange (US dollars)	o	o	
23	• Presentation is consistent with the template	o	o	
24	• Foreign exchange–local currency cost allocations appear reasonable (e.g., civil works will usually be mainly local; commitment charges will be usually be all foreign)	o	o	
25	• Taxes and duties are presented appropriately (see OM J6)	o	o	
26	• Consulting costs are comparable with similar projects and are supported by robust terms of reference and unit estimates. Where international consultants are to be engaged, the fee rates and per diems are consistent with ADB norms, and airfare assumptions are based on the highest cost assumption regarding consultant residence	o	o	

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Table *continued*

No.	Item	Yes	No	Remarks
27	• Where project management unit costs are included, arrangements for government officials are stated clearly	o	o	
28	• The cost estimates should incorporate the budgets included in the safeguard documents (e.g., environmental management plan, resettlement plans, and indigenous people's development plan)	o	o	
29	• Audit costs, where applicable, are described in a footnote and are reasonable	o	o	
30	• Physical contingencies are computed on the base cost for both foreign exchange costs and local currency costs	o	o	
31	• Physical contingencies are reasonable (5%–10% of the base cost)	o	o	
32	• Price contingencies are computed for both foreign exchange costs and local currency costs	o	o	
33	• Price contingencies are reasonable (5%–15% of base cost)	o	o	
34	• Interest during construction is reasonable (2%–10% of base cost for an OCR loan, but can vary depending on cofinancing arrangements)	o	o	
35	• Commitment charges are reasonable (0.1%–0.4% of base cost for an OCR-financed operation)	o	o	
36	• Numbers are consistent with other cost tables in the RRP and PAM	o	o	
37	• Arithmetically correct	o	o	
38	• Footnote is included to indicate price basis ("in mid-20XX prices") and basis is recent	o	o	
39	• Footnote is included for physical contingency computation: "Computed at x% for civil works; and x% for field research and development, training, surveys and studies." • Expectation is that physical contingency computation will differ by expenditure type (e.g., training will have a lower physical contingency than civil works)	o	o	

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Table *continued*

No.	Item	Yes	No	Remarks
40	• Footnote is included for price contingency computation ("Price contingencies computed at x% on foreign exchange costs and x% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate"); x% should differ between foreign exchange and local currency costs (usually higher for local currency costs)	o	o	
41	• The table is consistent with the schedule in the loan/grant agreement	o	o	
42	• Cost categories, amounts, and disbursement percentages are consistent with the table Detailed Cost Estimates by Financier	o	o	
43	• Arithmetically correct	o	o	
	Table: Detailed Cost Estimates by Financier			
44	• The table is consistent with the allocation tables	o	o	
45	• If contingencies are to be financed by counterpart funds, have these funds been identified/ appropriated	o	o	
46	• Presentation is consistent with the template	o	o	
47	• Arithmetically correct	o	o	
	Table: Detailed Cost Estimates by Output/Component			
48	• Numbers are consistent with the other detailed cost estimate tables	o	o	
49	• Presentation is consistent with the template	o	o	
50	• Arithmetically correct	o	o	
	Table: Detailed Cost Estimates by Year			
51	• Spread of costs is broadly consistent with timing of activities per the implementation and procurement plans	o	o	
52	• Spread is consistent with s-curve (disbursements)	o	o	
53	• Numbers are consistent with the other detailed cost estimate tables	o	o	
54	• Presentation is consistent with the template	o	o	
55	• Arithmetically correct	o	o	

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Table *continued*

No.	Item	Yes	No	Remarks
	Table: Contract and Disbursement S-curve			
56	• Spread of contract awards and disbursements is broadly consistent with timing of activities according to the implementation and procurement plans (check for overly optimistic expectations of early contract awards and disbursements)	o	o	
57	• Total disbursements are the same as the ADB loan/grant amount	o	o	
58	• Total contract awards are (usually) less than total disbursements, (among other things, disbursements include items such as “interest during construction” which are not included in contract awards)	o	o	

ADB = Asian Development Bank, DMC = developing member country, OCR = ordinary capital resources, OM = operations manual, PAM = project administration manual, RRP = report and recommendation of the President.

Source: Asian Development Bank.

Appendix 6: Example of Expenditure Monitoring Report

Table A6: Loan 1234-AKS: Integrated Urban Development in Central Aksala Expenditure Monitoring Report for the 6 Months Ended 31 December 2020
(AKP million)

Item	Expenditures to Date					Cost Estimates			Change	
	Last 6 months	Cumulative	Target	Variance		At Appraisal	Revised	Updated	Change	
	A	B	C	D=C-B	% [D/C]	E	F	G	H=F-G	% [H/G]
A. Base Cost										
1. Civil works	98.25	235.41	237.68	2.27	1.0	1,300.81	1,326.83	1,325.00	1.83	0.1
2. Equipment	12.30	27.63	28.67	1.04	3.6	248.12	248.12	248.00	0.12	0.0
3. Land acquisition and resettlement	121.34	251.20	262.70	11.50	4.4	313.92	313.92	315.00	(1.08)	(0.3)
4. Environmental and social mitigation	7.86	21.53	20.63	(0.90)	(4.4)	29.52	44.28	45.00	(0.72)	(1.6)
5. Survey, research, design, and project management	16.67	56.60	53.26	(3.34)	(6.3)	166.32	166.32	166.32	(0.00	(0.0)
6. Capacity development and institutional strengthening	1.78	3.24	3.27	0.03	0.9	12.60	12.60	15.40	(2.80)	(18.2)
Subtotal (A)	**258.20**	**595.61**	**606.21**	**10.60**	**1.7**	**2,071.29**	**2,112.06**	**2,114.72**	**(2.66)**	**(0.1)**
B. Contingencies	0.00	0.00	0.00	0.00	...	364.86	324.09	324.09	(0.00)	(0.0)
C. Financial Charges During Implementation	3.67	12.10	11.75	(0.35)	(3.0)	54.55	54.55	54.55	0.00	0.0
Total Project Cost (A+B+C)	**261.87**	**607.71**	**617.96**	**10.25**	**1.7**	**2,490.70**	**2,490.70**	**2,493.36**	**2.66**	**0.1**

Source: Asian Development Bank.

Cost Estimation in Sovereign Operations
Technical Guidance Note

This technical guidance note describes the Asian Development Bank's requirements for preparing, updating, and presenting cost estimates, which are critical for the due diligence process of assessing and monitoring the expenditures incurred and the financing needed to meet project development objectives. Robust cost estimates provide an objective basis for reaching sound investment decisions and help ensure that ADB interventions are cost effective and contribute efficiently to its broad development objectives as well as those of its developing member countries.

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 68 members—49 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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