



NATIONAL PUBLIC-PRIVATE PARTNERSHIPS GUIDELINES

Annex G – Financial analysis guidelines

PPP Unit of the Ministry of Finance, Planning and Economic Development

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List of abbreviations

DSCR	Debt Service Coverage Ratio
FIRR	Financial internal rate of return
FNPV	Financial net present value
IAS	International Accounting Standards
IFRS	International Financial Reporting Standards
LLCR	Loan Life Coverage Ratio
PLCR	Project Life Coverage Rate
PPP	Public-private partnership
ROE	Return on equity
SPC	Special Purpose Company
UGX	Uganda shilling
USD	United States dollar
VAT	Value added tax
VFM	Value-for-money
WACC	Weighted average cost of capital

1. Introduction

1.1 Background

- 1.1.1. In 2010, the Government of Uganda adopted a PPP policy. The policy creates a framework for the involvement of the private sector in provision of public infrastructure and services.
- 1.1.2. The *Public Private Partnerships Act* came into force on 1 October 2015. The *PPP Act* establishes the legal and institutional framework for the concrete implementation of PPP projects. The *PPP Act* provides for the establishment of the Public Private Partnerships Committee, the Public Private Partnerships Unit and the Project Development Facilitation Fund. The *PPP Act* also sets out the procedure for the implementation of PPP projects across all steps of the project cycle from inception to the end date of the PPP agreement. Furthermore, the *PPP Act* defines the contents of the PPP agreement.
- 1.1.3. Pursuant to the *PPP Act*, the Minister responsible for finance issued the *Public Private Partnerships Regulations, 2019* and the *Public Private Partnerships (Meetings of the Committee) Regulations, 2019* (together, *the PPP Regulations 2019*) . The *PPP Regulations* prescribe the bidding methods and procedures for the selection of a Private Party.
- 1.1.4. The *Guidelines* presented in this document are firmly grounded in the policy and legal framework that has been put in place by the Government for the implementation of PPP projects.

1.2 This document

- 1.2.1. The National Public-Private Partnership Guidelines consist of a Main Document and a set of Annexes.
- 1.2.2. This document is Annex G, which guidelines for conducting the financial analysis of PPP projects.

2. Financial analysis guidelines

2.1 Introduction

Objective of financial analysis

- 2.1.1. The objective of the financial analysis is to assess the financial viability of the project. Financial viability refers to the ability of the project to earn sufficient revenues so that:
- the internal rate of return of the project equals or exceeds the cost of capital, commensurate with the risk;
 - debts are repaid in time;
 - the conditions in the covenants and security package demanded by the lenders are satisfied.
- 2.1.2. In conventional procurement projects no extensive financial analysis is required. The financial assessment of the project is limited to the estimation of the costs of the services being procured (design, construction and/or maintenance services), which does not require a financial model. This is different for a PPP project, because of the distinctive characteristics of a PPP Project compared to conventional public procurement:
- long duration of the contract: under a PPP agreement the Private Party is responsible for most of the lifecycle of the project (maintenance and operation of the assets during a significant portion of their lifetime, and – depending on the type of the PPP agreement – often also the design and construction of these assets);
 - the transfer of a substantial part of the project risks to the private sector, notably with respect to designing, building, maintaining, operating and/or financing the project;
 - private financing: in most PPP projects the Private Party is responsible for the financing of all or a substantial part of the investments in the project assets (which may include infrastructure, buildings, equipment and software systems).
- 2.1.3. These characteristics render the analysis and assessment of the financial feasibility of a PPP project much more complex than with a conventionally procured project, so that a more extensive analysis with a financial model is required.

Who conducts a financial analysis and why?

- 2.1.4. In the case of a solicited PPP both the contracting authority and the bidders responding to the procurement undertake a financial analysis. In general, the financial analysis is outsourced to specialised financial consultants. The financial analysis for the contracting authority is performed by the transaction advisor.

2.1.5. The contracting authority conducts (or causes to conduct) a financial analysis for the following reasons

- (a) In the case of a government-pays PPP the financial analysis of the project is used to forecast the bid price (which will be adopted as the amount of the availability or service fee in the PPP contract between the contracting authority and the winning bidder). In particular, the financial analysis allows to determine the amount of the availability or service fee that is required for the financial viability of the project. This fee amount will be requested by bidders in their bids (with some variation, depending on each bidder's specific costs). The fee requested by the winning bidder will be documented in the PPP agreement and will have to be paid by the contracting authority to the Private Party during the PPP agreement. The contracting authority must know the full forecast of the availability or service fee over the life of the Project in order to assess the affordability of the project and to prepare its multi-annual budget. If the estimated availability or service fee exceeds the available budget of the contracting authority, then the project must be scaled back or abandoned.
- (b) In the case of a user-pays PPP the financial analysis of the project is used to forecast the amount of the tariff that will have to be collected from the users of the project services (for instance the users of a toll road) for the project to be financially viable. In this case the fees are paid by the users of the project and not by the contracting authority. Nevertheless, in general the contracting authority wishes to forecast the amount of the user tariff in order to assess its affordability for users (especially for low-income groups).
- (c) If the tariff that is required for financial viability is too high (i.e. is considered to be unaffordable for some social groups or will result in a too low demand volume/take up), then the project cannot be implemented without government support. So, in the case of a user-pays PPP the financial analysis also serves to determine the level of government support that is required to make the project financially viable. In addition, various types of government support (upfront grants, periodic grants, concessional loans, guarantees) can be compared to determine the most efficient support package. If the required level of government support exceeds the available budget of government, then options for reducing the government support must be considered, for instance scaling back the project, increasing user tariffs, or even abandoning the project.
- (d) The financial analysis conducted by the contracting authority serves as a benchmark (a "shadow bid") for the bids submitted by the bidders. If the bid price forecasted by the financial model deviates strongly from the prices in the submitted bids, then the reasons for the differences must be identified and investigated. It is for instance possible that either the contracting authority or the bidders have made mistakes in the estimation of particular cost items.¹ Or that the risk appreciation of the contracting authority and bidders is different. Differences in the perception of the costs and the risks of the project can be taken up in negotiations with bidders, resulting in optimised bids.

¹ Note that it is in general not in the interest of the Contracting Authority if the bidder has made a mistake and has underestimated his costs because of a misunderstanding about the scope and risks of the project. In the short run the mistake benefits the Contracting Authority because the winning bidder has submitted a proposal with a lower price than expected. However, in the longer run, when the mistake becomes apparent, the contractor observes that resources are insufficient to cope with the problems and performance suffers. In extreme cases the contractor defaults and the service provision is interrupted.

- 2.1.6. The private bidders conduct a financial analysis for the following purposes.
- (a) First, to determine their bid price. Bidders must undertake a financial analysis to determine which availability/service fee or user tariff they must request in order to achieve financial viability.
 - (b) Secondly, to acquire an understanding of the risks and rewards of the project. The financial assessment is one of the elements of the due diligence performed on a project by investors and lenders.
 - (c) Thirdly, to define and optimise the financing structure. The financing conditions of the equity investors and lenders are incorporated in a financial model. The equity investors use the financial model to compare financing proposals from alternative lenders in order to select the most competitive financing package. Lenders require the running of stress tests in order to assess their risks in case of negative events (cost overruns, demand shortfalls, ...).
 - (d) Often fiscal optimization is also part of the financial analysis. The financial and legal structuring of the project may have a significant impact on tax liabilities and therefore the return on investment.
- 2.1.7. In the case of an unsolicited proposal the financial analysis is conducted in first instance by the proponent to prepare his bid. The conclusions of the financial analysis are presented by the proponent of the unsolicited proposal to the contracting authority, in particular the required fee or tariff level and the required government undertakings (grants, guarantees, contributions in kind, permits, exclusive rights, ...). However, it is crucial in this case that the contracting authority conducts its own, independent financial analysis of the project. In this way the contracting authority acquires a deeper understanding of the project and is in a better position to negotiate a balanced deal. The availability fee or user tariff calculated by the contracting authority serves as a benchmark for the unsolicited proposal.

Levels of financial analysis

- 2.1.8. Two levels of financial analysis can be distinguished:
- a preliminary financial analysis;
 - a detailed financial analysis.
- 2.1.9. The **preliminary financial analysis** focuses on the real project cash flows (i.e. capital expenditures, operating/maintenance expenditures and revenues) and determines the overall project return. The objective of the preliminary financial analysis is to assess whether the project can generate a sufficiently high overall return to cover the costs of capital (equity and debt). Thus, only one aspect of financial viability is considered: return. A preliminary financial analysis may be applied in the Preliminary Economic Cost-Benefit Analysis (if enough data is available) and recorded in the Project Concept Note to conduct a preliminary financial viability assessment of the PPP project.
- 2.1.10. A **detailed financial analysis** is conducted as part of the Feasibility Study. In the detailed financial analysis not only are the real project cash flows covered but also the financing cash flows (i.e. the drawdown, redemption and remuneration of equity and various types of debt, reserve accounts). All aspects of the financial viability are examined: not only return but also the financial ratios of interest to lenders. The detailed financial analysis produces a more comprehensive assessment of the

financial viability of the project and can be used to optimise the financial structure of the project. From the perspective of the contracting authority the detailed financial analysis yields a more reliable shadow bid price to serve as a benchmark for the submitted bids. For this purpose, the detailed financial model is updated in the Procurement Stage, if relevant.

2.2 Preliminary financial analysis

Purpose of preliminary financial analysis

- 2.2.1. The purpose of a preliminary analysis is to gain a quick insight in the financial feasibility of a project. The preliminary financial analysis may be used in the Preliminary Economic Cost-Benefit Analysis and included in the Project Concept Note.
- 2.2.2. The analysis is very simple, as will be shown below. This allows to assess in a fast and simple manner various project options; for instance:
 - alternative scope or phasing of project;
 - a bandwidth of demand scenarios in function of expected economic growth;
 - impact of government support measures;
 - impact of risk events, resulting in higher investment costs and delays.

Approach of preliminary financial analysis

- 2.2.3. The approach of a preliminary financial analysis will be explained using the example presented in Table 1 on the next page (*an Excel file with the example is provided in annex to these Annex G guidelines*).
- 2.2.4. A preliminary financial analysis is based on the cash flows from investing and from operations.
- 2.2.5. A cash flow statement is divided into three components:
 - cash flow from investing: cash spent on the construction or acquisition of property, infrastructure, superstructure and equipment that is needed to implement the PPP project;
 - cash flow from operations: cash flow deriving from the operation of the PPP project, consisting of revenues from the sale of services, maintenance and operating costs and taxes;
 - cash flow from financing: cash flow deriving from the raising of capital (equity injections and loan drawdowns), the repayment of capital (loan repayments, equity redemption) and the remuneration of capital providers (dividends, interests, bank fees).
- 2.2.6. In a preliminary financial analysis only the first two cash flow components are included (investing and operations). The cash flow from financing is not taken into account. That does not mean, however, that the preliminary financial analysis is incomplete. The cash flows from investing and operations on the one hand, and the cash flow from financing on the other hand mirror each other. The financing cash flow is needed to cover the funding gaps in the cash flows from investing and operations. The surpluses from the cash flows from investing and operations are distributed to the investors in the form of repayments, interests and dividends. So, by excluding the cash flow from financing from the analysis no errors of omission are committed. In the preliminary financial analysis the financing

conditions (interest rate and required rate of return on equity) are summarised in the weighted average cost of capital (WACC) formula, explained in paragraph 2.2.13 below.

- 2.2.7. The example in Table 1 concerns a PPP Project with a contract period of 17 years, consisting of an investment/construction period of two years and an operation period of fifteen years. The investment costs are equal to 1275, spread out over two years.² The revenues have a ramp-up period of three years, in which they increase from 100 to 200. Thereafter revenues grow steadily at 5% per annum as a result of volume growth and/or inflation. Likewise, operating costs ramp up in the first years and thereafter grow at 5% per annum.³ At the end of the operation period the assets are transferred at zero cost to the government. There is thus no handback value in the example.

² The data in the example are illustrative. They can refer to UGX or any monetary unit.

³ In this example revenues and operating costs grow at the same rate. That is not necessarily always the case. Operating costs may grow slower than revenues (for instance because they contain a large component of fixed costs that do not increase with output volume) or faster than revenues (for instance because they include a cost component the price of which usually outpaces general inflation, such as petrol).

Table 1: Example of preliminary financial analysis

Project Cash Flow (UGX)

Years	Total	1	2	3	4	5	6	7	8
Capital Expenditures	-1,275.0	-500.0	-775.0	-	-	-	-	-	-
Revenues	3,801.0	-	-	100.0	150.0	200.0	210.0	221.0	232.0
Operating Expenditures	-754.0	-	-	-20.0	-30.0	-40.0	-42.0	-44.0	-46.0
Corporate Tax (30%)	-531.6	-	-	1.5	-10.5	-22.5	-24.9	-27.6	-30.3
Project Cash Flow	1,240.4	-500.0	-775.0	81.5	109.5	137.5	143.1	149.4	155.7

Years	9	10	11	12	13	14	15	16	17
Capital Expenditures	-	-	-	-	-	-	-	-	-
Revenues	244.0	256.0	269.0	282.0	296.0	311.0	327.0	343.0	360.0
Operating Expenditures	-48.0	-50.0	-53.0	-56.0	-59.0	-62.0	-65.0	-68.0	-71.0
Corporate Tax (30%)	-33.3	-36.3	-39.3	-42.3	-45.6	-49.2	-53.1	-57.0	-61.2
Project Cash Flow	162.7	169.7	176.7	183.7	191.4	199.8	208.9	218.0	227.8

Calculation of Corporate Tax (UGX)

Years	Total	1	2	3	4	5	6	7	8
Revenues	3,801.0	-	-	100.0	150.0	200.0	210.0	221.0	232.0
Operating Expenditures	-754.0	-	-	-20.0	-30.0	-40.0	-42.0	-44.0	-46.0
Depreciation	-1,275.0	-	-	-85.0	-85.0	-85.0	-85.0	-85.0	-85.0
Profit Before Tax	1,772.0	-	-	-5.0	35.0	75.0	83.0	92.0	101.0
Corporate Tax (30%)	-531.6	-	-	1.5	-10.5	-22.5	-24.9	-27.6	-30.3

Years	9	10	11	12	13	14	15	16	17
Revenues	244.0	256.0	269.0	282.0	296.0	311.0	327.0	343.0	360.0
Operating Expenditures	-48.0	-50.0	-53.0	-56.0	-59.0	-62.0	-65.0	-68.0	-71.0
Depreciation	-85.0	-85.0	-85.0	-85.0	-85.0	-85.0	-85.0	-85.0	-85.0
Profit Before Tax	111.00	121.0	131.0	141.0	152.0	164.0	177.0	190.0	204.0
Corporate Tax (30%)	-33.30	-36.3	-39.3	-42.3	-45.6	-49.2	-53.1	-57.0	-61.2

Project Financial Return

Equity Share	30.0%
Debt Share	70.0%
Cost of Equity	20.0% p.a.
Cost of Debt	10.0% p.a.
Corporate Tax Rate	30.0%
WACC	10.9% p.a.
Project FIRR	8.1% p.a.
Project FNPV	-193.4 UGX

Project cash flow

2.2.8. The top panel of the table shows the project cash flows, i.e. the cash flow from investing (capital expenditures) and the cash flow from operations (revenues, maintenance and operating expenditures and corporate tax).⁴

⁴ Any other business taxes (special excise taxes on particular goods, local taxes on business activities, land taxes...) must be included in the capital or operating expenditures. This also applies for the non-recoverable part of VAT.

As a refinement the formation of working capital can be added to the cash flow statement. Working capital is needed because often expenses must be paid in advance of the receipt of revenues (this depends on the relative length of the credit extended by suppliers to the SPC and by the SPC to the off-takers of the project services). The recovery of VAT also often lags behind the payments of VAT. The amount of working capital is usually expressed as a fraction of expenses (for instance one month of expenses). The working capital is established at the start of operations, and the balance is

- 2.2.9. In determining the project cash flows, the following important points must be kept in mind.
- (a) Only the expenses borne and revenues earned by the Private Party are included in the financial analysis. A separate analysis can be made for the impact on the government budget (see section 2.4 below).
 - (b) The expenses and revenues are expressed in nominal terms, i.e. including expected price increases due to inflation.
 - (c) The forecasts of the expenses and revenues are obtained from other parts of the feasibility study (in particular the technical studies for cost estimates and the demand study for revenue estimates). The forecasts must be clearly documented and explained so that the reader of the financial analysis can assess their reliability and robustness. In particular:
 - the sources of data are indicated, assumptions are justified, and calculations are explained;
 - for convenience and readability, the documentation of the forecasts may refer to the cost estimates in the technical studies and to the demand forecasts in the analysis of user demand (the underlying studies should not be reproduced entirely in the financial analysis; it is sufficient to summarise the relevant findings of these studies and refer to them for further details);
 - assumptions on macro-economic variables (exchange rates, inflation) are based as much as possible on data and forecasts of authoritative institutions (central banks, reputed research institutes, ...).

Corporate tax

- 2.2.10. The calculation of the corporate tax is shown in the middle panel of Table 1. For the estimation of the corporate tax a simple profit and loss statement is constructed. Profit before tax equals revenues less cash costs (maintenance and operating expenditures) and less non-cash costs (for example depreciation). The depreciation amount is obtained by taking $\frac{1}{15}$ th of the value of capital expenditures (15 being the length of the operational period). Then the amount of the corporate tax is determined by multiplying the profit before tax by the corporate income tax rate (30% in the example). The result of the estimate of the corporate tax is copied to the top panel of Table 1, where the project cash flow is calculated.⁵
- 2.2.11. Note that the impact of interest charges on profit before tax and thus on corporate tax is ignored in the calculation of the corporate tax. The corporate tax amount is determined as if the SPC is unlevered and there are no interest charges. In reality, the SPC is usually levered and interest charges are deducted from operating income to arrive at profits before taxes. However, as explained above, the financing cash flow is not considered in the preliminary financial analysis. Instead, the impact of leverage on the return of the project is taken into account through the WACC formula (see below).

returned to investors upon the end of the PPP Contract and the dissolution of the SPC. If expenses rise over time (due to inflation or volume growth), then additional deposits to working capital are made over time. Mutations of working capital can be considered as capital expenditures. They do not enter into the income statement for the purpose of the determination of profits and corporate tax.

⁵ Note that in the example the profit before tax in the first operational period is negative, so that the calculated tax bill is positive (i.e. an income instead of an expense). In practice the tax credit will be offset against profits elsewhere in the firm or carried over to a later period. In the preliminary financial analysis these tax scheduling effects can be ignored. Recall that it is not the actual taxes are modelled, but the hypothetical taxes of an unlevered SPC.

WACC

- 2.2.12. The project financial internal rate of return (FIRR) is a metric of the financial return of the Project. The FIRR is equal to the discount rate that makes the net present value (NPV) of all cash flows from the Project equal to zero. The FIRR is calculated by solving the following equation:⁶

$$\sum_{t=1}^T \frac{PCF_t}{(1+FIRR)^t} = 0$$

in which:

- t = year;
- T = end year (17 in the example);
- PCF_t = project cash flow in year t

In the example the project FIRR is equal to 8.1% per annum.

- 2.2.13. To establish whether the project is financially feasible the FIRR must be compared to the WACC. The project is potentially financially feasible if the FIRR exceeds the WACC.⁷ As the term indicates, the WACC is the average cost of the sources of financing, debt and equity.⁸ The WACC is determined with the following formula:

$$WACC = (S_E \times R_E) + ((S_D \times R_D) \times (1 - T_C))$$

in which:

- S_E = share of equity in the financing of the project;
- R_E = required return on equity;
- S_D = share of debt in the financing of the project = 1 – S_E;
- R_D = required return on debt (i.e. interest rate);
- T_C = corporate tax rate.

In the example, the WACC equals 10,90% per annum:

$$0.3 \times 0.2 + 0.7 \times 0.1 \times (1 - 0.3) = 0.1090.$$

- 2.2.14. The assumptions with respect to the parameters in the WACC formula must be clearly documented and based on published market data, findings from market consultations, or parameters from recent projects with similar risk characteristics.
- 2.2.15. In this example the FIRR is significantly lower than the WACC. This indicates that the project is unlikely to be financially feasible in its current configuration.
- 2.2.16. An alternative way to express this is by calculating the project financial net present value (FNPV). The FNPV is calculated by the following formula:

⁶ This calculation is performed by the Excel IRR-function.

⁷ The term "potentially" is included in this sentence, because the preliminary financial analysis focuses only on one aspect of financial feasibility: the project return. In the detailed financial analysis other dimensions of financial feasibility are also taken into consideration. But the return is arguably the most important factor of financial feasibility and therefore sufficient and for a preliminary analysis.

⁸ As a refinement more sources could be distinguished, for instance subordinated debt or various types of senior debt. In that case the same formula to calculate the WACC applies, only with more terms.

$$FNPV = \sum_{t=1}^T \frac{PCF_t}{(1+WACC)^t}$$

The project is financially feasible if the FNPV is positive. In particular:

- if $FIRR > WACC$, then $FNPV > 0$ and the project is (potentially) financially feasible; and
- if $FIRR < WACC$, then $FNPV < 0$ and the project is (likely) not financially feasible.⁹

In the example the FNPV is equal to -193. The negative outcome is not surprising since it had been found above that $FIRR = 8.1\% < 10.9\% = WACC$

Use of the results of the preliminary financial analysis

2.2.17. The results of preliminary financial analysis can be used in various ways to explore the conditions under which the project is (potentially) financially feasible. In the following paragraphs some applications are presented.

- Firstly, the preliminary financial analysis can help determine the equilibrium availability fee or user tariff. In the example an increase of revenues by about 21% (in all years) brings the FIRR to the level of the WACC.
 - In the case of a government-pays PPP Project the Availability Payment must simply be increased by 21%. The government must then decide whether, at this higher price, the project is still affordable.
 - In the case of a user-pays project, on the other hand, raising the user tariff by 21% is not sufficient to increase revenues by 21%. The negative impact of the higher user tariff on the demand volume must be taken into account. Suppose the demand study has established that the price elasticity of demand equals -0.5 . This means that for every 1% price increase, demand falls by 0.5%. So, to increase revenues by 21% the tariff must be increased by twice as much, or 41%. The government must decide whether the project is still worth doing if the number of users is reduced and the services are only affordable for higher income groups who can pay the higher price.¹⁰
- Alternatively, the financial analysis can determine the level of government support that is required to achieve financial feasibility at the currently proposed user tariffs. In the example an upfront grant of 247 to defray part of the capital costs is sufficient to attain a project return equal to the WACC. The government must then assess whether this public subsidy is justified by the social and economic benefits of the project.
- A preliminary financial analysis can be used to explore whether the project can be financially feasible in another configuration, for instance in a scaled-back version, with a less expensive technology or phased in time.

⁹ FIRR and FNPV are therefore equivalent measures of the project return. In some, relatively rare, cases the FIRR equation has no or multiple solutions and the equivalence between FIRR and FNPV breaks down. In those cases, the FNPV must be used.

¹⁰ The government should also check whether an increase of tariffs by 37% is feasible. A price elasticity estimate is only reliable for limited price changes above or under the base tariff level used in the demand study. If the price is pushed ever higher, at some point most potential users may drop out and demand fall steeply towards zero.

- (d) Finally, the preliminary analysis can be used to assess the robustness of the financial feasibility of the project to changes in uncertain assumptions or risks. A preliminary financial analysis should include a sensitivity analysis to assess the impact on the financial return of (i) uncertainty about important assumptions in the calculation of expenses and revenues and (ii) project risks on the financial feasibility of the project. The usual sensitivity tests include:
- increase of costs by the uncertainty margin of the costs estimate (usually around 20%);
 - low demand scenario;
 - any important project risks that have been identified in the other parts of the feasibility study (for instance delay of the project implementation due to permit problems, or higher than expected land acquisition costs).

2.2.18. If the preliminary financial analysis shows that the expected return of the project is negative, the contracting authority can take one of three decisions:

- proceed with the project to the full feasibility study, but with the understanding that government support may be required;
- revise the project (scope, scale, revenue sources, ...) in order to increase revenues or decrease costs;
- abandon the further development of the project, if neither of the two preceding options is feasible.

2.3 Detailed financial analysis

Purpose of detailed financial analysis

- 2.3.1. As explained above, a preliminary financial analysis focuses on only one aspect of financial viability: the financial return. Moreover, (as stated above) a preliminary financial analysis does not include the financing cash flow. The financing conditions are summarized and approximated through the WACC.
- 2.3.2. A preliminary financial analysis provides sufficient insights in order to evaluate the potential financial feasibility of a project. However, if one wants to obtain a more precise estimate of the financial return of the project and to also assess the other dimensions of financial feasibility a detailed financial analysis is required.
- 2.3.3. The contracting authority conducts, or causes to conduct,¹¹ a detailed financial feasibility analysis as part of the Feasibility Study. The objectives of the detailed financial analysis are the same as those of the preliminary financial analysis. The contracting authority wants to establish whether the project can be implemented as a PPP, what the availability fee or user tariff demanded by the winning bidders is likely to be, and what level of government support is needed in order to make the project financially feasible. The difference is that detailed financial analysis yields more accurate answers to these questions.
- 2.3.4. In the Procurement Stage the detailed financial model (updated if relevant) is used to benchmark the financial bids.

¹¹ A preliminary financial analysis is often performed by the internal staff of the Contracting Authority (and the PPP Unit is available for support). A detailed financial analysis is mostly outsourced to external service providers. A detailed financial analysis will usually be part of the scope of work of the Transaction Advisor.

- 2.3.5. The bidders also conduct a detailed financial analysis to structure the financing, negotiate with investors and lenders and define the most competitive bid price (availability fee or user tariff, depending on the type of PPP Project) that meets the financial feasibility criteria.

Approach of detailed financial analysis

Differences between detailed and preliminary financial analysis

- 2.3.6. The detailed financial analysis extends the preliminary financial analysis in several ways.
- (a) In a detailed financial analysis all cash flows are recorded in a financial model: the cash flow from investing, the cash flow from operations and the financing cash flow. By modelling the financing cash flow explicitly, the financing structure can be simulated and optimised in a much more detailed way. Different forms of debt with different conditions can be distinguished. Also, the costs of the debt instruments are modelled in much more detail. While in the WACC only interest charges are taken into account, in the modelling of financing cash flows all types of financing costs are included such as arrangement fees, commitment fees and bank agency fees. In addition to interest rates and fees other financing conditions affecting the return to equity investors are included in the analysis, in particular the obligation to establish a debt service reserve account and a maintenance reserve account, and restrictions on the distribution of dividends to shareholders (dividend lock-up).
 - (b) In a preliminary financial analysis only a cash flow statement is produced (as well as a simple income statement for purpose of the determination of the corporate tax). A detailed financial analysis yields a complete set of financial statements:
 - a cash flow statement, containing a full cash-flow waterfall from revenues to distributions to equity holders;
 - a profit & loss statement;
 - a balance sheet.
 - (c) In the preliminary financial analysis two measures of financial feasibility are assessed: the FIRR and the FNPV. Both measures are practically equivalent and only focus on the project return. A detailed financial analysis yields a broader set of financial feasibility measures. The most important measures, which are used by equity investors and lenders to decide on the financing of project, are (definitions of the measures are provided below):
 - equity internal rate of return (EIRR);
 - the debt service coverage ratio (DSCR);
 - the loan life coverage ratio (LLCR);
 - the gearing ratio.
 - (d) In a preliminary financial analysis the project is usually modelled with an annual frequency. That is sufficient for an initial estimate of the potential return of the project. In a detailed financial analysis a more detailed timeline may be required: semi-annual, quarterly or even monthly. Often financial models have two timelines: a timeline with high frequency during the development and construction period (monthly) and a timeline with lower frequency during the operational period (quarterly, semi-annual or annual). The timeline must be adapted to the schedules of the financial flows. If loans are drawn on a monthly basis, then the financial model preferably has a monthly frequency in the construction period.

Structure of a detailed financial model

- 2.3.7. The list below presents an overview of the modules of a detailed financial model. For the sake of model clarity the modules must be placed in separate tab sheets of an Excel file.

Table 2: Modules of a financial model

<ul style="list-style-type: none"> Inputs 	All input parameters, divided into sections: project dates, capital expenditures, operating expenditures, revenues, financing, taxes, ...
<ul style="list-style-type: none"> Time and escalation 	Time schedules (model period, construction period, operating period, among others) and price indices.
<ul style="list-style-type: none"> Capital expenditures 	Development and construction costs, phased in time on accrual basis.
<ul style="list-style-type: none"> Operating expenditures 	Maintenance and operating costs, phased in time on accrual basis
<ul style="list-style-type: none"> Revenues 	Revenue streams, phased in time on accrual basis.
<ul style="list-style-type: none"> Funding 	Allocation of the development and construction costs to equity and the various types of debt (equity, equity bridge loan, subordinated debt, concessional loans, bank loans, among others). Every form of financing with different conditions (interest, fees, among others) must be modelled separately.
<ul style="list-style-type: none"> Financing 	Modelling of cash flow related to the debt service: interests, fees, repayment of debt.
<ul style="list-style-type: none"> Reserve accounts 	Establishment and mutations of debt service reserve account (DSRA) and maintenance reserve accounts (MRA).
<ul style="list-style-type: none"> Working capital 	Modelling of payment delays of costs and revenues, resulting in accounts receivable and payable balances.
<ul style="list-style-type: none"> Accounting and tax 	<p>Modelling of accounting items, in particular:</p> <ul style="list-style-type: none"> – creation and depreciation/amortization of assets; – profits and corporate tax; – dividends; – value added tax. <p>The accounting items must be modelled according to national accounting standards and tax rules. Where national accounting standards are not available, international accounting standard must be followed (IAS and IFRS).</p>
<ul style="list-style-type: none"> Financial statements 	<p>In this module the results from the preceding modules are brought together in three financial statements:</p> <ul style="list-style-type: none"> – cash flow waterfall; – profit & loss statement; – balance sheet.

<ul style="list-style-type: none"> • Ratios 	Calculation of financial ratios (project internal rate of return, equity internal rate of return, DSCR, LLCR, PLCR, gearing ratio, among others).
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Financial statements

- 2.3.8. The tables below present the typical structure of the three financial statements: the cash flow waterfall, the profit and loss statement and the balance sheet.

Table 3: Cash flow waterfall

Revenues (+)
Operating expenditures (–)
Corporate tax (–)
Operating cash flow
Capital expenditures (–)
Cash flow before funding
Equity injections (+)
Debt drawdowns (+)
Cash flow after funding
Withdrawals or deposits of maintenance reserve account (MRA) (withdrawals + ; deposits –)
Cash flow available for debt service (CFADS)
Senior debt service: interests and fees, repayment of principal (–)
Withdrawals or deposits of debt service reserve account (DSRA) (withdrawals + ; deposits –)
Cash flow available for shareholders
Subdebt interests and repayment (–)
Distributions to equity: dividends and equity redemption (–)
Net cash flow

Table 4: Profit & loss statement

Revenues (+)
Operating expenditures (–)
EBITDA (earnings before interests, taxes, depreciation and amortization)
Depreciation and amortization (–)
EBIT (earnings before interests and taxes)
Interests on senior debt and subdebt (–)
Interest income on cash balances (+)

PBT (profits before taxes)
Corporate income tax (–)
PAT (profit after tax)
Addition to legal reserves (–)
Profits available for dividends
Dividend payments (–)
Retained earnings

Table 5: Balance sheet

Work in Progress (WIP)	Equity capital
Fixed assets	Legal reserve balance
Financial assets	Retained earnings balance
Accounts receivable	Subordinated debt
VAT receivable	Equity Bridge Facility
MRA and DSRA	Senior debt
Cash balance	Accounts payable
Total assets	Total liabilities

Financial ratios

- 2.3.9. The table below presents formulas of the financial ratios that are commonly used by equity investors and lenders to assess the financial feasibility of a PPP project.

Table 6: Financial ratios

Equity internal rate of return (EIRR)	<p>The equity IRR (EIRR) is found by solving the following formula:¹²</p> $\sum_{t=1}^T \frac{CFE_t}{(1+EIRR)^t} = 0$ <p>in which:</p> <p>CFE_t= cash flow to equity (equity injection, equity repayment, dividends, subdebt investment, subdebt repayment, subdebt interest) in period t.</p> <p>The return to shareholders is the sum of the return to pure equity and the return on investments in the form of subordinated debt (which is often fiscally more advantageous). The shareholders have requirements with respect to the return on their total investment. Therefore, the CFE term in the EIRR formula also includes subdebt.</p> <p>The EIRR is the internal rate of return from cash flows available to equity providers that will turn the NPV into 0. The computed EIRR of the Project shall</p>
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¹² In practice by using the IRR or XIRR function in Excel.

	<p>be compared against the required rate of return of potential investors in order to determine the commercial viability of the Project.</p>
Debt service coverage ratio (DSCR)	$DSCR_t = \frac{CFADS_t}{DS_t}$ <p>in which:</p> <p>CFADSt = cash flow available for debt service in period t (see definition in Table 3)</p> <p>DSt = debt service in period t (interests and repayment of principal).</p> <p>The DSCR is a ratio calculated for a given period. It shows the ability of the SPV to repay its scheduled debt service for a given period with the use of cash flows available for debt service in the same period. Thus, a higher a DSCR is considered safer by the lenders. However, in the interest of optimizing distributions within the SPV while reducing the risk of loan repayment default, lenders provide a minimum DSCR in the lending agreement as part of the loan covenants.</p> <p>The DSCR is assessed in the financial feasibility assessment in order to assess the bankability of the Project.</p>
Loan life coverage ratio (LLCR)	$LLCR_t = \frac{\text{present value of CFADS from period t onwards}}{\text{outstanding debt balance at beginning of period t}}$ <p>The present value of the CFADS is computed using the interest rate on the debt, with the formula:</p> $PV(CFADS)_t = \sum_{j=t}^T \frac{CFADS_j}{(1+r_j)^{j-t}}$ <p>in which:</p> <p>r_j = effective interest rate in period j (interest charge in period j divided by outstanding debt balance at beginning of period j).</p> <p>The LLCR is important from the Lender's perspective in order to understand the credit quality of the Project. Thus, a higher ratio is considered safer from the perspective of the lender. Similar to the DSCR, a minimum LLCR is defined as part of the covenants of the loan agreement. The LLCR is also included in the financial feasibility assessment in order to assess the bankability of the Project.</p>
Gearing ratio	$\text{Gearing}_t = \frac{\text{outstanding debt at end of period t}}{\text{sum of outstanding equity and debt at end of period t}}$ <p>The outstanding equity is the sum of all shareholder investments, i.e. the sum of pure equity, equity bridge loan, subordinated debt, legal reserves and retained earnings balance.</p> <p>The Gearing Ratio shows the extent of debt financing over the total capital of the SPV. Project financed projects are usually debt-driven as it debt financing reduces the weighted average cost of capital given that debt financing is cheaper as compared to equity financing due to the difference in risk profiles between the said financing sources. However, it must be noted that lenders has a limit in terms of the debt exposure in light of the cost of financial distress that is attached to excessive debt exposure.</p>

Use of the results of the detailed financial analysis

Assessment of financial feasibility

- 2.3.10. In a detailed financial analysis all aspects of the financial feasibility are addressed. In particular, a project is financially feasible if:
- the return to shareholders (equity and subordinated debt) is at least equal to the required rate of return;
 - the minimum DSCR exceeds the level prescribed in loan covenants;¹³
 - the gearing ratio does not exceed the maximum prescribed in loan covenants;
 - the loans can be repaid on time;
 - the cash balance remains positive.
- 2.3.11. If the project is found to be not financially feasible, then alternative solutions must be explored such as:¹⁴
- increasing the user tariff;
 - reducing the scope of the project;
 - implementation of the project in phases instead of in one go;
 - lengthening the concession period, so that the SPC has more time to recover the investment costs;
 - providing government support.
- 2.3.12. The financial model allows to determine to what extent the above measures must be implemented in order to achieve financial feasibility.

Sensitivity analysis

- 2.3.13. It is not sufficient that the project is financially feasible in the base case (i.e. the case when all cost and revenues are at their expected level). Lenders are especially concerned about downward risks, i.e. risks that increase costs or decrease revenues so that the ability to service the debt is impaired. Lenders therefore insist on conducting stress tests in which the worst expected outcomes are simulated.
- 2.3.14. Stress tests are carried out by means of sensitivity analyses with the financial model. Common stress tests include:
- upper value of bandwidth of cost estimates (capital expenditures, operating expenditures and maintenance expenditures);
 - pessimistic demand forecast (low economic growth scenario, low uptake of services);

¹³ A loan covenant is a condition in the financing agreement that requires the borrower (in this case the SPC) to fulfill certain conditions, or which forbids the borrower from undertaking certain actions unless other conditions are met. One of the conditions usually imposed concerns the minimum level of the DSCR.

¹⁴ See in this regard paragraphs 2.2.17 and 2.2.18 in section 2.2- Preliminary financial analysis. The same arguments also apply here to the detailed financial analysis.

- any important project risks that have been identified in the other parts of the feasibility study (for instance delay of the project implementation due to permit problems or delays in land acquisition).
- 2.3.15. Even in the most adverse conditions that can be reasonably expected the financial ratios must exceed minimum levels specified in the loan documents. As a minimum, it must be possible to pay the interest on the senior loans and repay the principal over the lifetime of the project.
- 2.3.16. If there are risk events with such large impacts that the SPC becomes financially unviable, then the risk allocation in the contract must be changed. This is achieved by including provisions in the PPP agreement that give the SPC compensation paid by the contracting authority or another government agency in the case specific adverse risks occur, or that transfer specific costs entirely to the government (but then they appear in the financial analysis from the government perspective– see section 2.4).

Financial evaluation of performance deductions

- 2.3.17. The PPP agreement specifies penalties and/or fee deductions in case of non-performance of contractual requirements. The objective of the penalties and reductions is to incentivise the Private Party to fulfil these contractual requirements. The penalties and performance deductions should be therefore set at a level that is more than symbolic. The intention of the penalties and performance deductions is to cause financial pain to the SPC and its investors. Otherwise the incentive mechanism is not effective. On the other hand, the penalties and performance deductions should not be so severe that they endanger the financial viability of the SPC. The contracting authority has, in general, no interest in triggering the insolvency of the SPC, because then the public service provided by the PPP project is interrupted and the government has to step in. Only when performance is so bad that the contracting authority wishes to terminate the PPP agreement anyway, the financial viability of the SPC may be less important. But in other cases, the penalties and performance deductions are intended to provide a strong, financially painful signal but not to ruin the SPC. In general, the performance deductions reduce the return to shareholders, but should not affect the debt service obligations unless in case of very large shortcomings.
- 2.3.18. In order to verify that the penalty and performance deduction mechanism meets the above requirements (sufficiently penalising, but not too much) the financial model is used to assess the impact of plausible scenarios of performance shortcomings on the financial outcomes of the SPC.
- 2.3.19. The private bidders also undertake this exercise, in order to determine the level of fee or tariff they should demand to achieve financial feasibility taking into account the expected, unavoidable shortcomings in performance.

Financial evaluation of termination payments

- 2.3.20. The PPP agreement specifies compensation payments in case of early termination (i.e. a termination prior to the contractually defined date of expiry). The amount of the compensation depends on the cause of the early termination. There are three groups of causes:
- contracting authority default or voluntary termination by contracting authority;
 - Private Party (i.e. SPC) default;
 - force majeure.

- 2.3.21. The financial model can be used to:
- estimate the expected termination payment in particular termination scenarios (by applying the compensation formulas in the PPP agreement); and
 - assess the financial impact of the termination on the SPC.
- 2.3.22. In the detailed financial analysis at least one representative event of contracting authority default, Private Party default and force majeure must be examined in order to check the compensations in these three types of occurrences.
- 2.3.23. Lenders are especially concerned about the termination payments. As a general rule, lenders should be compensated in full in case of an early termination due to contracting authority default or force majeure. In case of an SPC default, on the other hand, it is fair for the lenders not to be repaid in full if the early termination causes large damages for the user or the government, and the outstanding equity is insufficiently large to compensate for these damages.

2.4 Financial analysis from the government perspective

- 2.4.1. In the preceding sections the financial analysis was discussed from the perspective of the Private Party. Even if the contracting authority conducts the financial analysis, it does so from the point of view of the SPC in order to assess the financial feasibility of the project being implemented by a Private Party on a PPP basis. However, the government is also interested in the financial consequences of the PPP project for the government budget.
- 2.4.2. Two issues are in this respect relevant:
- the assessment of government support measures;
 - fiscal liability management.

For both issues the financial analysis provides essential inputs.

Analysis of government support measures

- 2.4.3. The financial analysis supports the assessment of government support in two ways.
- Firstly, the financial model determines the extent of the **need** for government support measures. Government support could, for example, include the provision of viability gap funding. The financial analysis the shortfall of revenues to achieve financial feasibility is calculated. This shortfall is equal to the value of government support measures that is required.
 - Secondly, the financial model allows to simulate the impact of government support measures that are proposed. In this way the **effectiveness** of the proposed measures to achieve financial feasibility of the PPP project is assessed.

Fiscal commitments and contingent liability management

- A.1.1 The procedure and methodological approach for fiscal commitments and contingent liability management are covered in detail in Annex J (Guidelines for the Management of Contingent Liabilities).

A.1.2 The financial analysis provides inputs for the forecast of the fiscal commitments. In particular the financial model forecasts the following cash flow items which must be funded from, or accrue to, the budget of the contracting authority or of other government agencies:

- Direct commitments:
 - availability fee paid by the contracting authority;
 - capital grants (upfront grants to defray part of the capital expenditures);
 - grants in kind (for instance grant of use rights for land needed to build the project, valued at market price);
 - operating grants (fixed annual subsidy, ad valorem subsidy, or specific subsidy per unit of output);
 - concession fees paid by SPC to contracting authority (upfront, fixed per annum, ad valorem or per unit);
 - tax deductions;
- contingent liabilities:
 - compensation in case of risk events;
 - pay-out under loan guarantees (if relevant);
 - early termination payments.

2.4.4. For contingent liabilities the financial model estimates the fiscal expense that will occur in the case of particular risk or termination events. To obtain an estimate of the expected fiscal expense, this information must be combined with estimates of the probability that the risk or termination event under consideration will occur. This information is then supplied to the relevant departments within the Ministry responsible for financing for the analysis of fiscal risks (as explained in Annex J - Guidelines for the Management of Contingent Liabilities).

2.5 A note on financial modelling

Role of financial model

2.5.1. The financial model is the most important **instrument** for the financial analysis. The financial model aims to provide a realistic representation of the cash flows that the project will generate. Calculations and simulations with the financial model underpin most of the conclusions of the financial feasibility assessment.

2.5.2. In addition, the financial model serves as a **depository** for all financially relevant data and assumptions of the PPP project and the PPP agreement. The financial model contains the data and assumptions on:

- project capital and maintenance/operating costs;
- the demand for project services;
- financing structure;
- financing conditions (interest costs, fees, required return on equity, ...);
- tax rules;
- project risks;
- provisions in the PPP agreement on the responsibilities of the SPC and the contracting authority, the payment mechanism, the compensations for special events and the termination payments.

2.5.3. The data and assumptions are obtained from several sources, notably:

- technical studies (costs and technical risks);
- demand study (demand volume, user tariff, price elasticity);
- social impact study (costs and timing of land acquisition);
- environmental impact study (costs of preventive and mitigating measures);
- market consultation of potential investors and lenders (financing conditions);
- macro-economic forecasts (expected inflation and economic growth);
- experience from recent, similar projects (costs, demand, financing conditions);
- proposed draft PPP agreement.

The reliability of the financial analysis is only as good as the reliability of the input data.

Modelling practices and standards

2.5.4. Financial models for the assessment of PPP projects are usually built in Excel.

2.5.5. There are several standards for financial modelling in Excel.¹⁵ The use of one of these standards, or equivalent, is imperative. It ensures that financial models are built in a consistent, transparent and structured manner. As a result, the financial models:

- are more flexible for implementing modifications and for simulation of additional scenarios;
- can be audited more easily and comprehensively by external auditors (which is essential for models that are used for bidding purposes);
- can be handed over more easily between modellers and users.

¹⁵ Three well-known and widely used financial modelling standards are FAST (www.fast-standard.org), Best Practice Modelling Standards (ssrb.org) and SMART (www.corality.com/consulting/smart).