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METHODOLOGY

For Risk Assessment and Management of PPP Projects

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METHODOLOGY

For Risk Assessment and Management of PPP Projects

1. General provisions

1.1 1.1. The purposes of this Methodology is to provide for the Public Partner the underlying concepts of risk and risk management in the context of PPP Projects as well as to define potential types of risks, methods for their evaluation and tools for risk management

1.2 This Methodology is expected to be used by the Public Partner during each stage of the full project life cycle from initiation to closure and, in specifics, for the purposes of making decision on project viability and efficiency valuation, allocation of risk between public and private partner and project implementation and management of risks allocated to the public partner according to the agreement signed between the partners (in accordance with the Article 5 of the Law of Ukraine on Public – Private Partnership (2404-17), and through to project closure.

1.3 The following terms have the following meanings in this Methodology:

“expected value” has the meaning given to it in the field of mathematical probability and statistics.

1.4 Risk

1.4.1 For purposes of this Methodology, a risk is any uncertainty about a factor, event or influence that could impact the project performance at any stage of the project lifecycle in terms of time, costs, quality of assets or services, or expected returns. A risk can be negative or positive in nature.

1.4.2 Conceptually, the magnitude of a specific risk is determined by the product of (a) the probability of the event occurring and (b) the consequences if the event does occur.

1.5 The purposes of risk assessment and management in the preparation and implementation of a PPP project include the following, among other things:

1.5.1 to ensure the use of risk adjusted assumptions in the financial and economic analysis, thus providing for more reliable estimates of value for money from the PPP;

1.5.2 to allocate each risk in the best possible manner to the party most able to handle it and to guide the drafting of the PPP agreement to achieve this aim;

1.5.3 to estimate the contingent liabilities of the public partner and any other relevant governmental or municipal entity;

1.5.4 to help determine needed project contingency reserves; and

1.5.5 to identify and monitor mitigation actions.

2. Risk identification, assessment, and allocation

2.1 In preparing the PPP Feasibility Report, all material risks need to be identified, assessed, and described and allocated. A risk is considered to be material if taking it into account would reasonably affect a decision about the project design or structure.

2.2 For the practical purposes of risk assessment under this Methodology, each risk will be categorized as either quantitative or qualitative.

2.2.1 Quantitative risks are those types of risks for which a numerical value or values can realistically be assigned.

2.2.2 Qualitative risks are those for which either:

- (1) the cost or effort involved in quantifying the risk would be disproportionate to the benefit of quantitative valuation; or
- (2) the degree of uncertainty is so great that any effort to quantify the risk would be speculative.

2.3 Quantitative risk analysis

2.3.1 A quantitative risk analysis for purposes of the PPP Feasibility Report must be carried out using the financial model.

2.3.2 The analysis carried out must be tailored to the risks and the magnitude of the risks of the particular PPP project.

2.3.3 A risk is assessed based on information from historical data, accepted technical models, or expert opinions. The correct method (or combination of methods) depends on the specific risk.

2.3.4 Any form of quantitative risk analysis applied to the financial model must take into account the manner in which the particular cash flow in the base case of the financial model was determined, for example by engineers' estimates, the most likely value, or the expected value.

2.3.5 There are three main types of quantitative risk analysis relevant for the Feasibility Report:

- (1) sensitivity analysis, to be used for all PPP projects;
- (2) scenario analysis, to be used for all PPP projects; and
- (3) Monte Carlo simulation, required to be used only for large and complex PPP projects that present special issues concerning risk.

2.3.6 Sensitivity analysis

- (1) In sensitivity analysis, the values of key risky variables, starting from the base case, are varied one by one, and the impact on output indicators is examined for changes in the value of each variable.

(2) The project must remain financially viable even when the value of a key risky variable is set at a substantially unfavorable value.

(3) Variables to be tested using sensitivity analysis include, as relevant and among other things:

(a) cost overruns during construction;

(b) cost overruns during operation;

(c) revenue shortfalls (if substantial demand risk will be allocated to the private partner).

2.3.7 Scenario analysis

(1) In scenario analysis, starting from the base case, a single “worst case” scenario is constructed using unfavorable values for several key risky variables. Several different types of scenario should be examined. The impact on output indicators is then examined.

(2) The project must remain financially viable even in a worst case scenario.

2.3.8 Monte Carlo analysis

(1) If a Monte Carlo analysis is carried out, it must be carried out in accordance with generally accepted principles and practices in the financial industry for Monte Carlo risk simulation.

(2) In a Monte Carlos analysis, probability distributions for a number of risky variables are used in the financial model and the aggregate impact on output indicators is examined in probabilistic terms.

2.4 Risk allocation. In the absence of other considerations, each risk will be allocated to the party best able to control, manage, or mitigate it.

2.5 The PPP Feasibility Report will include a Risk Matrix. The Risk Matrix will contain the following information, column by column:

2.5.1 Column 1 (No.): Each identified risk must be numbered consecutively.

2.5.2 Column 2 (Risk category and subcategory): The following categories and subcategories must be included in the table. If any category or subcategory is not applicable to the particular PPP project, this must be stated. The names of the subcategories may be modified slightly to better reflect the nature of the particular project if this is appropriate. Other categories and subcategories may be added as appropriate for the specific project.

(1) Planning and approvals

(2) Design and construction

(a) Site availability and conditions

- (b) Inadequate technology
 - (c) Cost overruns
 - (d) Completion delay
 - (e) Failure of contractor
 - (f) Environmental
- (3) Demand and market
- (4) Operation
- (a) Supplies and other inputs
 - (b) Underestimation of costs
 - (c) Inadequate technology
 - (d) Failure of operator
 - (e) Environmental
- (5) Legal and regulatory
- (6) Financial and macroeconomic
- (a) Availability of finance
 - (b) Financial strength of private partner
 - (c) Interest rate
 - (d) Inflation
 - (e) Exchange rate
- (7) Social and political
- (a) Objections or resistance by key stakeholders
- (8) Force majeure and other unforeseen (but high-impact) events

2.5.3 Column 3 (Description of risk): The nature of the risk must be described in a succinct but informative way.

2.5.4 Column 4 (Assessment method): First, it must be stated whether it has been decided to assess the risk in a qualitative manner or a quantitative manner. Then, if the method is quantitative, the method used to assess the risk must be briefly indicated.

2.5.5 Column 5 (Input into financial model): This column is to be used only if it has been stated in column 4 that the assessment method is quantitative. If the risk has been assessed in a quantitative way, it must be stated how the risk will be incorporated into or applied to the financial model of the PPP.

2.5.6 Column 6 (Envisaged risk allocation): The risk could be allocated to the PPP company or the public contracting party or to another public authority. The risk could be shared between various parties. For present purposes, it is not necessary to describe the precise mechanism to be used to allocate the risk.

2.6 In addition to containing the Risk Matrix, the PPP Feasibility Report will include a section in which the major risks are discussed, one by one, in greater detail, including the justification for the proposed allocation.

3. Risk management by the public partner during project implementation

3.1 This section 3 applies only to risks that have been allocated in the Risk Matrix partially or entirely to the public partner or to significant stakeholders other than the private partner. It does not apply to risks to the extent that they have been allocated to the private partner.

3.2 For every such risk, the PPP Feasibility Report will include a discussion of how it is intended that the risk can be mitigated.

3.3 Risk management is the process of identifying, analyzing and addressing significant risks on an ongoing basis. Project risk management is an iterative process that begins in the early phases of a project and is conducted throughout the project's life cycle. It involves systematically considering possible outcomes before they happen and defining procedures to accept, avoid, or minimize the impact of risk on the project.

3.4 The Risk Register is a key tool for the risk management and risk mitigation process to be used department after contract signature on a continuing basis.

3.5 Risk management approaches include, among other things: risk prevention, impact mitigation, risk transfer (including insurance), and risk acceptance.

3.6 The PPP Feasibility Report must include a Risk Register. The Risk Register must be designed so that it can be properly updated on a regular basis.

3.7 The Risk Register must contain the following information, column by column:

3.7.1 Column 1 (No.): Each identified risk must be numbered. The numbers should correspond to the numbers given under Clause 2.5.1. The numbers in the Risk Register table therefore will not necessarily be consecutive.

3.7.2 Column 2 (Risk category and subcategory): The categories and subcategories listed under Clause 2.5.2 must be included in this table. The names of the subcategories may be modified slightly to better reflect the nature of the particular project if this is appropriate. If any category or subcategory is not applicable to the particular PPP project, this must be stated. Other categories and subcategories may be added as appropriate for the specific project.

3.7.3 Column 3 (Description of risk): The nature of the risk must be described in a succinct but informative way. For this table, only those risks that will be allocated (entirely or partially) to the public partner or to significant stakeholders other than the private partner will be considered. To the extent that a risk has been allocated to the private partner, risk management is the responsibility of the private partner and will not be dealt with in the Risk Register. The public partner must monitor the performance of the private partner but is not responsible for managing the risks allocated to the private partner.

3.7.4 Column 4 (Effect of risk): The effect that is likely to result if the risk materializes must be succinctly described in this column. It must be indicated also on which persons or entities the impact is likely to fall.

3.7.5 Column 5 (Potential Impact): One letter must be entered into this column: “L” for low, “M” for medium, and “H” for high. This summarizes the size of the impact on the project or on other stakeholders if the risk materializes.

3.7.6 Column 6 (Probability of occurrence): One letter must be entered into this column: “L” for low, “M” for medium, and “H” for high. This summarizes the probability that the risk will materialize.

3.7.7 Column 7 (Risk management approach):

(1) For each risk that is scored (in columns 5 and 6) H/H, H/M, or M/H, the approach to be followed by the public partner for managing the risk must be succinctly described.

(2) For each risk that is scored M/M, either a risk management approach will be indicated or it must be stated why a risk management approach is considered not to be necessary.

(3) For each risk that is scored L/M, M/L, or L/L, it is not required to indicate a risk management approach.

3.8 In addition to the Risk Register, the PPP Feasibility Report must include:

3.8.1 a section that, for each major risk that the public partner will need to manage during the life of the PPP (as indicated in the Risk Register), discusses in greater detail the risk management approach and develops a specific risk management plan, including the specific measures to be taken, which department will be responsible for each aspect, and how the risk will be monitored on an on-going basis; and

3.8.2 (if relevant) a section in which all risks that would have a significant monetary impact on a government or municipal budget (i.e. those risks constituting significant contingent liabilities for government or municipality) are quantified.

RISK MATRIX

(1) No.	(2) Risk category and subcategory	(3) Description of risk	(4) Assessment method	(5) Input into financial model	(6) Envisaged risk allocation
1.					
2.					
3.					
4.					
5.					
6.					
7.					
<i>Etc.</i>					

RISK REGISTER

(1) No.	(2) Risk category and subcategory	(3) Description of risk	(4) Effect of risk	(5) Potential impact	(6) Proba- bility of occur- rence	(7) Risk management approach
1.						
2.						
3.						
4.						
5.						
6.						
7.						
<i>Etc.</i>						