

Funded by the European Union



This publication was produced with the financial support of the European Union. The content it is the exclusive responsibility of the Project "Support the Moldovan Government in identifying and preparing projects linked to the implementation of the Association Agreement "funded by the European Union. The content of the publication belongs to authors and do not necessarily reflect the view of the European Union.



Support the Moldovan Government in identifying and preparing projects linked to the implementation of the Association Agreement



These Instructions are approved by Ministerial Order 104 of 22 November 2024, published on 13 December 2023 in MONITORUL OFICIAL Nr. 474-476 art. 1172 and serve as guidance for the preparation of public investment project to all Central Public Authorities.

This is an unofficial translation from Romanian.

Acknowledgements

These Instructions are a joint effort between the Ministry of Finance of Moldova and the EU TA project "Support the Moldovan Government in identifying and preparing projects linked to the implementation of the Association Agreement (PPF Project)".

The team that participated on the part of the Ministry of Finance, Public Investment Directorate included Viorel Pană, Head of the Directorate, Lilia Taban, Deputy Head, and Angela Dvornic, Senior Consultant. Also, Natalia Sclearuc, Head of Budget Synthesis General Directorate.

PPF Project team was composed of Yiannis Hadziyiannakis, Team Leader, Gnel Sedrakyan, Public Investment Expert, Kostantinos Kyriakopoulos, Financial Analysis and Modelling Expert, Irina Grigoryan, Costing and Public Sector Accounting Expert, Leonidas Crisciunas, IT Expert, Eugenia Busmachiu, Public Investment Management and Budgeting Expert, and Daniela Cotorobai, Financial Analysis Expert.

The support of Josip Juric, Programme Manager at EU Delegation to Moldova, is also acknowledged.



MINISTRY OF FINANCE OF THE REPUBLIC OF MOLDOVA

ORDER No. 104

22 November 2023

(amended by the Ministry of Finance Order No. 114 of 9 October 2024)

On Approval of Instructions for Appraisal of Public Capital Investment Projects

Pursuant to Article 3¹ from Government Decree No. 684/2022, as amended, approving Regulation regarding public capital investment projects (Official Gazette of the Republic of Moldova, 2022, No. 326-333, art. 787)

I ORDER:

- 1. To approve the Instructions for Appraisal of Public Capital Investment Projects (as annexed).
- 2. This order shall enter into force on the date of its publication in the Official Gazette of the Republic of Moldova.

MINISTER

PETRU ROTARU

INSTRUCTIONS FOR THE APPRAISAL OF PUBLIC INVESTMENT PROJECTS

2023

CONTENTS

I. GENERAL PROVISIONS	1
1.1. Coverage of the Instructions	1
1.2. Definitions	2
1.3. Pipeline of capital public investment project	2
1.4. Information System "Register of Public Investment Projects (RPIP)"	3
1.5. Working Group of public capital investments	3
II. PROJECT PROPOSAL APPRAISAL PROCESS	5
2.1. Submission of project proposals	5
2.2. Appraisal of projects proposals	5
2.2.1. Scoring methodology	5
III. STRUCTURE AND THE CONTENT OF THE PROJECT PROPOSALS	9
3.1. Project Summary	9
3.1.1. Purpose of the project	9
3.1.2. Strategic framework	10
3.1.3. Beneficiaries	10
3.1.4. Location	11
3.2. Technical Analysis	12
3.2.1. Technical specifications and resources	12
3.2.2. Technology required	13
3.2.3. Operational assessment	13
3.3. Economic and financial analysis	14
3.3.1. The business case	14
3.3.2. The financial case	16
3.3.3. Cost-benefit / cost-effectiveness analysis	20
3.4. Legal Assessment	25
3.5. Institutional and Management Assessment	28
3.6. Social Impact Assessment	29
3.7. Environmental impact assessment	30
3.8. Risk Assessment	

ANNEXES		
	x 1: Project submission and assessment through Regist cts (RPIP) platform	
Annex	c 2: Scoring methodology	42
Annex	x 3: Excel sample of discounted cash flow, and NPV / IR	RR calculation49
Annex	4: Sector specific of cost-benefit analysis	50
Annex	c 5: Laws and regulations relevant to public investment	t projects56

I. GENERAL PROVISIONS

1.1. Coverage of the Instructions

This Instruction operationalise the Regulation on Public Investment Projects approved by Government Decree No. 684/ 2022, which is applied to all public investment projects funded from the state budget resources/funds, including external resources, development funds, as well as state budget contribution to the implementation of projects funded from the local budget resources.

The instruction describes the procedure for assessing and determining the eligibility of public capital investment projects, which are included in the annex to the annual budgetary law.

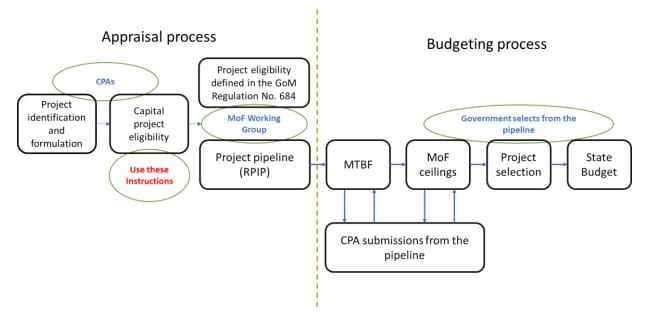


Figure 1: Public investment project cycle

The Instructions consist of 3 sections:

- Chapter I "General provision" presents the general provisions of the Instructions, including the descriptions of the Pipeline, Register of Public Investment Projects IT system (IS RPIP) as well as and the structure and the functions the Working Group of the Ministry of Finance is responsible for the appraisal of eligibility of public investment projects;
- Chapter II "The process of projects proposals appraisal" describes the appraisal process of the projects, including the detailed explanation of the process of submission of the public investment projects, their appraisal and subsequent inclusion on the Pipeline;
- Chapter III "Structure and content of project proposals" presents the requirements to the structure and content of the project proposals so that they meet the eligibility criteria defined in the GoM Regulation No. 684/ 2022.

1.2. Definitions

Durability: the ability of an investment project to ensure long-term performance and to remain viable and competitive in order to face long-term changes and risks.

Cash-flow: the amount of cash that an entity receives and disburses during a given period of time.

Discount rate: rate of return used to discount future cash flows back to their present value.

Sustainability: the ability of an investment project to generate benefits on a long term in a balanced and sustainable mode from economic, social and environmental view.

Net present value: The total of discounted net returns over the lifetime of the project, or the difference between the present value of cost and the present value of benefits.

Pipeline: a database of public investment projects eligible for budget funding.

Present value of cost and benefits: discounted future costs and benefits.

Social costs and social benefits: the full spectrum of costs and benefits (including social and environmental effects) borne by society as a whole as a result of a project or intervention.

Social discount rate: interest rate used in cost-benefit analysis to be applied to benefits and costs that are expected to occur in the future in order to convert them into a present value.

1.3. Pipeline of capital public investment project

The Pipeline of public investment projects is a database of projects that were appraised as eligible in line with the eligibility criteria set in Annex 1 of the GoM Regulation No. 684 of 29 September 2022.

Budgetary institutions may submit public investment projects for appraisal throughout the course of the year. Projects must be complete and in line with the eligibility criteria. The projects deemed eligible are added to the Pipeline to be considered for funding and will be examined at the next stages of budgetary planning.

The determination on eligibility is made by a Working Group designated by the MoF as foreseen by GoM Regulation No. 684 of 29 September 2022 – see section 1.5 below.

The selection of new PICPs, to be included in the medium-term budgetary framework / draft BS law, is carried out by the Inter-ministerial Committee for Strategic Planning (CIPS) only from the existing portfolio of new projects.

The Pipeline is operated as an automated procedure as part of the Register of Public Investment Projects (RPIP) – see section 1.4 below.

1.4. Information System "Register of Public Investment Projects (RPIP)"

IS RPIP is an automated platform to store and manage information on public investment projects.

IS RPIP can be accessed from PC workstations or mobile devices via common web browsers, such as Mozilla FireFox, Chrome, Internet Explorer, Opera, etc. An up-to-date User Guide is available for download on the login page and all internal pages of the application.

IS RPIP includes a Project Appraisal Module that fully automates the workflow for project submission and appraisal as illustrated in the Figure 2 below.

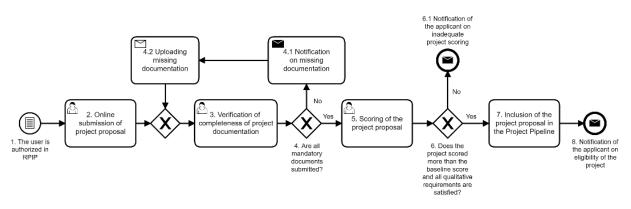


Figure 2. The process and submission and appraisal of investment project proposals

1.5. Working Group of public capital investments

The Working Group of the Ministry of Finance is responsible for the appraisal procedure and for determining eligibility of public investment projects which are included in the Annex of the annual budgetary law.

The members of the Working Group are:

- 1) The heads of the directorates of the Ministry of Finance responsible for:
 - Public capital investments;
 - Budget policies and synthesis;
 - Sectoral budgetary policies;
 - Public debt.
- 2) A representative of the State Chancellery

The composition of the Working Group is approved by the Minister of Finance and updated on an annual basis as necessary. The secretariat and the organisational arrangements for the operation of the Working Group are determined by the Public Investments Directorate. The Working Group will only consider project proposals that are submitted through the IS RPIP platform.

The Working Group will convene meetings to examine public investment project proposals as necessary throughout the year upon receipt of project proposals through RPIP platform. The proceedings of the Working Group will be recorded in minutes.

Project proposals shall be examined by all members of the Working Group. In the event of the objective impossibility of a permanent member's participation in the meetings of the Working Group, the head of the subdivision in which the given member operates shall appoint an alternate member with the right to vote.

II. PROJECT PROPOSAL APPRAISAL PROCESS

2.1. Submission of project proposals

Projects prepared in line with the requirements of these Instructions and Annexes 1 and 2 of GoM Regulation No. 684 should be upload in the IS RPIP platform. To access IS RPIP, the users need to authenticate their identity by using their username and password.

New users should submit a formal request to one of the official email addresses of P. E. " Centre of Information Technologies in Finance" (<u>accesmf@ctif.gov.md</u> to obtain a username and a password.

Upon uploading a project proposal to IS RPIP, the system will generate an automatic e-mail notification confirming receipt of the submission.

Initial screening of proposals will be done by the Secretariat of the Working Group. If the proposal is complete, i.e. includes all required information as per these Instructions and Annexes 1 and 2 of the GoM Regulation No. 684/2022, the proposal will be sent for appraisal to the Working Group. If the proposal is incomplete, registration will be rejected, and the applicant will be informed of the information missing by an automatic email generated by RPIP. The applicant will be able to resubmit the proposal including the missing information.

After confirming the completeness of the project proposal, obtaining the opinion of the Ministry of Environment on the implications and vulnerabilities of the climate, and the opinion of the Legal Directorate on the criterion "Legal assessment", the, directorate responsible for capital investments within the Ministry of Finance prepares and presents to the members of the Working Group a Note on the preliminary examination of the proposal for a new public capital investment project.

The RPIP project proposal submission procedure is described in more detail in Annex 1 to these Instructions.

2.2. Appraisal of projects proposals

The MoF Working Group reviews and appraises the new project proposals in accordance with the requirements set in the Annex 2 of the GoM Regulation 684.

2.2.1. Scoring methodology

Scoring of project proposals is done using a standardised methodology as illustrated in Annex 2 to these Instructions.

Criteria of eligibility are classified into two categories:

– Quantitative:

- Criterion 1 Project Summary
- Criterion 2 Technical Analysis
- Criterion 3 Economic and financial analysis
- Criterion 5 Institutional and management assessment
- Criterion 6 Social impact assessment
- Criterion 8 Risk Analysis

Criteria 1-3 include sub-criteria that are scored individually under the appraisal procedure.

- Qualitative:
 - Criterion 4 Legal assessment
 - Criterion 7 Environmental assessment

A. Scoring of Quantitative Criteria

For the assessment of the quantitative criteria a scale of '0-10' is used for scoring with '10' being the maximum score. The threshold for the scoring of individual criteria and sub-criteria as 'adequate' is '4'. Scores below '4' are deemed as "non-adequate".

Each quantitative criterion is given a weight in relation to the total score. For criteria 1-3 with sub-criteria, weights are assigned to each sub-criterion, as shown in Table 1 below.

N	Criteria	Criteria weights	Sub-criteria weights
1	Project Summary (PS)	5.00%	
1.1	Purpose (PP)		20%
1.2	Strategic framework (SF)		20%
1.3	Beneficiaries (BEN)		20%
1.4	Location (LOC)		20%
1.5	Possible source of funding (PSF)		20%
2	Technical Analysis (TA)	20.00%	
2.1	Technical specifications and resources (TSR)		33.33%
2.2	Technology required (TR)		33.33%
2.3	Operational assessment (OA)		33.33%
3	Economic and financial analysis (EFA)	45.00%	
3.1	Business case (BC)		20%
3.2	Financial case (FC)		25%

Table 1: Weights of quantitative criteria and sub-criteria

3.3	Cost-benefit / cost-effectiveness analysis		55%
5	Institutional and management assessment (IMA)	10.00%	
6	Social impact assessment (SIA)	10.00%	
8	Risk Analysis (RA)	10.00%	
Total		100.00%	

It is noted that the weights in Table 1 are decided by the Working Group. Weights assigned to criteria and sub-criteria are subject to revision should the Working Group deem necessary.

The following rules are used for scoring of quantitative criteria:

- The score for quantitative criteria 1-3 is the sum of the scores of all weighted subcriteria.
- For projects with a total cost of less than MDL 200 million, the scoring of the subcriterion 3.3. Cost-benefit/Cost-effectiveness analysis is not required. In this case, the corresponding sub-criterion weight is distributed proportionately to the weights of the sub-criteria 3.1 Business case and 3.2 Financial case. Therefore, the score for criterion 3. Economic/Financial Analysis becomes the weighted average of the scores of sub-criteria 3.1 Business Case and 3.2 Financial Case.

B. Scoring of Qualitative Criteria

The qualitative criteria (4) *Legal assessment* and (7) *Environmental assessment* are scored as 'Satisfactory' (S) or 'Non-Satisfactory' (NS).

C. Eligibility of Project Proposal

The total score of the project proposal is the sum of the scores of all its quantitative criteria weighted by the respective criterion weights. A project is assessed as *eligible* if it receives a score of at least '7'.

The final score on the project is determined as the average of the total scores awarded by each member of the working group and the calculation of the total score is automated in the IS RPIP platform.

A project is assessed as 'eligible' if:

- all quantitative criteria and sub-criteria score at least 4points;
- the total score is '7' and above; and
- both qualitative criteria are assessed as 'satisfactory' by all members of the Working Group.

An automated email notification through the RPIP system will be sent to the applicant informing that the proposed project is *"eligible"*.

Eligible projects will be included in the Pipeline and will subsequently be submitted for examination to the Government (represented by Inter-ministerial Strategic Planning Committee - CIPS). Following their approval by the CIPS, new projects might be considered for funding from the State Budget at the next stages of budgetary planning. Project proposals that are assessed 'non-eligible' will not be included in the Pipeline. The applicant will receive an automated email notification through the IS RPIP system about the rejection of the project proposal.

III. STRUCTURE AND THE CONTENT OF THE PROJECT PROPOSALS

3.1. Project Summary

The purpose of the project defines the objective of the investment and what is planned to be achieved. Project proposals should provide a brief summary about the action consisting of 5 sub-sections:

- 1) Purpose
- 2) Strategic framework
- 3) Beneficiaries
- 4) Location
- 5) Possible Sources of funding

3.1.1. Purpose of the project

Examples for "transportation" sector:

- Build a X km highway from City A to City B for safe, efficient and fast movement of people and goods.
- Increase road capacity through development and improvement of road network in Rayon X.

Examples for "agriculture" sector:

- Construct an irrigation network in Rayon X to promote the proper growth of plants and maintaining the right levels of moisture for the soil.
- Construct a seed selection station in City X to increase agricultural production through spread of good quality seed of high yielding varieties.

Examples for "education" sector:

- Construct a college in City X to respond to the needs of a rapidly growing demand for agricultural specialist in the south of the country.
- Reconstruct the School No. X in City X to meet modern requirements for durability, maintenance, quality and safety.

Examples for "health" sector:

• Construct a new hospital in City X to improve faster access of the patients to the quality surgical services in the northern rayons of the country.

• Construct a new policlinic in City X to provide patients with high-quality, next generation acute facilities that will improve health outcomes across population.

3.1.2. Strategic framework

This section "Strategic framework "should be demonstrated that the proposed project is coherent with at least one of the public planning documents the existing National Development Strategy (NDS) and/or sector strategic/program documents.

Example for "agriculture" sector:

• The project stems from the "National Strategy for Agricultural and Rural Development 2020-2030" approved by law nr. 315/2022 for the specific objective nr. [...] policy and priority intervention direction nr. [..]; the GoM Decree No. XX of [date] and in particular section 4.1 "Soil erosion by water and wind".

Example for education sector:

• The project stems from the Strategy "Development of Education 2030" approved by GoM Decree No. XX of [date] and in particular its objective 4.3 "Effective and motivating learning environments".

3.1.3. Beneficiaries

Project beneficiaries are those who will derive benefit from the implementation of the project. Two types of beneficiaries can be defined: direct and indirect.

- Direct beneficiary (or primary beneficiary) is a physical or juridical person who is directly involved with the project and benefits from it. Depending on the nature of the project this could be students at the new school, patients for the hospital, frequent travellers on the new road.
- An indirect beneficiary (or secondary beneficiary) is a physical or juridical person who is not directly connected to the project but benefits from it.
- For example, the project builds a new sewage network and a treatment plant in a given community. Direct beneficiaries are the households connected to the new sewage network, while the entire community is the indirect beneficiary, as the general hygienic and sanitary conditions in the village improve.

The list of beneficiaries will be mandatory through disaggregated data and indicators based on the criteria of sex, age, living environment, individual characteristics of vulnerability / disability and ethnicity, according to the type and destination of the investment project.

Examples:

• XX women from rural areas / XX women from urban areas;

- XX men from rural areas / XX men from urban areas;
- XX girls in the age group 6-11 years / XX boys in the age group 6-11 years;
- XX girls in the age group 12-17 years / XX boys in the age group 12-17 years;
- XX girls with locomotor disabilities;
- XX boys with audiovisual disabilities, etc.

3.1.4. Location

Project location is the area or areas where the Project will be implemented. There are several ways of providing project locations:

- Legal address;
- Coordinates;
- Indication on the map.

If needed, a more detailed description of the location will be provided.

Example of location description:

• The Project is located in the City A and is generally bound by residential and commercial development along Street X to the north, and the Street X to the south. Regional access to the project site is ensured through the Road X from City B. Neighbouring land uses include a former sports facility to the north, which is in the process of being converted into a hotel and the 5-hectare park to the south.

3.1.5. Possible source of funding

Project funding for public investment projects funded from the State Budget may come from a variety of sources: domestic sources, foreign project loans or foreign project grants.

The information should be presented in a summary tabular form as in Table 2 bellow.

	General	Grant		Loans		
Project component	resources and collected revenues (thousand MDL)	Amount (thousand MDL)	Donor	Amount (thousand MDL)	Donor	Total (thousand MDL)
Comp 1						
Comp 2						
Total						

Table 2: Possible sources of funding

3.2. Technical Analysis

Technical analysis is the study assessing technical and engineering aspects of the project design. This section should demonstrate the most suitable option in terms of technical specifications, technology, location, timeframe etc. This section consists of 3 sub-sections:

- 1) Technical specifications and resources;
- 2) Technology required;
- 3) Operational assessment.

3.2.1. Technical specifications and resources

The technical specifications must comply with applicable legal and regulatory standards, in line with the Law No. 721 of 2 February 1996 on quality of construction, and the Government Decree No. 361 of 25 June 1996 on ensuring the quality of construction.

Each project is unique and will naturally require a specific set of specifications. However, they all should have the following common elements:

- Details on the types of materials and installations needed to complete a project;
- Description of how to assess installations to ensure that they were up to project quality and standards;
- Description of what is needed for the final product and how it should function after completion.

The project designers may take into consideration the EN Eurocodes of the European Union¹. These are a series of 10 European Standards, EN 1990 - EN 1999, providing a common approach for the design of buildings and other civil engineering works and construction products. They are the recommended reference for technical specifications in public contracts in EU countries.

This section should also include a detailed description of the location of the project, including the following factors:

- Availability of infrastructure already in place;
- Proximity to the source of raw materials required for the implementation of the project;
- Proximity to markets or to the beneficiaries of the project;

¹ <u>https://eurocodes.jrc.ec.europa.eu/</u>

- Government policies in relation to the site, including possible government restriction that may occur during the implementation of the project;
- Other factors, such as climatic conditions, general living conditions, pollution around the project site, etc.

3.2.2. Technology required

The same product or service can generally be obtained using quite different technologies. This section should provide an analysis of the technology required for the realisation of the project and assurances that it will be made available.

The project design should weigh available alternative technologies and select the one that is most appropriate and cost effective for the given project. A technology is considered appropriate only if it is assessed to be satisfactory in relation to the following aspects:

- Required introduction period versus the time actually available of the project;
- Sources and ease of availability;
- Domestic availability of comparable technology;
- Adaptability to the qualitative characteristics of the locally available resources including energy and efficiency in their usage;
- Capacity of the organisation to absorb/adopt the technology;
- Timely availability of manpower with requisite skills for installation, operation and maintenance;
- Cost of acquisition, installation, repairs and maintenance versus availability of funds;
- Safety characteristics;
- Environmental and sociocultural sensitivities.

Other important questions to be asked include:

- Is the technology available as a technical know-how, or through a technical collaboration, or a joint venture?
- Are patents, trademarks, or licensing involved, and at what terms and with what legal obligations?
- Will it tie down the investor to procure equipment(s) as well from a specific country or company?

3.2.3. Operational assessment

This section should provide the description of the proposed phases, proposed activities and schedules of the project.

The schedule for project implementation is a chart listing all the tasks necessary to be completed for the finalisation of the project and the related deadlines. (for example Gantt Diagram, PERT Method, "Cascade" method etc.)

The applicant can make use of standard MS Excel templates to create clear and easily manageable project timelines². These can be used also during the project implementation for the ongoing monitoring of the project.

The project implementation chart should provide a breakdown of the work by placing the related activities, tasks and responsibilities on a timeline. The project proposal must include a credible estimate of the completion of each phase of the project (construction phase and / or operation phase, where applicable). It is important to make sure that the proposed timeline is realistic and adequate for the completion of the project.

3.3. Economic and financial analysis

This section consists of 3 sub-sections:

- 1) the business case;
- 2) the financial case;
- 3) cost-benefit / cost-effectiveness analysis.

Project proposals costing less than MDL 200 million need to present (1) the business case and the (2) the financial case as required in Sections 3.3.1 and 3.3.2 below.

Project proposals costing over MDL 200 million must carry out a complete cost-benefit or cost-effectiveness analysis as required In Section 3.3.3 below.

3.3.1. The business case

This section covers four elements:

A. Project background and description:

The project proposal should present:

 description of the current situation, including problems and needs before the project is implemented. Specific and factual data should be used here; Real and disaggregated data are presented according to the specifics of the project, based on the sex criteria (women, men) age groups, according to the needs), living environment (rural, urban) individual vulnerability / disability characteristics (locomotor, audiovisual, intellectual and), ethnicity etc;

² For example: <u>https://templates.office.com/en-us/milestone-and-project-status-timeline-tm45188603</u>

 description of how the situation will change after implementing the project. in general terms, but also for each target group.

B. Analysis of the economic environment and the potential short-term and long-term socio-economic benefits:

A description of the economic environment in which the public investment project will be implemented should be provided. The economic environment also includes the external factors that can influence the implementation of the investment project, such as exchange rates, taxation, interest rates and inflation.

The potential short-term and socio-economic benefits are all those positive changes in the welfare of the society that can be affected as a result of the investment. These benefits will depend on the sector in which the investment is planned to be implemented, as well as the significance of the investment. Some of the most common examples are: the creation of employment opportunities, additional household income, cost savings, improved safety, improved access to public services, access to markets, etc.

C. Demand analysis for the services to be provided:

To justify the need for public investment, an analysis of the current and future demand should be presented.

The current demand analysis should be based on statistics provided by respective authorities, including regulators, ministries and statistical service, for the various types of users and beneficiaries.

The future demand should be calculated for two scenarios, when the project is implemented and without the proposed investment.

Several techniques (e.g., multiple regression models, trend extrapolations, interviewing experts, etc.) can be used for demand forecasting. The selection of a technique depends on the data available, the resources that can be dedicated to the estimates and the sector involved. The selection of the most appropriate technique will depend, amongst other factors, on the nature of the good or service, the characteristics of the market and the reliability of the available data. In some case, e.g. transport, sophisticated forecast models are required.

D. Statement if the asset created will generate income:

The proposal should clearly state whether the asset that will be created as a result of the public investment will generate cash revenues such as fees, tolls, etc.

If the asset created as a result of public investment will not generate cash income, this should be clearly stated.

3.3.2. The financial case

The financial analysis should demonstrate whether the project is financially sustainable and, if it includes a commercial business case, profitable. In doing so, the assessment should consider:

- Total project costs, including investment costs, and operating and maintenance costs;
- Revenues;
- Sources of financing;
- Financial sustainability;
- Project profitability.
- A. Total project costs

Total investment costs of the projects should be identified and broken down over the years of the project. Investment costs are classified into initial investment and replacement costs.

Initial investment includes the capital costs of:

- Fixed assets (e.g. land, constructions, buildings, plant and equipment, machinery, etc.)
- Non-fixed assets (e.g. start-up and technical costs such as design and planning, project management, construction supervision, publicity, etc.)

Cost breakdown over the years should be consistent with the time-plan for implementation of the project. Where relevant, the initial public investment will include environmental and climate change mitigating costs during the implementation.

Replacement costs include costs occurring during the reference period to replace short-life machinery and equipment, e.g. filters and instruments, vehicles, etc.

A residual value of the fixed investment must be included within the investment costs for the end-year. The residual value reflects the capacity of the remaining service potential of fixed assets whose economic life is not yet completely exhausted.

Operating and maintenance costs include all costs to operate and maintain the new or upgraded service. Costs forecasts can be based on historic unit costs. Typical operating and maintenance costs include labour costs for the employer, materials needed for maintenance and repair pf assets, consumption of raw materials, fuel, energy, other consumables, services purchased from third parties, rent of buildings, rental of machinery, general management and administration, insurance costs, quality control, waste disposal costs, emission charges, etc.

These costs are distinguished between fixed (those that do not vary with the volume of goods and services for a given capacity) and variable (those that vary depending on the volume).

B. Revenues

An analysis of all lifecycle benefits of the project, direct and indirect, actual and projected should be performed. For quantifiable benefits if market prices or standards cannot be used, reasonable assumptions for their development will be made. For non-quantifiable benefits (like socio-economic benefits) a narrative analysis will be made explaining their nature and positive contribution.

The project revenues are cash inflows directly paid by the users if the goods and services provided by the operation of the created asset. These revenues are determined by the forecasts of quantities of goods and services and their prices.

Transfers or subsidies (e.g., transfers from the state or regional budgets or national health insurance) should not be included in the operating revenues for the calculation of financial profitability of the project. However, they shall be computed for the financial sustainability of the project.

C. Sources of financing

The proposal should identify the different sources of financing of the investment costs. These sources might include:

- State budget, including;
- General resources and collected revenues, including Government contribution to projects funded from external sources;
- Foreign assistance in way of grant and technical assistance;
- Loans from International Financial Institutions, foreign governments, etc.;
- Loans from private sector;
- Equity from private sector.

Where applicable, the assessment should include the cost for servicing the loan instruments, any consequences for failure to meet the obligations under the instruments and the situations under which the cost of financing could be altered.

D. Financial sustainability

The project is financially sustainable when the risk of running out of cash in the future, both during the investment and the operational stages is expected to be nil. The proposal should show how the sources of financing available will consistently match disbursements year-by-year. The difference between inflows and outflows will show the deficit or surplus that will be accumulated each year. The inflows include:

- Sources of financing;
- Operating revenues from the provisions of goods and services; and

- Transfers, subsidies and other financial gains that do not come from taxes paid by infrastructure users.

The residual value should not be taken into account unless the asset is actually liquidated in the last year of the analysis.

The outflows include:

- Initial investment;
- Replacement costs;
- Operating costs;
- Repayment of loans and interest payments;
- Taxes on income and other direct taxes.

The sustainability analysis of the project is presented in a tabular form as shown in Table 3.

	Year					
	1	2	3	4	5-9	10
Total inflows						
Sources of financing						
Total revenue						
Total outflows						
Initial Investment						
Replacement costs						
Loan repayments						
Payment of interest						
Total operating costs						
Taxes						
Net cash flow						

Table 3: Financial Sustainability

E. Project profitability

Determination of the investment costs, operating costs, revenues and sources of financing enables the assessment of the project profitability, which is typically measured by Net Present Value (NPV) and Internal Rate of Return (IRR) on investment. The detailed calculation of the NPV and the IRR is presented in Section 3.3.3 and Annex 3.

The cash flows in NPV analysis are discounted:

- Taking into account the time value of money; and
- Adjusting to the risk of an investment opportunity.

Accounting for time value of money is required due to inflation, interest rates and opportunity costs, the sooner the money is received the more valuable it is. If the money is received today, it can be invested and earn interest and will be worth more in a year's time.

Adjustment for the risk is necessary because not all projects or investment opportunities have the same level of risk. To account for the risk, the discount rate is higher for riskier investments and lower for a safer one.

If feasible a comparison of the NPV and the IRR of the proposed project should be performed with the metrics of projects of similar nature.

Discounted Cash Flow (DFC) method should be used to calculate NPV and IRR.

The main ruled of the DCF method are:

- Only cash inflows and outflows are considered in the analysis. All costs and revenues which do not correspond to actual cash flows are disregarded (e.g., depreciation, reserves, price and technical contingencies).
- Financial analysis should be varied out from the point of view of the infrastructure owner.
- An appropriate financial discount rate is adopted to calculate the present value of the future cash flows. The financial discount rate reflects the opportunity cost of capital.
- Project's cash flow forecast should cover the project's economically useful life and it's likely long-term impact. The choice of project's time horizon, i.e. the number of years for which the forecasts are provided, affects the appraisal results. Table 4 contains reference periods per sector as proposed by the European Commission³.
- The financial analysis should be carried out in constant (real) prices, i.e. with prices fixed at a base year.
- The analysis should be carried out net of VAT both on costs and revenues if the VAT is recoverable. When the VAT is not recoverable, it must be included.
- Direct taxes are considered only for financial sustainability verification and not for the calculation of financial profitability.

³ EC Guide to cost-benefit analysis for investment projects (2014).

Sector	Time horizon (years)
Railways	30
Roads	25-30
Ports and Airports	25
Urban Transport	25-30
Water supply/sanitation	30
Waste management	25-30
Energy	15-25
Telecommunications	15-20
Research and Innovation	15-25
Business infrastructure	10-15
Other sectors	10-15

Table 4: Reference periods by sector

3.3.3. Cost-benefit / cost-effectiveness analysis

For projects greater than MDL 200 million and provided that the most impacting benefits can be reliably assessed and quantified, a Cost-Benefit Analysis (CBA) will be performed.

In the case of project proposals with a value over 200 million MDL where the most impacting benefits cannot be easily assessed or quantified, a cost-effectiveness analysis (CEA) will be performed instead of a CBA.

A. Cost-benefit analysis⁴

In the public sector, CBA of the investment project is an assessment method that quantifies in monetary terms the value of all consequences of the project to all members of society. The aggregate value of the project is measured by its *net social benefits*, sometimes simply referred to as the *net benefits*. The net social benefits, NSB, equal the *social benefits*, B, minus the *social costs*, C:

$$NSB = B - C$$

⁴ For the detailed CBA methodology, it is recommended to use:

(1) European Commission "Guide to Cost-Benefit Analysis of Investment Projects" December 2014: <u>https://wayback.archive-</u>

it.org/12090/20221203224508/https://ec.europa.eu/inea/sites/default/files/cba_guide_cohesion_policy.p_df

⁽²⁾ Anthony E. Boardman et al. "Cost–Benefit Analysis, Concepts and Practice" 5th edition (exists also in Romanian): <u>http://students.aiu.edu/submissions/profiles/resources/onlineBook/E5V5H3_Cost-benefit%20analysis%20_%202018.pdf</u>

The basic steps of CBA are:

Step 1: Specify the set of alternative projects:

This allows the project analysis to consider whether the return that might be expected from an investment compares favourably with investment in other sectors or projects (the opportunity cost of the investment). CBA compares the net social benefits of investing resources in one or more potential projects with the net social benefits of a project that would be displaced if the project(s) under evaluation were to proceed.

Very often, in case of the large public investment projects, the alternative is the *status quo*, which means there is no change in government policy. For example, the government plans to build a highway, and there is no alternative project to compare (such as a railway). In this case the "no-highway" scenario is the alternative.

Step 2: Define the scope of benefits and costs:

The analysis must cover what benefits and costs should be included. This process often can be controversial. While the central governments usually take only national costs and benefits into account, others may argue that many issues should be analysed from a global perspective. Environmental issues also fall into this category. Local governments typically are interested only benefits and costs to local residents and not necessarily about costs and benefits that occur in adjacent municipalities or are borne by central public authorities.

Step 3: Identify the impact categories, catalogue them, and select measurement indicators:

The analysis should identify the physical impact categories of the proposed project, catalogue them as benefits or costs, and specify the measurement indicator of each impact category. For example, for a road project the anticipated benefit impact categories are: time saved and reduced vehicle operating costs for travellers on the new highway; accidents avoided (including lives saved) due to drivers switching to a safer new road; revenues collected from tolls, etc. The cost impact categories are construction costs, additional maintenance such as snow removal etc.

Step 4: Predict the impacts quantitatively over the life of the project:

The analysis should quantify all impacts in each time period. In practice, predicting impacts is very important but also very difficult. Prediction is especially difficult where projects are unique, have long time horizons, or relationships among variables are complex.

Good CBA predicts and monetises all the impacts of the project being considered. Some impacts can usually be predicted with considerable confidence in fairly straightforward ways and monetised directly with market prices. Other impacts can only be predicted indirectly, often based on statistical inference or perhaps even theory alone, and therefore they may be very uncertain.

Step 5: Monetise all impacts:

The analysis has to monetise each of the quantified impacts. To monetise means to value in national currency, or in foreign exchange if needed.

Monetising often requires analysis of shadow prices, such as willingness to pay for reductions in mortality risk, that are not directly revealed in markets and thus also uncertain. CBA requires accepting these uncertainties to produce a comprehensive assessment.

In CBA, the value of an output is typically measured in terms of "willingness-to-pay." Where markets exist and work well, willingness to pay can be determined from the appropriate market prices. Problems arise where markets do not exist or do not work well.

Step 6: Discount benefits and costs to obtain present values:

For a project that has impacts that occur over years, we need a way to aggregate the benefits and costs that arise in different years. In CBA, future benefits and costs are discounted relative to present benefits and costs in order to obtain their *present values* (PV). The need to discount arises because there is an *opportunity cost* to the resources used in a project.

A cost or benefit that occurs in year "t" is converted to its present value by dividing it by (1+i)^t where "i" is the *discount rate*. Suppose a project has a life of "n" years and let and denote the benefits and costs in year t, respectively.

The present value of the benefits, PV(B), of the project are calculated by using the following formula:

$$PV(B) = \sum_{t=0}^{n} \frac{B(t)}{(1+i)^t}$$

The present value of the costs, PV(C), of the project are calculated by using the following formula:

$$PV(C) = \sum_{t=0}^{n} \frac{C(t)}{(1+i)^t}$$

The discount rate is an important factor because the PV(B) and PV(C) of a project will change depending on which discount rate is used. The *government borrowing rate* can be used as a discount rate for the projects that are financed from external sources. However, this may not be a good measure when many projects are financed from domestic sources.

In the public sector, especially for large infrastructure projects, there is an argument for using a *social discount rate* in which a lower discount rate is applied to take account of the importance of project benefits in the medium to long term. Therefore, lower discount rates may be used for projects that have impacts over many generations (dams, water supply, hospitals and health projects).

Step 7: Compute the Net Present Value or Internal Rate of Return of the project:

The *net present value* (NPV) of an alternative equals the difference between the PV of the benefits and the PV of the costs:

$$NPV = PV(B) - PV(C)$$

Or

$$NPV = \sum_{t=0}^{n} \frac{B(t)}{(1+i)^{t}} - \sum_{t=0}^{n} \frac{C(t)}{(1+i)^{t}}$$

Or

$$NPV = \sum_{t=0}^{n} \frac{NSB(t)}{(1+i)^t}$$

The basic decision rule for a single alternative project (relative to the status quo) is simple: *adopt the project if its NPV is positive*. In short, the analysis should recommend proceeding with the proposed project if its:

$$NPV = PV(B) - PV(C) > 0$$

that is, if its benefits exceed its costs:

When there is more than one alternative to the status quo and all the alternatives are mutually exclusive, then the rule is slightly more complicated: *select the project with the largest NPV*. This rule assumes implicitly that at least one NPV is positive. If no NPV is positive, then none of the specified alternatives are superior to the status quo, which should remain in place.

The discount rate at which the NPV is zero is called the *internal rate of return* (IRR). The IRR conveys useful information to decision makers or other analysts who want to know how sensitive the results are to the discount rate. The internal rate of return can be found by setting the left-hand side of the NPV equations equal to zero and solving for "i".

$$NPV = 0 = \sum_{t=0}^{n} \frac{NSB(t)}{(1+i)^t}$$

The IRR may be used for selecting projects when there is only one alternative to the status quo. If the IRR of a project is greater than the appropriate social discount rate, then one should proceed with the project; if the IRR is less than the appropriate social discount rate, then one should not proceed with it.

Annex 3 presents an Excel sample of cash flow and calculation of NPV and IRR.

Step 8: Perform sensitivity analysis:

There may be considerable uncertainty about both the predicted impacts and the appropriate monetary valuation of each unit of the impact. The analysis may also be uncertain about the appropriate *social discount rate*. Sensitivity analysis attempts to deal with such uncertainties.

Annex 4 presents some sectors specifics of costs-benefit analysis.

B. Cost-effectiveness analysis

The focus of the cost-effectiveness analysis (CEA) should be on the relative effectiveness of the project, taking into consideration the costs involved, instead of the trade-off between costs and benefits.

CEA compares (mutually exclusive) alternatives in terms of the ratio of their costs and a single quantified, but not monetised, effectiveness measure. In order to do this, the analysis must choose an appropriate basis from which to compute the effects and costs of alternatives.

As CEA does not monetise benefits, it inevitably involves two different metrics: Costs are measured in national currency or foreign exchange, whereas effectiveness may be measured in units such as lives saved, tons of carbon dioxide reduced, or children vaccinated.

The ratio can be expressed in two ways: either as a *cost-effectiveness ratio* (CE ratio), computed by dividing the costs of an alternative by the measure of its effectiveness, or as an *effectiveness-cost ratio* (EC ratio), computed by dividing the effectiveness measure of an alternative by its costs.

$$CE = \frac{C_i}{E_i}$$

Or

$$EC = \frac{E_i}{C_i}$$

Where: " C_i " is the cost of alternative "I", in MDL; and, " E_i " is the effectiveness of alternative "I" in physical units.

Tables 5 and 6 show 2 examples of project selection between alternatives using costeffectiveness analysis.

	Project A Project B		Project C	
Budget	MDL 10 million	MDL 10 million	MDL 10 million	
Effectiveness measure	5	10	15	
CE ratio	2	1	0.67	
EC ratio	0.5	1	1.5	

Table 5: Examples of projects with similar budgets but with different outcomes

Project C should be selected, as it has the lowest CE ratio, and the highest EC ratio.

Table 6: Example with projects with different budgets but with similar outcomes

	Project A	Project B	Project C
Budget	MDL 5 million	MDL 10 million	MDL 15 million
Effectiveness measure	10	10	10
CE ratio	0.5	1	1.5
EC ratio	2	1	0.67

Project A should be selected, as in this case it has the lowest CE ratio, and the highest EC ratio.

3.4. Legal Assessment

As per the provisions of paragraph 22(4) of GoM Decree 684 and point 4 of Annex 1 to the Decree, this section should include an assessment of whether the existing legal and regulatory framework is adequate for the implementation of a given public investment project. If required, an assessment of the nature of amendments necessary to be brought to the legal framework in order, together with tentative timeframes for such amendments, should be undertaken.

More specifically, the legal assessment should include, but is not limited to:

A. Analysis of existing/effective legal framework governing the nature, terms and conditions of the project together with a review of draft laws/regulations which might impact the project in the future.

The assessment should include a review of whether the nature and content of the proposed project is expressly and unconditionally regulated by legal provisions, effective as of the date of submission. This should include *inter alia* a comparative analysis of the nature, terms and conditions of the project against the existing legal framework.

Example of a road construction project:

• A project proposal on road construction should include an analysis of whether there is a general legal and regulatory framework for construction works, and whether there

are laws and regulations governing specifically the activity of road construction. A list of the relevant laws and regulations must be disclosed in under this sub-section of the project proposal.

Example of an IT project:

• A project proposal on a large complex IT system requires specific skills and know-how from the company which will perform construction works based on a contract award. The required skills and know-how are not available in the Moldovan market and can only be sourced internationally. The project proposal should include assurances that the general legal framework governing the employment/use of foreign employees for the works in Moldova and that there are specific conditions for employment of personnel with specific skills (specific work permit necessary, requirement to prove the skill-set through the presentation of diplomas, certificates etc.).

B. Analysis of draft laws/regulations which, once approved, might impact the implementation of the project.

The assessment should focus on review of draft laws and regulations governing the nature, terms and conditions of the public investment project being designed to assess whether there are or might be certain changes/amendments brought in the short-, medium- or long-term perspective. The applicant should perform a search/analysis of a dedicated webpage for public consultations of draft laws and regulations (<u>www.particip.gov.md</u>) and the relevant country strategies/action plans approved by the Government and/or Parliament of the Republic of Moldova.

Example of an irrigation project:

• A project proposal on reconstruction/modernisation of irrigation systems should include a review of draft laws/regulations on the functioning of irrigations systems under consideration. In addition, the applicant should perform a review of the provisions of relevant country strategies/actions plans in order to identify whether there might be new laws/regulations proposed in the area of irrigation systems. In the case that new laws/regulations are expected in the short-, medium- or long-term, the applicant will analyse how these may affect project implementation and whether certain amendments to the project design and documentation will be necessary.

Example of a renewable energy project:

• A project proposal on a renewable energy park should include an analysis of the tax policy changes for the forthcoming year in order to check whether there might be additional/new tax costs that may jeopardise the financial viability of the project.

C. Identification of legislative/regulatory gaps and/or misinterpretations which might affect the project.

If the assessment under sub-section A above demonstrates that the nature, terms and conditions of the proposed project are not regulated expressly and unconditionally by existent and effective laws/regulations and there is room for different interpretations, the applicant should perform a legislative gap analysis necessary to identify necessary legal revisions.

Example of school construction:

• A project proposal on the construction of a school designed to students from a number of villages/towns, may require clarification about the village/town which will be in charge for the administration and management of the asset once the project is completed.

Example of waste management project:

• A project proposal on the construction of a waste management facility should clearly stipulate if the asset will be managed by a commercial or a public entity state-owned enterprise upon completion of works. The analysis should include a review of competition legislation to ensure that there is no negative impact on competition using either one of the options.

D. Identification of the need to elaborate/amend and approve gaps in legislation.

If the assessment under sub-section A above demonstrates that the nature, terms and conditions of the project are not regulated expressly and unconditionally by existing and effective laws/regulation and such lack of regulation may not be attributed to gaps/misinterpretations, the applicant will propose necessary amendments to be brought to the relevant legislation/regulation.

Example of logistical infrastructure:

• A project proposal on the construction of a logistical infrastructure which is not expressly regulated by law and as such not viewed as a legislative gap/misinterpretation, will require an analysis to identify the exact legal provision(s) missing and the exact legislative act necessary to be drafted/amended. In such cases, the applicant should also file a written explanation as part of the project proposal explaining in detail what should be amended/drafted together with a tentative timeline for its approval, in accordance with the provisions of the specific law governing the procedure of approving relevant normative acts in the Republic of Moldova.

Example of border crossing construction:

• A project proposal on the construction of a joint border crossing to connect Moldova with a neighbouring country should be based on a bilateral agreement or treaty governing the rights and obligations of each country and contribution to the works.

Annex 5 presents a list of laws and regulations relevant to public investment.

3.5. Institutional and Management Assessment

This section should describe the institutional and management capacity and set up in terms of relations between entities involved in the implementation of the public investment project. This section will cover the following elements:

- The management arrangements, including the organisational arrangements and the allocation of responsibilities between the parties involved in the implementation of the project;
- Human resource capacity, including the availability of knowledgeable, skilled and experienced personnel to implement the project.

For the public investment project to be implemented effectively, the roles and responsibilities of all key players should be clearly established.

Special attention should be given to the process of procurement and contract management, since these can be lengthy and complected processes.

This section should typically address the following issues:

- Which institutions are related to the project? Which organisation should lead the project?
- Does this organisation have the capacity and enough resources to run and monitor the project properly?
- Is any local entity involved in the implementation of the project and is its management adequately equipped to handle the project?
- Is there a need for changes in the institutional set up outside in order to ensure successful implementation of the project?
- Is there a local entity involved in the implementation of the project and is its management properly equipped to manage the project?
- Is there a need for changes in the institutional structure to ensure the successful implementation of the project?
- What type of procurement procedure will be applied for the project?
- Will the elaboration of the technical design and terms of reference of the project be carried out by the project team or will it be done externally?

 Are there internal procedures for ensuring good governance and transparency in the management of capital investment projects?

3.6. Social Impact Assessment

Social impacts are the impacts of public investment projects on population. These impacts can be both positive and negative. Social impact assessment needs to identify and where possible measure these impacts and also manage them in such a way that the positive impacts are maximised, and the negative impacts are minimised.

Social impact assessment should take into account the following specific impacts:

- Demographic impacts: including labour force, population shift, employment, displacement and relocation effects, change in population make-up;
- Socio-economic impacts: including income and income-multiplier effects, employment rates and patterns, prices of local goods and services, and taxation effects;
- Institutional impacts: including demands on public services in housing, education, health, justice, recreation, etc.;
- Cultural impacts: including those on family structure and authority, religion and ethnic factors, archaeological features, social networks, etc.;
- Gender impacts: including the implications of investment projects on women's role in society, income-generating opportunities, access to resources, and employment opportunities.

Some of the common questions in social assessment include:

- Who are the stakeholders of the proposed project?
- Are project objectives consistent with the needs and interests of the stakeholders?
- What will be the impact of the project on the various stakeholder groups, i.e. children, elderly, women, vulnerable, etc.?
- Are there plans to mitigate adverse impacts?
- What social risks might affect project success?

It is recommended to use tables to provide key social data of the area (region, rayon, municipality, city district, village, etc.) affected by the project, to cover at least the following information:

- Total population;
- Number of households;

- Ethnic and religious structure;
- Education, age, gender structures;
- Employment and income structures.

It is recommended to use the following two tables 7 and 8 to summarise social impact and measures:

Table 7: Negative social impacts and mitigation measures

Social impact	Mitigation measures	Project phase	Responsible agency

Table 8: Positive social impacts and enhancement measures

Social impact	Enhancement measure	Project phase	Responsible agency

3.7. Environmental impact assessment

According to item 20, sub-item 5) of the Regulation on public capital investment projects, all proposals for new projects must be submitted to the Ministry of Environment for examination and for the preparation of the opinion on the climate implications and vulnerabilities of the project.

The information provided must include:

- a) References about the submission of the draft procedure for the environmental impact assessment under the terms of Law no. 86/2014 on the environmental impact assessment and on the possession of the appropriate environmental permissive act (Environmental Agreement or Decision on the prior environmental impact assessment with annex) – for the projects to be it is included in Annex 1 and Annex 2 to Law no. 86/2014;
- b) Description of the potential significant environmental impact generated by the project, project size, duration and, where appropriate, its reversibility (with emphasis on the use of natural resources, in particular land, soil, soil, etc, water and biodiversity, taking into account, as far as possible, the sustainable availability of these resources;

emission of pollutants, noise, vibration, light, heat and radiation, and, waste disposal and recovery, etc.);

- c) Assessment of the impact of the project on the climate, including the nature and extent of greenhouse gas emissions, technologies and substances used;
- d) The alternative measures and solutions envisaged to avoid, prevent, reduce or, where possible, compensate for the identified significant negative impact on the environment and climate change;
- e) The analysis of the vulnerability of the project to climate change, the potential positive and negative effects on the implementation and further exploitation of the project;
- f) Actions to mitigate risks, increase resilience to the negative impact of hazards, climate shocks on the project.

The analysis should indicate whether or not some aspects of the project are contrary to legal environmental provisions and possible regulatory solutions.

Environmental impact assessment is a tool aimed at ensuring the prevention or the reduction, at the initial stages, of possible significant effects on the environment, which may occur as a result: of the construction of new objects; or the expansion, reconstruction, modernization, reprofiling of existing assets; as well as the acquisition or use of natural resources and useful mineral resources.

The environmental impact assessment procedure is an integral part of the procedure for issuing approvals for the development of publicly and privately planned types of activity. Law no. 86/2014 on environmental impact assessment sets out the procedures and modalities applied in the environmental impact assessment process, of some types of planned public and private activities with a significant impact on the environment in the Republic of Moldova or in other states.

In accordance with art. 4 of the Law, the environmental impact assessment must highlight, describe and properly assess the significant impact in each case, directly and indirectly, of the proposed activity on the following factors:

- Population and public health;
- Biodiversity, focusing on protected species and habitats on the basis of the Law on Fauna No. 439/1995, the Law on Flora No. 239/2007, Ecological Network Law No. 94/2007 and international conventions to which the Republic of Moldova is a party;
- Land, soil, water, air and climate;
- Wealth, cultural heritage and landscape;
- The interaction between the factors referred to in points above, as well as the impact on socio-economic conditions resulting from the change of these factors; the impact associated with the use of natural resources (risk of depletion, considerations on the use of resources);

- The impact associated with climate change, climate change mitigation (this takes into account the impact that planned activity will have on climate change, mainly through greenhouse gas emissions);
- Adaptation to climate change (this takes into account the vulnerability of planned activity to future climate change and its ability to adapt to the impact of climate change, which can be uncertain);
- Risks of major accidents and disasters.

The environmental impact assessment should include a biodiversity assessment in the event that the planned activities impact the areas of the Emerald network in accordance with the Law on Ecological Network No. 94/2007.

For activities that are not regulated by the annexes no. 1 and no. 2 but may have a significant potential impact on the Emerald sites/network, the authority issuing the permit/authorisation suspends the procedure for issuing the permit and notifies the initiator of the need to initiate the biodiversity assessment procedure in accordance with the procedure established in art. 10¹⁰ of Law no. 86/2014 regarding environmental impact assessment.

The environmental impact assessment has to highlight, describe and assess the expected impact due to the vulnerability of the planned activities to major accidents and disasters, relevant to the planned activity.

The impact assessment procedure is carried out in several stages:

- 1) Preliminary assessment;
- 2) Development of the environmental impact assessment program;
- 3) Elaboration of the environmental impact assessment report by the applicant/PA initiator of the planned activity;
- 4) Conducting public consultations with interested central and local public administration authorities and with the public concerned, at local, national and cross-border level, as appropriate;
- 5) Examination of the report on the environmental impact assessment, any other information provided in addition by the initiator of the project, as well as the information received after the public consultations provided in point (4);
- 6) Issuance by the Environment Agency of the motivated decision on Environmental Agreement;
- 7) Providing the Decision concerning environment agreement and Environment Agreement if it exists, in the approval of development of the planned activities, in accordance with art. 24 to Law no. 86/2014 on environmental impact assessment.

The environmental agreement is the environmental permit/authorisation issued by the Environment Agency that establishes the carry out a planned activity, as provided in annex no. 1 or no. 2 of Law no. 86/2014 on environmental impact assessment for a certain

object/location, conditions and environment protection measures which have to be fulfilled in the process of the approval of development of the planned activities.

List of planned activities included in Annex no. 1 of Law no. 86/2014 on environmental impact assessment are mandatory for environment impact assessment, but the activities included in annex no. 2, Environment Agency at the stage of preliminary assessment establishes the necessity of the environmental impact.

Thus, when submitting project proposals, the initiation attaches the Preliminary Assessment Decision and, where applicable, the Environmental Agreement for the planned activity authorising the planned activity (foreseen in annex no. 1 or no. 2) at a given location/certain object, as well as the conditions and measures for environmental protection to be fulfilled for the development of the planned activity in accordance with art. 24 of Law no. 86/2014 on environmental impact assessment.

3.8. Risk Assessment

Risk analysis is a key component of the preparation of a public investment project proposal. Many different types of risk exist, and an element of risk and uncertainty exists with all projects. These include the risks of non-performance, project delays, fluctuations in exchange rates, physical and natural hazards, political and security risk. Project risks have implications for the financial, economic, social, environmental and health impacts of projects.

A number of different types of risk are summarised in Table 9 below. Table 9 also gives examples of individual categories of risk and the likely impacts if such a risk event should occur.

Table 9: Examples of types of risks

Type of risk	Examples	Impact
Availability Risk	The quantity of input required for the project may not be available.	The project will be delayed and the IRR and NPV may be reduced.
Construction risk	The construction of physical assets is not completed on time.	The project may be delayed; costs will escalate and there may be problems with project finance and operation.

	I	1
Design risk	Design cannot deliver services at the required performance or quality standards.	Project may be delayed; project performance will be less than expected.
Environment risk	Meteorological (tropical cyclones, tornados) Geological (earthquakes, volcanic eruptions)	The project performance may be reduced because of delays in start- up. The project life may be reduced because of major natural hazards.
Economic, Financial and Business Risk (May be carried out in CBA, if CBA is required)	Macroeconomic instability: high inflation; Demand estimates are incorrect; The business cannot meet its business imperatives; Funding is not available in the quantity and at the time required;	The project may need to be terminated; Project is delayed with the risk of higher incremental costs in the future.
Legislative risk (May be carried out under Legal assessment)	Possible changes in legislation and the tax regime; environmental regulations.	Project success may be reduced.
Political economy risk	Interest groups may block the implementation of the project.	The project may be curtailed, delayed or scrapped.
Security risk	Civil war and disturbance, terrorism.	Threat to project completion and Operation.
Technology risk	Changes in technology may result in the project offering services using non-optimal technology	Project may not be cost effective and unable to compete with other projects.

It is recommended to use a Project Risk Matrix, also known as a *Probability* and *Severity* risk matrix in project risk assessment.

Project Risk Matrix is a graphical risk analysis tool in the form of a table which gives a quick view of project risks and severity of their impact. It is used to allocate ratings for each risk based on two intersecting factors:

- The likelihood (or probability) of a risk to occur (horizontal axis).
- The impact (or severity) if a risk occurs (vertical axis).

	Likelihood					
H		Very unlikely	Unlikely	Possibly	Likely	Very likely
npact	Very strong	Low	Moderate	High	Critical	Critical
Ē	Significant	Low	Moderate	Moderate	High	Critical

Table 10: Project Risk Matrix

	Moderate	Low	Low	Moderate	Moderate	High
	Low	Very low	Low	Low	Moderate	Moderate
	Negligible	Very low	Very low	Low	Low	Low

The likelihood can be expressed at a 5-level scale as shown below:

- (1) **Very unlikely**: A very low probability for this risk to occur.
- (2) **Unlikely**: Low probability for this risk to occur.
- (3) **Possible**: Medium probability for this risk to occur.
- (4) **Likely**: More than medium probability for this risk to occur.
- (5) Very likely: High probability this risk will occur at some point.

The impact can also be expressed at a 5-level scale as shown below:

(1) **Negligible**: Minimum impact of this risk on the project.

(2) Low: Manageable impact of this risk on the project.

(3) **Moderate:** Medium impact of this risk on the project; it will take some time and effort to mitigate impact.

(4) **Significant:** The impact of this risk can cause long-term consequences that may require complex, costly and time-consuming mitigation measures.

(5) **Very strong**: The impact of this risk can jeopardise the implementation of the project.

The project proposal will assign each risk a corresponding risk rating based on the identified likelihood and impact. A project risk that is very likely to happen and will cause major safety hazards will receive a higher risk rating than a risk that is unlikely to occur and will cause very minor harm.

The formula for the risk rating is as follows:

Likelihood x Impact = Risk rating

Example: Likelihood (4) x Impact (5) = Risk rating (20)

Since it is a 5×5 matrix, the risk rating values will range from 1 to 25. The risk rating can be raked as follows:

1 - 6 (Low): Low-rating risks most likely will not happen. If they do, they will not be a threat to the project.

7 – 12 (Medium): Some medium-rating risks might happen at some point. These are types of risk that should not be ignored.

13 – 25 (High): High-rating risks are serious and very likely to happen threats. They can cause the project to fail, they should be kept in mind when planning the project.

The Risk Matrix will take the following form when the likelihood and impact values are applied:

	Likelihood							
		Very unlikely (1)	Unlikely (2)	Possibly (3)	Likely (4)	Very likely (5)		
	Very strong (5)	5	10	15	20	25		
Impact	Significant (4)	4	8	12	16	20		
<u><u></u></u>	Moderate (3)	3	6	9	12	15		
	Low (2)	2	4	6	8	10		
	Negligible (1)	1	2	3	4	5		

Table 11: Project Risk Matrix

The assessment in this section can be summarised with the Risk Assessment Matrix as shown in the example below:

Risk	Likelihood	Impact	Risk rating	Response
Legal action delays or pauses project	3	4	Medium (12)	Follow all regulatory requirements and complete stakeholder management plan.
Consultant or contractor delays	5	5	High (25)	Include late penalties in contracts. Build in and protect lead time in the schedule. Communicate schedule early.
Project design and deliverable definition is incomplete	2	3	Low (6)	Complete a business case and ensure purpose is well defined.
Natural disasters leading to leads to loss of resources, materials, premises etc.	4	2	Medium (8)	Check insurance is in place. Familiarise project team with emergency procedures. Put back up systems in place e.g. generators.

Table 12: Project Risk Assessment Matrix

It needs to be noted that *uncertainty* is different to risk in that it is not possible to assign an estimated likelihood (or probability) to the variable. Uncertainty may be caused by a number of changes during the planning and future operation of the public investment project. Examples of project uncertainty include:

- Economic shocks, such as changes in energy prices;
- Sudden changes in technology;

 Regulatory changes; for example, the impact of changes in environmental or trade, construction legislation.

ANNEXES

Annex 1: Project submission and assessment through Register of Public Investment Projects (RPIP) platform

Step	Task	Description
1.	The user is authorized in IS RPIP	In order to be able to submit a new project proposal for appraisal, the applicant (representative of the central administrative public authority/local administrative public authority (CAPA/LAPA) needs to authenticate in RPIP by using their username and password. Users without authentication credentials would need to submit a formal registration request to the official email address of IS RPIP (accesm@ctif.gov.md). The project appraisal procedure process starts with the user being authenticated and authorized in IS RPIP as <i>applicant</i> .
2.	Online submission of project proposal	 The user accesses the specific <i>Project Appraisal module</i> in the RPIP, open a new application form by accessing the button "New project" and: 1. Fills in all mandatory fields: Project Title, Total cost, selects from the list the Institution (Org1) and the main group (F1F2) according to the budgetary classification;
		 Attaches all project documentation in PDF format (one or several documents) ensuring that all mandatory information for each component (project appraisal eligibility criterion) is uploaded as required;
		 Double check and confirm (checks relevant checkboxes) that attached project documentation includes all required components;
		 Submit the project proposal for appraisal by pressing the "Submit" button. The user will only be able to submit the project proposal if all of the checkboxes are checked.

Step	Task	Description
		IS RPIP automatically notifies by email the user of the successful receipt of the project proposal, including the date of reception, registration number, etc.
3.	Verification of completeness of project documentation	The Secretariat of the MoF Working Group reviews whether the project proposal includes all the necessary documentation in order to be permitted to proceed for appraisal. IS RPIP displays the project proposal details in tabular form or "Completeness Table".
		The Secretariat of the Working Group of the MoF accesses documents submitted as part of the project proposal (IS RPIP will open each document in a popup modal window with a PDF Viewer) and checks if the documentation submitted by the applicant covers all mandatory information within each component representing each project appraisal eligibility criterion. The Secretariat of the MoF Working Group reviews the project proposal submission. If all mandatory information and documentation is included in the project proposal submission as required, the administrator checks the respective checkboxes in the 'Identified' column of the Completeness Table and the IS RPIP component changes colour to green. Upon completion of the review, the administrator of the Secretariat of the Working Group clicks on the "Completeness" button in order to confirm that the verification is finalised.
		 RPIP IS will display a new modal popup window with the title: a) Send project proposal for appraisal - If all required project documentation components
		were identified (all checkboxes are checked) RPIP will show the <i>"Project proposal is complete!"</i> message.
		 b) Refuse registration and send email to applicant If any of the mandatory components is missing, RPIP will show "Project proposal is incomplete! The following items are missing"

Step	Task	Description
		message and will list the missing project documentation components.
4.	Are all mandatory documents submitted?	Depending on whether the project proposal submission is complete or not, the administrator of the Secretariat of the Working Group decides whether to send the project proposal for appraisal or reject and request the Applicant to submit the missing mandatory documentation. The workflow continues accordingly with one of the paths (4.1 'notification of missing documentation' or 5. 'Appraisal of the project proposal).
4.1.	Notification on missing documentation	IS RPIP automatically sends an email to the Applicant with the list of missing project documentation.
4.2.	Uploading missing documentation	The Applicant has the option to upload missing project documentation or refuse to continue with the submission process. If the Applicant resubmits the project proposal including the missing documentation, the workflow resumes with step 3 "Verification of completeness of project documentation" described above.
5.	Appraisal of the project proposal	Once all project documentation components are identified and verified during the verification of project documentation completeness, the workflow continues with the appraisal step. Only designated members of the Working Group have user access to this step. RPIP IS displays a new tab "Appraisal" which includes the "Project appraisal form". Each member of the Working Group independently assesses the project proposal and inputs scores for each component (project appraisal eligibility criterion). In the event of divergence of scores among members of the Working Group, a meeting is called by the designated Chairman of the Working Group.
6.	Does the project scored higher than baseline score	After all project documentation components (project appraisal eligibility criterion) are appraised and the

Step	Task	Description			
	and are the qualitative requirements satisfied	overall score for the project proposal is computed, the workflow continues with one of the paths (6.1 'notification of applicant on project proposal rejection due to score lower than threshold' or 7 'inclusion of the public investment project in the Project Pipeline') depending on whether the project proposal scored higher or lower than the minimum threshold.			
6.1.	Notification of applicant on project proposal rejection due to score lower than threshold	IS RPIP notifies the Applicant on inadequate project scoring when the overall score is lower than the minimum baseline by email. The workflow (business process) ends with this task 6.1.			
7.	Inclusion of the public investment project in the Project Pipeline	RPIP IS includes the public investment project in the Project Pipeline (list of projects eligible for funding under the State Budget).			
8.	Notification of the applicant on eligibility of the project	IS RPIP automatically notifies by email the Applicant on the successful conclusion of the appraisal procedure and the eligibility of the project. The workflow ends with step 8.			

Annex 2: Scoring methodology

Scoring rationale

The appraisal procedure recognises that there are criteria (requirements) suitable for numerical assessment, while other criteria assessed on a qualitative basis.

The compulsory requirements for numerical assessment are following: The criteria Project Summary; Technical Analysis; Economic & Financial Analysis, Institutional & Management Assessment; Social Impact Assessment and Risk Analysis are numerically assessed, and the ranking is determined by the highest score.

The compulsory requirements assessed on a qualitative – Satisfactory (S) / Non-Satisfactory (NS) basis are the Legal Assessment and Environmental Impact Assessment. Qualitative criteria

The Legal Assessment must not only be based on the description of various legal risks but it must also investigate the ways in which these risks will be mitigated. If the Legal Assessment indicating significant legal risks for the proposed public investment project doesn't also present appropriate measures to mitigate these risks, it should be assessed as 'Non-Satisfactory' (NS).

Similarly, the **Environmental Assessment** should not only be based on the assessment of the completeness of the presentation of direct and indirect environmental consequences (impacts) of the public investment project, but also on the measures to address and, if needed, mitigate these consequences. An Environmental Assessment which points to serious negative impacts on the environment with no realistic ways of mitigating them should be assessed as 'NS'.

For a public investment project proposal to deemed successful ('eligible') both the Legal and Environmental qualitative criteria must be assessed as Satisfactory (S).

Quantitative criteria

The weights of the quantitative criteria and sub-criteria along with their contribution to the total score are shown below:

N	Quantitative criteria and sub-criteria	Criterion weight	Sub-criterion weight	Contribution to total score
1	Project Summary (PRS)	5.00%		
1.1	Purpose (PUR)		20%	1%
1.2	Strategic Framework (STF)		20%	1%
1.3	Beneficiaries (BEN)		20%	1%
1.4	Location (LOC)		20%	1%
1.5	Possible Source of Funding (PSF)		20%	1%

N	Quantitative criteria and sub-criteria	Criterion weight	Sub-criterion weight	Contribution to total score	
2	Technical Analysis (TEA)	20.00%			
2.1	Technical Specifications (TSR)		33.33%	10%	
2.2	Technical Required (TER)		33.33%	10%	
2.3	Operational Assessment (OPE)		33.33%	10%	
3	Economic and Financial Analysis (EFA)	45.00%			
3.1	Business Case (BUC)		20% (44.45%)	7% (15.56%)	
3.2	Financial Case (FIC)		25% (55.55%)	8.75% (19.44%)	
3.3	Cost-Benefit / Cost-Effectiveness Analysis (CBA/CEA)		55%	19.25%	
5	Institutional and Management Assessment (INM)	10.00%			
6	Social Impact Assessment (SOI)	10.00%			
8	Risk Analysis (RIA)	10.00%			
	Total	100.00%			

The **Project Summary** criterion has five equally weighed (20%) sub-criteria (Purpose of the project (PP), Strategic framework (SF), Beneficiaries (BEN), Location (LOC) and Possible source of funding (PSF). The information provided in Project Summary criterion is fairly typical and standardised and that is why its weight is only 5%.

Particular focus is placed on the **Technical Analysis (20%)** and the **Economic/ Financial Analysis (45%) criteria**, as their combined weight contribution to the total score is 65%. These two criteria are of paramount importance since technical feasibility and financial viability are the backbone for the success of any public investment project.

More specifically:

The **sub-criteria of the Technical Analysis** criterion (*Technical Specifications and Resources, Technologies Required and Operational Assessment*) are considered of equal importance for the technical completeness of a project and, therefore, equally contribute to the scoring of the Technical Analysis criterion (1/3 or 33.33%). Their contribution to the total score is 30%.

The Economic and Financial Analysis (EFA) criterion has three sub-criteria: *Business Case(BC),* Financial Case (FC) and Cost Benefit (CBA) / Cost Effectiveness Analysis (CEA) with weights 20%, 25% and 55% respectively. For project proposals that cost more than MDL 200 million, Cost Benefit/Cost Effectiveness Analysis sub-criterion is given the highest weight (55%) because of its significance to overall project appraisal. For these project proposals the weight contribution of CBA/Cost Effectiveness Analysis sub-criteria to the total scoring is 19.25%.

For project proposals with a total cost less than MDL 200 million, where Cost Benefit / Cost Effectiveness Analysis is not mandatory, its weight is added to the Business Case and Financial Case weights proportionately resulting in weights of 44.45% and 55.55% respectively, with a contribution to the overall score of 15.56% and 19.44% respectively.

Institutional and Management (IM), Social assessment (SA) and **Risk Analysis(AR)** are considered as criteria of equal importance for any complete project and therefore have the same weight of 10% in the total score.

Illustration of scoring of sample projects

Five sample project proposals have been entered into RPIP platform and scored. The scoring results are presented below.

The assumptions underlying these project proposals are as follows:

- The Ministry of Finance is the initiator of the five projects.
- For all five projects, the Legal Assessment (LA) and the Environmental Assessment (EA) are both marked as Satisfactory (S). NB: if for any of the project proposals either one or both of the two qualitative criteria were assessed Not Satisfactory (NS) the project proposal would be automatically rejected irrespective of the total score for the quantitative criteria.
- All the quantitative criteria and sub-criteria must be scored at least '4'. If any of the sub-criteria is scored below '4' the project proposal would be automatically rejected even if the total score exceeds the **minimum threshold of 7**.

Table 2: The cost of each project proposal, the scoring of each criterion and sub-criterion,
the total score of the project proposal and the final appraisal result:

N	Quantitative criteria and sub- criteria	Project 1	Project 2	Project 3	Project 4	Project 5
Project	cost (MDL million)	150	150	250	250	210
1	Project Summary (PRS)	9.8	9.8	10	10	4
1.1	Purpose of the project (PUR)	10	10	10	10	4
1.2	Strategic Framework (STF)	9	9	10	10	4
1.3	Beneficiaries (BEN)	10	10	10	10	4
1.4	Location (LOC)	10	10	10	10	4
1.5	Possible Source of Funding (PSF)	10	10	10	10	4
2	Technical Analysis (TEA)	9.33	9.33	5	5	9.33
2.1	Technical Specifications (TSR)	9	9	5	5	9
2.2	Technical Required (TER)	9	9	5	5	10

N	Quantitative criteria and sub- criteria	Project 1	Project 2	Project 3	Project 4	Project 5
2.3	Operational Assessment (OPE)	10	10	5	5	9
3	Economic and Financial Analysis (EFA)	4.46	5.01	5.45	6.55	9.05
3.1	Business Case (BUC)	5	5	10	10	8
3.2	Financial Case (FIC)	4	5	5	5	10
3.3	Cost-Benefit / Cost-Effectiveness Analysis (CBA/CEA) for projects more than 200, 0 mln. lei	-	-	4	6	9
4	Legal assessment (LEA)	S	S	S	S	S
5	Institutional and Management Assessment (INM)	7	7	10	10	4
6	Social Impact Assessment (SOI)	7	7	10	10	4
7	Environmental Impact Assessment (ENA)	S	S	S	S	S
8	Risk Analysis (RIA)	7	7	10	10	4
Total so	Total score (TS)		6.71	6.96	7.45	7.34
Conclus	Conclusion		Accepted	Rejected	Accepted	Accepted

Analysis of scoring of project proposals 1 and 2

The estimated costs for Projects 1 & 2 are MDL 150 million and they have identical scoring for all sub-criteria except for Financial Case (FIC) sub-criterion.

The score for a criterion with sub-criteria is calculated as the sum of the sub-criteria scores weighted by the sub-criteria weights.

For Project 1, the score for the Project Summary (PRS) criterion is calculated as:

$$PRS = 20\%(PUR) + 20\%(STF) + 20\%(BEN) + 20\%(LOC) + 20\%(PSF)$$
$$= (0.2 \times 10) + (0.2 \times 9) + (0.2 \times 10) + (0.2 \times 10) + (0.2 \times 10) = 9.8$$

The same calculation holds for Project 2. Therefore, both for the Project 1 and the Project 2 **PRS =9.8**.

For Project 1, the score for the Technical Analysis (TEA) criterion is calculated as:

TEA = 33.33%(TSR) + 33.33%(TER) + 33.33%(OPE)= (0.3333 × 9) + (0.3333 × 9) + (0.3333 × 10) = 9.33 The same calculations hold for Project 2. TEA=9.33.

We note that both projects score very high on Project Summary (PS) (9.8) and Technical Analysis (TA) (9.33).

The scores for Institutional Management Assessment (INM) Social Impact Assessment (SIA) and Risk Analysis (RIA) are equal to the minimum total score (7). It can be concluded that these three criteria do not influence negatively to project eligibility.

In Project 1, Financial case (FIC) sub-criterion is scored 4 while in Project 2 it is scored 5. Since the projects are less than MDL 200 million the Business Case and Financial case sub-criterion weight is 44.45% and 55.55% respectively.

For Project 1, the Economic and Financial Analysis (EFA) score is calculated as follows:

 $EFA = 44.45\%(BUC) + 55.55(FIC) = 0.4445 \times 5 + 0.5555 \times 4 = 4.46$

For project 2, the Economic and Financial Analysis (EFA) score is calculated as follows:

 $EFA = 0.4445 \times 5 + 0.5555 \times 5 = 5$

The Total Score for a project is calculated as the sum of the numerical criteria weighted by the weights of each criterion.

For Project 1, the Total Score (TS) is calculated as:

$$TS = 5\%(PRS) + 20\%(TEA) + 45\%(EFA) + 10\%(INM) + 10\%(SOI) + 10\%(RIA)$$

= (0.05 × 9.8) + (0.2 × 9.33) + (0.45 × 4.46) + (0.1 × 7) + (0.1 × 7)
+ (0.1 × 7) = 6.46

For Project 2, the Total Score is calculated as:

$$TS = (0.05 \times 9.8) + (0.2 \times 9.33) + (0.45 \times 5) + (0.1 \times 7) + (0.1 \times 7) + (0.1 \times 7)$$

= 6.71

We note the impact of the high contribution of the weight of Finance case (FIC) sub-criterion to the Total Score. For Project 1, the Financial case (FIC) sub-criterion score of '4.46' results in a Total Score of **6.46**, whereas for Project 2, the Financial case sub-criterion score of '5' results in a Total Score of **6.71**.

Since the minimum score for eligibility is 7, Project 1 is rejected while Project 2 is accepted. These example shows the importance of Finance case (FIC) sub-criterion for projects with total estimated cost less than MDL 200 million.

Analysis of scoring of project proposals 3 and 4

The estimated costs for projects 3 & 4 are MDL 250 million. Since the cost threshold of MDL 200 million is exceeded for both projects, the Cost-Benefit / Cost-Effectiveness Analysis (CBA/CEA) sub-criterion weight (55%) is used.

Both projects have identical scoring on all the criteria and sub-criteria levels except for the Cost-Benefit / Cost-Effectiveness Analysis (CBA/CEA) sub-criterion.

For Project 3 the score of Economic and Financial Analysis (EFA) criterion is calculated as follows:

EFA = 20%(BUC) + 25%(FIC) + 55%(CBA or CEA) $= (0.2 \times 10) + (0.25 \times 5) + (0.55 \times 4) = 5.45$

For Project 4 the score of Economic and Financial Analysis (EFA) criterion is calculated as follows:

 $EFA = (0.2 \times 10) + (0.25 \times 5) + (0.55 \times 6) = 6.55$

Projects 3 and 4 score the maximum score for Project Summary (10), Institutional and Management Assessment (10), Social Impact Assessment (10) and Risk Analysis (10). But both projects score low in the Technical Analysis (5). For Cost-Benefit / Cost-Effectiveness Analysis (CBA/CEA) Project 3 scores slightly lower ('4') than Project 4 ('6').

This slight difference makes Project 3 to score '5.45' for the Economic/Financial Analysis and Project 3 to score '6.55'.

For Project 3, the Total Score (TS) is calculated as:

$$TS = (0.05 \times 10) + (0.2 \times 5) + (0.45 \times 5.45) + (0.1 \times 10) + (0.1 \times 10) + (0.1 \times 10)$$

= 6.95

For Project 4, the Total Score (TS) is calculated as:

$$TS = (0.05 \times 10) + (0.3 \times 5) + (0.35 \times 6.55) + (0.1 \times 10) + (0.1 \times 10) + (0.1 \times 10)$$

= 7.29

Due to 19.25% contribution of Cost-Benefit / Cost-Effectiveness Analysis (CBA/CEA) weight to the Total Score (TS) Project 3 has a Total Score of '6.95' and Project 4 has a Total Score of '7.45'.

Since the minimum score for eligibility is '7', Project 3 is rejected while Project 4 is accepted. This example shows the importance of Cost-Benefit / Cost-Effectiveness Analysis (CBA/CEA) sub-criterion for projects with total estimated cost of MDL 200 million and higher.

Analysis of scoring of project proposal 5

Project 5 has an estimated cost of MDL 210 million, which makes the Cost-Benefit / Cost-Effectiveness Analysis (CBA/CEA) sub-criterion mandatory. For this project every quantitative

criterion except the Technical Analysis (TEA) and Economic and Financial Analysis (EFA) criteria are scored with the minimum accepted score (4). This is well below the minimum threshold for the total score (TS) for eligibility (7). Therefore, the score of each of these criteria negatively contributes to the eligibility of the project.

At the same time, all the sub-criteria of Technical Analysis (TEA) and Economic and Financial Analysis (EFA) are scored very high resulting to Technical Analysis (TEA) criterion score of **9.33** and to the Economic and Financial Analysis (EFA) score of **9.05**. Due to their combined high weight (65%) on the Total Score (TS) the Total Score (TS) of the Project 5 is **7.34** which makes the Project 5 to be accepted.

Annex 3: Excel sample of discounted cash flow, and NPV / IRR calculation

	Save Off 🗄 M	lanual_Pub Page L		ormulas		v annex 🗸	View H	Search Ielp	_	_		_	
The T		Tuge L	ayout i	onnulus	Data	Review		ieip					
Default		FFT r	Page La	vout		🔽 Rule		ormula Bar	\bigcirc	F A		📩 New	Windo
		·		·		- Kule			\sim	100		<u> </u>	
		ge Break 📊		Views	Navigatio	n 🗌 Gridi	ines 🖂 H	andings	Zoom	100% 2	Zoom to	Arrar	ige Al
	~+ ·- F	review ^{II}		VIEWS			ines 🖸 A	leaungs		5	Selection	🚰 Freez	e Pan
						c 1				_			
Sheet	View	Workbook	views			Sr	IOW			Zoom			
34	\checkmark : $\times \checkmark f_x$	=NPV(C	32,D30:N	130)+C30									
А	В	С	D	E	F	Formu	ula Bar	1	J	К	L	м	N
	Cash flows	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
=1.1+1.2+.1.3	Cash outflows	(60,000.0)	(30,000.0)	(30,000.0)	(30,000.0)	(30,000.0)	(30,000.0)	(30,000.0)	(30,000.0)	(30,000.0)	(30,000.0)	(30,000.0)	
1.1	Investment costs	(60,000.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1.1.1	Start-up and technical costs	(2,000.0)											
1.1.2	Land	(12,000.0)											
1.1.3	Buildings	(28,000.0)											
1.1.4	Equipment	(13,000.0)											
1.1.5	Machinery	(6,000.0)											
1.1.6	Replacement costs Residual value	(3,000.0)											
1.1.7 1.2	Operating costs	4,000.0 0.0	(20,000.0)	(20,000.0)	(20,000.0)	(20,000.0)	(20,000.0)	(20,000.0)	(20,000.0)	(20,000.0)	(20,000.0)	(20,000.0)	
1.2.1	Personnel	0.0	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	
1.2.2	Energy		(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(10,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	
1.2.3	General expenditure		(5,000.0)	(5,000.0)	(5,000.0)	(5,000.0)	(5,000.0)	(5,000.0)	(5,000.0)	(5,000.0)	(5,000.0)	(5,000.0)	
1.2.4	Intermediate services		(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	
1.2.5	Raw material		(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	
1.3	Other outflows	0.0	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	(10,000.0)	
1.3.1	Loan repayments		(7,000.0)	(7,000.0)	(7,000.0)	(7,000.0)	(7,000.0)	(7,000.0)	(7,000.0)	(7,000.0)	(7,000.0)	(7,000.0)	
1.3.2	Interests		(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	(1,000.0)	
1.3.3	Taxes		(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	(2,000.0)	
2=2.1+2.2	Cash inflow	0.0	40,000.0	40,000.0	40,000.0	40,000.0	40,000.0	40,000.0	40,000.0	40,000.0	40,000.0	40,000.0	
2.1	Inflows	0.0	10,000.0 5,000.0	10,000.0 5,000.0	10,000.0	10,000.0 5,000.0	10,000.0 5,000.0	10,000.0 5,000.0	10,000.0	10,000.0 5,000.0	10,000.0 5,000.0	10,000.0 5,000.0	
2.1.1	Revenues Operating subsidies		5,000.0	5,000.0	5,000.0	5,000.0	5,000.0	5,000.0	5,000.0 5.000.0	5,000.0	5,000.0	5,000.0	
2.1.2	Sources of financing	0.0	30,000.0	30,000.0	30,000.0	30,000.0	30,000.0	30,000.0	30,000.0	30,000.0	30,000.0	30,000.0	
2.2.1	Government contribution	210	20,000.0	20,000.0	20,000.0	20,000.0	20,000.0	20,000.0	20,000.0	20,000.0	20,000.0	20,000.0	
2.2.2	Grants		3,000.0	3,000.0	3,000.0	3,000.0	3,000.0	3,000.0	3,000.0	3,000.0	3,000.0	3,000.0	
2.2.3	Loans		6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	6,000.0	
2.2.4	Private equity		1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0	
2-1	Net cashflow	(60,000.0)	10,000.0	10,000.0	10,000.0	10,000.0	10,000.0	10,000.0	10,000.0	10,000.0	10,000.0	10,000.0	
	[
	Discount rate	5.00%											
	NDV	617 017 05			to calculate N	PV							
	NPV IRR	\$17,217.35 10.56%		=NPV(C32,D30 =IRR(C30:M30									
	INN	10.56%		-ma(cou:ivi30	9								

Annex 4: Sector specific of cost-benefit analysis

This Annex shows some of the specific issues concerned with different sectors of the economy when identifying costs and benefits of public investment projects.

Transport infrastructure

Transport infrastructure projects are typically financed by international financial institutions and are often fairly costly. The area of transport economics is a major discipline in its own right and a number of sophisticated computer models have been developed to estimate the impacts of transport projects and to forecast traffic flows and traffic generation. Like other sectoral projects, transport projects involve comparing the 'status quo' project situation as well as comparing particular project options with the next best project alternative.

Care should be taken in defining the number of possible alternatives, as there may be many. For example, there may be many ways of improving urban transport and reducing congestion – private taxis, buses, trams, road user charging, tunnels, new road layouts and so on. Transport infrastructure projects include road, rail, water and other forms of transport.

Transport projects may well have as their objective the reduction of transport costs. The main economic benefits from investment in the transport sector are:

- Savings in vehicle operating costs;
- Time savings for passengers and freight;
- Reduction in the frequency and severity of accidents.

In common with other major infrastructure projects, the construction of new roads, bridges, etc. will have wider economic impacts. In the case of large projects, it may be worth carrying out multiplier analysis to assess both the direct and indirect impacts of the investment.

For example, the construction of rural roads may open up new markets for agricultural produce to traffic passing through and to regional and national markets. The development or expansion of an airport may permit more airfreight exports (fruit and vegetables and high value products) and the entry of more tourists (who will spend foreign exchange).

However, on the other side, by increasing traffic flows in some areas, the development of transport infrastructure may actually contribute to aerial pollution or increase accidents – these are external costs.

Agriculture

In Moldova, agriculture is an important sector in the economy in terms of employment generation, contribution to GDP, value added and employment. It is the predominant area for land use.

When implementing agricultural projects various externalities need to be taken into account. For example, a large-scale irrigation project may typically have various external costs and benefits, including:

- external costs loss of land for the irrigation scheme; diversion of water resources from other end uses;
- external benefits improvement of soil and land management, thus reducing erosion;
- multiplier impacts through linkages with other sectors of the economy. On the irrigation projects these might include demand for steel and construction materials for dams, irrigation canals; demand for irrigation equipment, seeds, fertilisers, pesticides and other agricultural inputs; agricultural products as inputs for other industries; cereal and grain production for flour, bread, brewing and other products; etc.

One of the key impacts of agricultural projects is how cost and benefit affects the physical environment. The relationship between agriculture and the environment is crucial and there is a two-way impact flow. On the one hand, environmental degradation occurs through deforestation, pollution of rivers, watercourses and air pollution, which may lead to degradation in soil quality, reduction in crop yields and a decline in agricultural production. On the other hand, agricultural practices – effluent pollution, atmospheric pollution, excessive water abstraction, soil compaction, irrigation leading to salinisation – may all lead to environmental degradation which will also have economic and financial impacts.

Other infrastructure projects

Large infrastructure projects other than transport may include:

- Urban and rural water supply;
- Urban wastewater treatment in rural and urban areas;
- Waste disposal and waste management services (landfill, incineration, recycling plants), etc.

In planning such projects, the following are key factors need to be considered:

- Demand forecasting (demand for water of wastewater treatment from key sectors domestic, industrial, commercial and institutional). Demand forecasting will need to take into account a number of trends including population and water consumption; changes in income and other indicators such as projected changes in the annual rates of GDP growth.
- Specification of investments buildings, plant, machinery and equipment and the impact of the project on incremental operating and maintenance costs.
- Existing infrastructure connections to water and sewerage networks.

• Forecast changes in urban and rural demand for services.

Some of the important benefits from this type of infrastructure projects include:

- In water supply: health, including lower morbidity and mortality; lower water collection costs, particularly in rural areas; lower water treatment costs, such as filtration and boiling.
- Wastewater treatment: health, including lower morbidity and mortality; amenity values – upgrading of rivers and waterways with the reduction of wastewater pollution; other environmental benefits with cleaner rivers; impacts on fisheries and aquatic life.
- Solid waste management: health, including lower morbidity and mortality, because of an improved physical environment; impacts of the natural environment; etc.

Energy

Energy production and distribution projects account for some of the largest projects financed by international financial institutions. They include a range of production plants and sources of energy, such as gas, oil or coal based thermal power plants, hydroelectric power plants, wind and solar energy, etc.

The important elements in project identification will typically include:

- Projections of energy demand over the lifetime of the project;
- Assessment and projections of the supply situation for energy (market and competition analysis);
- Specification of all the incremental investment and operating costs associated with the project, including buildings, plant and machinery;
- Access for transport;
- Specification of technology; etc.

On the energy distribution side, attention should be given to:

- Distribution networks (pylons, cables, pipelines, cabling) for urban and rural areas;
- Links with existing distribution networks;
- Circuit breakers, transformers, compressors and pumping stations.

Large energy projects may bring a number of major social benefits, including:

- Multiplier benefits, such as employment and the linkages with other sectors of the economy;
- Impacts on domestic production and productivity through the availability of locally produced energy;

• Reduction of dependence on imported energy supplies; etc.

On the economic costs side, the consequences from energy projects could include:

- Loss of land for the project, such as for a gas power station, or more so for PV solar farms;
- Pollution from thermal power stations;
- Loss of amenity values because of the impact of a large power station and distribution pylons on the landscape.

Telecommunications

Telecommunications projects tend to require large investments, and a typical project life would be at least 10 years. As with other infrastructure projects, telecommunications can make a major contribution to economic and social development, particularly by facilitating business and social exchange. Key questions will cover the balance between public and private investment, between serving urban and rural areas and the access to and affordability of the service for different income groups.

The objectives of telecommunications projects might include:

- Development of cabling and relay systems;
- Development of wider networks;
- Laying of cables and the construction of relay stations;
- Development of international communications systems to increase capacity, power and speed; Increasing the capacity, power and speed of inter-regional communications links;
- Updating of networks.

The identification of projects in the telecommunications sector will include the following:

- Market and demand forecasts for telecommunication services;
- Specification of traffic volume and seasonal trends, communications;
- Infrastructure, communication protocol, power and frequency bands;
- Length of networks and cabling;
- Buildings and infrastructure, covered, gross and net areas;
- Comparison of different technical alternatives including alternatives for infrastructure.

There are a number of social and economic benefits which may be attributed to telecommunications projects, including:

- Savings on communication time with savings costs for consumers and commercial users;
- New additional services;
- The national and regional multiplier impacts of telecommunications investments employment and income multipliers;
- Stimulation of new developments information technology and other sectors.

In general, there is evidence that investment in telecommunications brings additional benefits that are difficult to quantify. They include attracting foreign investment and increasing the competitiveness of a national or regional economy.

Health

The health sector is an important component of most social infrastructure projects. Health projects may include the construction of buildings of hospitals, clinics, medical schools, etc. There are many different approaches to investment in the health sector. The first consideration is whether such infrastructure is built using public or private sector funds or a combination of the two.

The second major question is whether investment is mainly in curative medicine putting major expenditure into hospital buildings and specialized medical equipment or whether the investments should be concentrated into preventative medicine using decentralised clinics. In the latter case, the investment costs may be considerably less and, through comparatively low-cost preventative care, the economic impacts may be considerably lower in terms of benefits per unit of expenditure than high cost/high technology curative medicine. In many countries there may be major constraints through lack of finance and skilled staff as well as constraints on operating and maintenance costs which make investment in sophisticated curative medicine very expensive.

Another issue which health projects may have to consider, in common with other social sector projects, is whether the emphasis will be given to investment in urban or rural areas.

Project objectives may vary according to which part of the population is to be targeted (urban, rural), for example, or which groups of the population will be served (men, women, children, the elderly). In broad terms, the objectives of health infrastructure projects may include:

- Preventative or curative medicine, or a combination of both;
- Health education campaigns;
- Health training (for medical schools, clinics, communities);
- Specialist facilities (children's care, isolation units; sports, military and geriatric hospitals; cancer treatment; etc.).

The project identification will include:

- Collection of basic data on epidemiology, demographic trends (sex, age, urban/rural split) and demand for different types of health care;
- Physical data for infrastructure surface areas, usable surface area, number of treatment rooms, operating theatres, consulting rooms, outpatient facilities, reception areas, waste disposal facilities, laboratories, mortuaries etc.;
- Specification of medical and other equipment and machinery;
- Major system's needs water, gas, electricity, waste disposal, air conditioning, heating and ventilation, fire control;
- Design and layout of buildings;
- Access roads, vehicle parks and transport linkages;
- Possibilities of cost recovery for health services through direct charges, taxation, insurance;
- Issue of affordability of health care in relation to incomes.

The key benefits of health projects will include:

- Future savings in health and treatment costs if there are improvements in mortality and morbidity rates;
- Production impacts the avoided loss in production due to the lower number of working days lost by the patient and her/his family;
- Increase in welfare or a reduction in suffering, number of deaths avoided and increased life expectancy.

Annex 5: Laws and regulations relevant to public investment projects

Codes

- Cod Civil al Republicii Moldova, nr. 1107/2002
 https://www.legis.md/cautare/getResults?doc_id=135157&lang=ro
- Codul Fiscal al Republicii Moldova, nr.1163/1997
 https://www.legis.md/cautare/getResults?doc_id=135449&lang=ro
- Codul Muncii al Republicii Moldova, nr.154/2003
 https://www.legis.md/cautare/getResults?doc_id=135052&lang=ro
- Codul Vamal al Republicii Moldova, nr.95/2021
 https://www.legis.md/cautare/getResults?doc_id=135043&lang=ro
- Codul Funciar al Republicii Moldova, nr.828/1991
 https://www.legis.md/cautare/getResults?doc_id=134294&lang=ro
- Codul Contraventional al Republicii Moldova, nr. 218/2008
 https://www.legis.md/cautare/getResults?doc_id=135510&lang=ro
- Codul Subsolului al Republicii Moldova, nr.3/2009
 https://www.legis.md/cautare/getResults?doc_id=132213&lang=ro
- Codul Transporturilor Rutiere, nr. 150/2014
 https://www.legis.md/cautare/getResults?doc_id=133067&lang=ro

Laws

- Legea cu privire la Guvern, no. 136/2017
 https://www.legis.md/cautare/getResults?doc_id=133423&lang=ro#
- Legea privind administrația publică locală, no.436/2006
 https://www.legis.md/cautare/getResults?doc_id=135048&lang=ro#
- Legea privind statutul special al Găgăuziei (Gagauz-Yeri), no. 344/1994 <u>https://www.legis.md/cautare/getResults?doc_id=86684&lang=ro#</u>
- Legea finanțelor publice și responsabilității bugetar-fiscale, no. 181/2014 <u>https://www.legis.md/cautare/getResults?doc_id=135212&lang=ro#</u>
- Legea bugetului de stat (pentru anul relevant) for 2023, no.359/2022
- Legea privind autorizarea executării lucrărilor de construcție, nr.163/2010

https://www.legis.md/cautare/getResults?doc_id=134574&lang=ro#

Legea privind calitatea în construcții, no. 721/1996
 <u>https://www.legis.md/cautare/getResults?doc_id=132689&lang=ro#</u>

 Law on environment assessment, no.86/2014

https://www.legis.md/cautare/getResults?doc_id=21797&lang=ro

- Legea privind regimul străinilor în Republica Moldova, no. 200/2010 <u>https://www.legis.md/cautare/getResults?doc_id=133235&lang=ro#</u>
- Legea privind achizițiile publice, no. 131/2015
 <u>https://www.legis.md/cautare/getResults?doc_id=135662&lang=ro#</u>
- Legea privind reglementarea valutară, no. 62/2008
 <u>https://www.legis.md/cautare/getResults?doc_id=135286&lang=ro#</u>

 <u>Methodological framework</u>

Regulations

• Handbook on estimating the costs of public policy documents in the Republic of Moldova

https://cancelaria.gov.md/sites/default/files/costing_manual_ro_may_2023.pdf

- Standard Cost Model Implementation Guide in the Republic of Moldova <u>https://cancelaria.gov.md/sites/default/files/ghid_aplicare_model_cost_standard_2</u> <u>022_final.pdf</u>
- Methodological guide for ex-ante evaluation of the impact of public policies
 <u>https://cancelaria.gov.md/sites/default/files/ghid_ex-</u>
 <u>ante_final_pentru_aprobare_30112022.pdf</u>
- Methodological guide for the mid-term and ex-post evaluation of the impact of public policies

https://cancelaria.gov.md/sites/default/files/ghid_expost_final_pentru_aprobare_30112022.pdf EU Technical Assistance Project "Support the Moldovan Government in identifying and preparing projects linked to the implementation of the Association Agreement"

Contract No. ENI / 2020 / 417-516

https://mf.gov.md/en/ppf

7 Constantin Tănase, MD-2005, Chisinau, Republic of Moldova Telephone: +(373) 760 77846 E-mail: e-mail: <u>eu.ta.pif@gmail.com</u>