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MEMORANDUM

TO : THE BOARDS OF DIRECTORS

**FROM : Omar KABBAJ
President**

**SUBJECT : A STUDY ON SECTORAL AND PROJECT PERFORMANCE
INDICATORS IN THE TRANSPORT SECTOR***

Please find attached hereto the above-mentioned document.

Attach:

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**African Development
Bank**

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**A STUDY ON SECTORAL AND PROJECT PERFORMANCE INDICATORS
IN THE TRANSPORT SECTOR**

BY

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TABLE OF CONTENTS

		<u>Page No.</u>
1.	OBJECTIVES AND SCOPE	1
2.	USEFULNESS OF PERFORMANCE INDICATORS	1
3.	TYPES OF PERFORMANCE INDICATORS	3
4.	PROJECT CYCLE AND PERFORMANCE INDICATORS	4
5.	USE OF PERFORMANCE INDICATORS IN THE BANK	5
6.	IDENTIFICATION OF PERFORMANCE INDICATORS FOR PROJECTS	5
7.	FRAMEWORK OF PERFORMANCE INDICATORS FOR SUB-SECTORS	8

ANNEXES

		<u>N°. of Pages</u>
1.	LIST OF REPORTS REVIEWED	3
2.	HIERARCHY OF GOALS AND OBJECTIVES IN SELECTED RECENT BANK PROJECTS	4
3.	PERFORMANCE INDICATORS FOR ROAD PROJECTS	4
4.	PERFORMANCE INDICATORS FOR RAILWAY PROJECTS	4
5.	PERFORMANCE INDICATORS FOR PORT PROJECTS	3
6.	PERFORMANCE INDICATORS FOR AIRPORT PROJECTS	5

ABBREVIATIONS

BME	:	Benefit Monitoring & Evaluation
CPM	:	Critical Path Method
EIRR	:	Economic Rates of Return
GDP	:	Gross Domestic Product
HDM	:	Highway Development Model (of World Bank)
MPDE	:	Methodology for Project Design and Evaluation
PCR	:	Project Completion Report
PERT	:	Programme Evaluation & Review Technique
PI	:	Performance indicators
PIU	:	Project Implementation Unit
PPER	:	Project Performance Evaluation Report
RMC	:	Regional Member Country
VOC	:	Vehicle Operating Cost

1. **OBJECTIVES AND SCOPE**

1.1 Performance indicators (PIs) are essential in the transport as well as other sectors to improve the quality of Bank Group portfolio. Their need arises from the increasing emphasis being placed by the Borrowers and the Bank Group on a more definitive range of clear /explicit objectives which projects would serve. The need for indicators also stems from increasing concern for better management of the entire project cycle, including more systematic monitoring of implementation and broad based tracking of development impact.

1.2 The objective of this report is an attempt to design indicators tailored to a typical project in each transport mode that reflect project objectives, expected outcomes, sustainability, sector circumstances, and country conditions.

1.3 This report is based on a review of the Bank Group's completed projects in the road, railway, port and airport sub-sectors of the transport sector. The more recent PCRs/ PPERs in roads sub-sector and all the available PCRs/ PPERs in the other sub-sectors have been reviewed. Reflecting the composition of the Bank's loan portfolio, the sample size in the road sub-sector is large enough to draw reasonable conclusions but the size in the other sub-sectors is limited. In addition, in order to understand the more current practices, the appraisal reports of the transport sector projects approved in 1997 (all in the road sub-sector) have also been reviewed. A list of the projects reviewed for the purposes of this report is at Annexure 1. Extensive use has also been made of some World Bank documents which contain results of considerable work done in the area of development of performance indicators in programmes and projects financed by it.

2. **USEFULNESS OF PERFORMANCE INDICATORS**

2.1 The need for PIs arises from the increasing emphasis being placed by the Borrowers and the Bank Group on a more definitive range of clear /explicit objectives which projects would serve. Performance Indicators have considerable potential as key management tools, including the effective use of public resources and for result-based management. With indicators, monitoring and evaluation becomes more objective and is no longer rooted in personal judgement and narrative descriptions.

2.2 While the indicators cannot display comprehensive assessments, they are a useful rough and ready method of quick and preliminary assessment. Typically the role of the performance indicators is to provide quick assessment at lower cost than in-depth analyses. The indicators are not intended to replace comprehensive assessments where underlying issues must be evaluated. They are, however, useful to complement the in-depth studies such as EIRR estimates. They can also complement detailed analysis, particularly where quantitative assessment is not easy or possible.

2.3 Performance Indicators are useful at all stages of the project cycle. The need for indicators also stems from increasing concern for better management of the entire project cycle, including more systematic monitoring of implementation and broad based tracking of development impact. These have very significant function in the logical framework of the Methodology for Project Design and Evaluation (MPDE) in providing performance measurements and quick assessment of the attainment of goals

and objectives. PIs also have a key role at all the three distinct stages of the project viz., identification, design and preparation; implementation and supervision; and post-evaluation.

2.4 In the stage prior to the approval of the project, PIs provide useful inputs in strategic planning and project design. In this phase these are used to make informed decisions for the most efficient and effective use of resources and also as diagnostic tools. PIs are also used concurrently with the implementation of the project for supervision and monitoring. The PIs in this stage of the project cycle help in providing early warnings where project/ programme implementation is faltering or for projecting future project performance and identifying exogenous factors that are likely to impact its performance.

2.5 At the end of the project implementation PIs are useful tools for evaluation of the project output and its development impact. Their use aids measurement of programme achievement relative to its objectives thereby promoting accountability for the project planners, borrowers and executive agencies for the design, implementation and performance and impact of the project. PIs can be used to demonstrate achievements and impact of the investments to the governments or taxpayers.

2.6 PIs help in providing data for inter project comparisons and provide a platform for benchmarking. PIs similarly assist in making informative country and inter-temporal comparisons. Likewise, a set of well thought and well developed PIs across the project cycle i.e., during implementation monitoring, completion and evaluation, is essential for the development of harmonized, consistent and meaningful rating systems for programme/ project performance.

2.7 Some of the critical PIs are also used as loan covenants that are legally enforceable. Use of properly selected and well-defined PIs helps in bringing clarity in the loan covenants.

2.8 However, there are serious limitations also in the use of PIs. There is limited understanding of the causality between transport (as an intermediate service) and its welfare impact. Interpretation of collected data has to be done with considerable care. Similarly country comparisons have to be circumspect. Only results of similarly placed countries, for example, in size of transport activity, stage of development and traffic composition can be compared to provide meaningful results. Inter-temporal comparisons of the same unit or area, on the other hand, are the most informative and productive use of PIs.

2.9 The utility and interpretation of the indicators and their results is also directly related to the quality of data collection and availability of data banks and the time and country series. It is also important that the data collected is regularly updated to retain its credibility. Similarly, PIs should not be such that they cause too heavy a burden on the usually limited capabilities of the project authorities in RMCs in collection, usage or interpretation of data. In any case, it is vital that there is no information overload.

2.10 To some extent, deficiencies in the quality of data could be overcome to some extent by adoption of innovative and quick methods of data collection. Quality of data can also be improved by regular use of data. Similarly, the utility and quality of PIs can also be improved and refined by regular use and feedback. However, the basic need is the long-term establishment and development of data collection systems and data quality. For this purpose, allocation of larger resources both within the Bank and RMCs is absolutely essential.

3. **TYPES OF PERFORMANCE INDICATORS**

3.1 Performance indicators can broadly be classified as follows:

1. Diagnostic indicators
 - Contextual indicators
 - Risk indicators
2. Input indicators
3. Activity/process indicators
4. Output indicators
5. Outcome/Efficacy/Relevance indicators
6. Development Impact indicators.
 - Policy level
 - Sector/ project level
7. Sustainability indicators
8. Project success rating indicators

3.2 Use of the diagnostic indicators commences at the project identification phase. The contextual and risk indicators help provide measurement of the influence of exogenous factors and form a vital part for the economic and sector work. The contextual indicators also provide a macro level perspective and sector context. The risk indicators are related to key project assumptions about conditions internal and external to the project where major variations have a potential of influencing the project outputs, outcomes and impacts.

3.3 The input indicators measure the quantity and quality of resources provided for project activities. These would include quantification of institutional, financial, technological and material inputs.

3.4 The activity indicators relate to monitoring of progress of major activities during project implementation. Such indicators are basically a narration of sequence of activities with the assignment of completion dates. In a similar manner, process indicators, as the name suggests, are for assessing the efficiency of a whole process, comprising a set of important activities. For example, procurement is a process comprising a number of individual activities such as preparation of pre-qualification and bidding documents, tendering, bid evaluation etc.

3.5 The output and outcome indicators relate to a measurement at project level of the quantity and quality of goods or services created or provided from the inputs. Similar to the input indicators, these will also cover institutional development, monetary, technological and material outputs.

3.6 The development impact indicators measure the effect and influence on the higher level sector, programme and country objectives i.e., the impact on the target areas and beneficiaries and the degree of satisfaction of the development objectives. The impact PIs typically includes indicators that measure promotion of economic activity and accessibility, promotion of social welfare etc. Such PIs are used in the evaluation of projects and impact studies. Some output and outcome indicators and some impact indicators are also used to judge the relevance or efficacy of the project inputs and components.

3.7 The sustainability indicators are employed in assessing the technological, financial, institutional and operational sustainability of projects. The overall success of projects/ programmes is measured on a calibrated scale by rating indicators.

4. **PROJECT CYCLE AND PERFORMANCE INDICATORS**

4.1 Figure 1 is a diagrammatic presentation of the use and development of PIs during project cycle.

4.2 The contextual and risk indicators are selected and used during the identification, design and preparation phase of the project. During this phase the PIs for use during project implementation, monitoring and supervision phase and for measuring the output, outcome and impact are also selected and target values assigned.

4.3 During project preparation and appraisal a number of PIs are also identified for inclusion as loan conditions and covenants. The covenants place contractual obligation on the borrowers and/ or executing agencies to fulfill certain conditions considered critical for the implementation, operation and sustainability of the project and for the achievement of its development objectives and impact. These span the entire project cycle and could be from any of the categories of the PIs.

4.4 During project monitoring and supervision phase, the contextual, risk, input, process and output indicators are all used to monitor project implementation and to assess the efficiency and efficacy of individual implementation activities. The PIs also help in identifying deviations from the project time and cost estimations made at the time of project design and approval and to devise corrective measures. As per the Bank's Operations Manual a ready assessment of the project's development impact, with reference to the impact indicators, is also to be made during monitoring and supervision of project implementation.

4.5 At project completion and post-evaluation stages, the efficiency and efficacy of project implementation and output are judged. Even more important is the assessment of the project's development impact. The post-completion judgements and assessments are greatly facilitated by well chosen PIs such as the input, process/efficiency, output, outcome, relevance/efficacy and development impact indicators, with carefully assigned control values. At this stage, the use of individual indicators or aggregated results of a number of PIs similarly determine the sustainability and success rating of the project. The post-evaluation also provides feedback regarding the suitability of the PIs used at all stages of the project cycle, and how the selection, formulation and control values of PIs could be improved.

5. USE OF PERFORMANCE INDICATORS IN THE BANK

5.1 *No logical frameworks were required to be prepared at the time of appraisal of the earlier projects, mostly approved for Bank financing in the pre 1990s era. It is noted that in the completed projects only a few PIs were selected and the selection process was also not scientific. The selected PIs often had neither specificity nor clarity. There was confusion between goals/objectives and outputs. Absence of base line data often hindered subsequent evaluation. There was no assessment or analysis of the quality of the existing data or the data collecting machinery or the need or manner of its strengthening. Similarly the means of verification were also vague.*

5.2 *Even where PIs were more specific, targets related to project objectives were not stated or quantified. For example, it was often mentioned in the road sub-sector projects that reduction of vehicle operating costs (VOC) was an objective of the project. Nevertheless, the level of current VOCs for different types of vehicles or road surfaces or the quantum of reduction in the form of a specified percentage was not stipulated.*

5.3 *Retrospective log frame matrixes were prepared in PPERs but as PIs were not clear or specific, evaluation became difficult. Similarly evaluation was problematic where data quality was deficient or time series were not available.*

5.4 *In the appraisal reports of transport projects approved by the Bank in 1997, logical framework has been adopted in all cases and has resulted in better identification of PIs and quantification of objectives. Clarity in hierarchy of goals and objectives and fairly specific indicators and means of verification have been particularly noted in the Chad: Djermaya-Massaguet Road Development Project, the Mozambique: Pemba-Montepuez Road Project and the Cape Verde: Road Project (see Annexure 2).*

5.5 *However, the selection of PIs or the means of verification in most cases is still adhoc and incomplete. It was also noted that no logical framework was prepared in one case of a supplementary loan. A supplementary loan provides a unique opportunity to review the objectives and the benefits of project vis-à-vis the inputs and investment, particularly in the light of the revised circumstances leading to additional financing. The framework of revised cost and time, changes in the situation of contextual and risk indicators, national and sector priorities etc., may dictate expansion, curtailment or even abandonment of the project. In the instant case, this opportunity of a comprehensive review of changes and the exercise of options appropriate to the changed circumstances was lost because a proper logical framework was not prepared at the time of the supplementary loan.*

6. IDENTIFICATION OF PERFORMANCE INDICATORS FOR PROJECTS

6.1 In selecting appropriate performance indicators, the first step is the identification of levels or a hierarchy of objectives for the project cycle steps within the objective driven logical framework, prepared at the time of identification and design of a project. The indicators need to be designed to coincide with each of the levels of objectives in the logical framework, enabling effective measurement of the achievement of the objectives at each of those levels and also monitoring of project implementation.

6.2 Development of performance indicators is preceded by the identification of top level goals of the project at the country/ economy level. These objectives in turn determine the objectives at the sector level or the project outcome level. This is followed by the delineation of the objectives at the output level, the activities level and the input level, in that order. The development of indicators follows the identification of objectives, and is similarly done on a top down basis.

6.3 The first level of indicators to be developed will be for measuring the achievement of the desired development impact at the country, programme and sector levels. The indicators at this level will then determine the indicators at the outcome and output levels, to achieve the desired results quantified for the impact indicators. The process is iterated downwards to the activities and then to the inputs levels.

6.4 In a typical transport project, the impact or the highest development objective is to promote economic activity and social welfare in an area/region and provide greater accessibility to the target population for better employment, health, education, recreation, etc., facilities. The indicators at this level to assess the attainment of development impact could include measurements for the expected increase in agricultural and industrial production, increase in employment and increase in disposable income levels. Likewise, there could be the indicators for measurement of the expected improvement in health, educational, recreational etc., facilities or for improved accessibility and reduced travel time and costs. In projects for regional cooperation, indicators would have to be for measuring the growth in quantity and quality of regional trade. Similarly, identification of indicators to assess the achievement of the objective of institutional development at sector and project levels, generally on a qualitative basis, is also essential at this stage. Some of these indicators also have a role as relevance and efficacy indicators i.e., for judging the relevance and efficacy of the project and its components in the achievement of its development impact.

6.5 At this level all the indicators may not necessarily have direct correlation with the project outputs but are nevertheless very critical in determining the success of the project in achieving its desired highest level goals.

6.6 Indicators for sustainability are also to be identified with the impact indicators. These would typically include indicators to assess, as appropriate, the levels of cost recovery and affordability as well as technical, economic, financial and operational efficiency and viability of the proposed project outputs. Indicators to qualitatively assess government commitment, socio-political support and organizational and management adequacy and effectiveness also need to be identified to assess sustainability of the project or programme. Indicators for rating project success will typically be a rating scale based on a weighted aggregate of selected individual indicators such as those for measuring the overall development impact, sustainability, institutional development, environmental results etc.

6.7 Also taken up at the project preparation stage is the identification of contextual and risk indicators such as synergy with related programmes and projects within or outside the sector (sometimes even outside the country), timely availability of requisite quality and quantity of human and financial resources etc. The contextual and risk indicators could comprise key parameters of the general economic and fiscal

scenario, measurement of the size of transport activity (such as transport expenditure as a percentage of GDP), size of industrial, agricultural and other relevant investment, regulatory and institutional framework, security environment etc.

6.8 In the hierarchical sequence, development of sector or project output/ outcome indicators follows the selection of impact indicators. At this level more specific indicators to measure the output and outcomes of the sector and the project/ programme can be identified. These will define what the project can be held directly accountable for producing, that is the project's deliverables in goods and services. Indicators to establish mandatory or desirable levels of environmental and safety outcomes at both sector and project level will also be identified at this stage. Some of these indicators like some of the impact indicators could also be used as the relevance and efficacy indicators i.e., to determine the relevance and efficacy of project and its components.

6.9 Growth in traffic is an important indicator at this stage for all modes of traffic. Throughput indicators such as tons or containers or tons/passenger km by each transport mode or number of road vehicles or trains or ships or planes handled would be a part of this category. It could also include total length of road/ railway (km), maximum distances from villages to the nearest points on the road network, length of bridges, increase in the length of road/ railway network, numbers of railway rolling stock, quantities of equipment and machinery etc. The density of the transport network (km per sq. km), maximum distances from villages to the nearest points on the road/ railway network or even airports etc. are other indicators to measure the project output or outcome.

6.10 Indicators to measure increase in speed and reduction in travel time between targeted points, comfort in ride (measures of roughness and deflection of pavements), reduction in vehicle operating cost (VOC) and transport costs would also be included in the output/ outcome indicators. Indicators for measurement of improvement/ decline in service time or productivity of assets would similarly measure the output or outcome of the project. Percentage of roads in Good, Fair and Poor condition and the monetary allocations for repair per lane km are useful indicators for road rehabilitation and maintenance projects. For similar railway rehabilitation projects, the locomotive and freight cars turn-around time, time and length of tracks operated under restrictions for speed, train speeds, and maintenance costs per route km will be useful PIs.

6.11 For ports and airports, the sector or project outcome/output indicators would include quay/ runway length and maximum sizes of ships/ planes that could be handled. There will be separate PIs for measuring port/ airport traffic handling capacity, efficiency of ship/ plane and cargo handling capacity, reduction in unit time and cost of handling and clearance at ports/ airports etc.

6.12 Outcome indicators also include standards to measure improvement in environmental standards of noise and emission and dust pollution. Likewise, safety standards are set as indicators for rate of accidents, for all modes of traffic.

6.13 Objectives at the output and outcome stage determine the inputs and activities as well as the indicators for these stages. The inputs are typically Borrower and donor financing, physical assets, technical assistance and training inputs etc. The input indicators cover measurement systems and reports for the provision of technical, financial and institutional resources. Activities are measured by indicators such as implementation schedules (including bar and PERT charts), cost monitoring statements (expenditure and disbursement statements), and progress monitoring and supervision reports. Dates for establishment of PIUs or for award of contracts or for completion and commissioning of works or any of the activities in the bar and PERT charts will all fall in this category. Indicators for early warning or quality management during project implementation are also included at this stage.

6.14 Process indicators assess the efficiency of some of the important processes, each comprising a set of important activities. For example, procurement is a process comprising a number of individual activities such as preparation of pre-qualification and bidding documents, tendering, bid evaluation etc. The process indicator in this case will be the setting of a practical time frame for the efficient and timely conduct of the entire procurement process. Efficiency of implementation process is also measured by indicators such as cost of construction or rehabilitation per unit length of road/ railway/ berth/ runway, time taken in discreet activities, selected quality control tests etc. Assessment of the efficiency of monitoring and supervision process would be accomplished by indicators such as frequency, composition, duration and quality of supervision missions, format and frequency of inspection and progress reports etc.

6.15 It is desirable that the performance indicators at all stages are selected in agreement with the borrower at the project identification and design stage and incorporated in the Staff Appraisal Reports of all Bank projects.

7. FRAMEWORK OF PERFORMANCE INDICATORS FOR SUB-SECTORS

7.1 A framework of desirable indicators prepared for the infrastructure projects in the roads, railways, ports and the airport sub-sectors are shown in Annexures 3 to 6. In the railway sector the Bank has financed not only the provision of basic infrastructure but also the provision of services. Consequently, performance indicators for railway services have also been identified. In the absence of any past or present projects in the Bank Group, no indicators have been prepared for urban transport, road haulage, and shipping or airline projects.

7.2 The listings can never be exhaustive. These are only illustrative. Depending on the specific goals and objectives of the project, the selection of the applicable indicators would have to be made. The indicators will also depend on the capability of Borrowers and Executing agencies and their needs and priorities and have to be selected in consultation with them.

7.3 A specific set of indicators and means of their verification have to be selected and tailored to the needs of each project, reflecting its objectives, outputs and inputs. Choice of indicators for each project will also involve trade-off among indicators themselves depending on the cost of information and data collection and analysis. In this process, the listed indicators and the means of verification could also be combined and/or rearranged.

7.4 A number of policy goals in different sub-sectors are inevitably identical and such commonness is manifested in repetition of the same indicator in different sectors. Similarly, even within the same sub-sector, the means of verification and risk assumptions are common to a number of indicators and some repetition was unavoidable in these items. However, a self-contained listing of each objective, complete with its indicators, means of verification and risks and assumptions in the Annexures, even at the cost of repetition is expected to considerably increase the utility of the matrices for the project preparation officer.

7.5 The selection of indicators and means of verification has to be accompanied by assignment of desirable numbers or target levels to quantify performance levels and the time frame. There could even be both "desirable" levels and "best practice" standards. It has not been possible to provide these "desirable" or "best practice" values in the matrices in the absence of any credible data for current levels of performance in most RMCs. These levels will have to evolve, keeping in view the current levels of performance, future potential and inputs and the circumstances of each project and its area/ country. As feedback and experience grow, the desirable levels and best practices could be evolved.

7.6 There would also be some PIs for which no numbers can be assigned. For example, the qualitative contextual, risk and sustainability indicators would need to be graded on a binary scale i.e., "yes" or "no" answers, or even on a larger scale to reflect the level of performance. Even the indicators based on weighted and aggregated results such as project success rating also need to measure the performance on a graded scale.

7.7 Selection of PIs is by itself inadequate unless it is accompanied by a clear identification of the means of verification. The data sources and, to the extent possible, the names of agencies and the publications, tables etc., to be referred to would need to be identified. For example, although a reference to "National Statistics", has been used as a generic expression in the matrices in Annexures 3 to 6, such a general expression would be inadequate in a specific project logframe. It has necessarily to be amplified and accompanied by identification of the compiling authority of the country and the specific section or series of National Statistics where the suggested indicator or data for its computation is available.

LISTS OF ANNEXES

<u>ANNEXES</u>	<u>TITLE</u>	<u>PAGE No.</u>
1.	LIST OF REPORTS REVIEWED	3
2.	HIERARCHY OF GOALS AND OBJECTIVES IN SELECTED RECENT BANK PROJECTS	4
3.	PERFORMANCE INDICATORS FOR ROAD PROJECTS	4
4.	PERFORMANCE INDICATORS FOR RAILWAY PROJECTS	4
5.	PERFORMANCE INDICATORS FOR PORT PROJECTS	3
6.	PERFORMANCE INDICATORS FOR AIRPORT PROJECTS	5

LIST OF REPORTS REVIEWED

A. APPRAISAL REPORTS

<u>S.NO.</u>	<u>COUNTRY</u>	<u>PROJECT NAME AND YEAR</u>	<u>DOCUMENT</u>
01	BURKINA FASO	ROAD MAINTENANCE PROJECT, 1996	AR
02	CAPE VERDE	ROAD PROJECT, 1997	AR
03	CHAD	DJERMAYA-MASSAGUET ROAD DEVELOPMENT PROJECT, 1996	AR
04	ERITREA	BARENTU-OMHAJER ROAD STUDY, 1997	AR
05	GHANA	ACHIMOTA-ANYINAM ROAD REHABILITATION PROJECT, 1997	AR
06	MALAWI	MCHINJI-KASUNGU-MSULIRA ROAD PROJECT - PROPOSAL FOR A SUPPLEMENTARY LOAN OF UA 6.60 MILLION, 1997	AR
07	MALI	ROAD MAINTENANCE PROJECT, 1997	AR
08	MOZAMBIQUE	PEMBA-MONTEPUEZ ROAD REHABILITATION PROJECT, 1997	AR
09	MAURITANIA	TRANS-MAGHREB ROAD CONSTRUCTION OF AKJOUJT-ATAR SECTION	AR
10	TANZANIA	MUTUKULA-MUHUTWE ROAD UPGRADING PROJECT, 1997	AR
11	TUNISIA	REHABILITATION OF THE STATE CLASSIFIED ROADS NETWORK PROJECT, 1997	AR

B. PCRs and PPERs

(i) Roads

S.No	COUNTRY	PROJECT TITLE	COMPLETION DOCUMENT
01	BURUNDI	N'GOZI-MUYINGA-KOBERO ROAD	PPER
02	SIERRA LEONE	HIGHWAY MAINTENANCE	PCR
03	SWAZILAND	LONHLUPHEKO-LOMAHASHA ROAD	PPER
04	CENTRAL AFRICAN REPUBLIC	ROAD MAINTENANCE	PCR
05	KENYA	MUMIAS-KAKAMEGA ROAD	PPER
06	ETHIOPIA	GORE-TEPI ROAD	PCR
07	NIGER	SECONDARY ROADS PHASE I & II	PCR
08	KENYA	KAKUMA-LOKICHOKIO ROAD	PPER
09	NIGER	SECTION OF ZINDER-AGADEVZ ROAD	PPER
10	LESOTHO	ROAD MAINTENANCE	PPER
11	RWANDA	KAYONZA-GABIRO ROAD	PCR
12	MAURITIUS	PORT LOUIS THROUGH ROAD, HIGHWAY 2	PCR
13	REGIONAL	ROUTE RUGOMBO- BUGARAMA	PCR
14	BOTSWANA	SEROWE-ORAPA ROAD	PPER
15	LESOTHO	MASIANOKENG-MAFETENG/ROMA ROADS REHAB.	PCR
16	MADAGASCAR	ROUTE MALAIMBANDY-MAHABO	PPER
17	SUDAN	KOSTI UMM RUWABA ROAD	PCR
18	COTE D'IVOIRE	PROGRAM ROUTIER	PPER
19	ZIMBABWE	RURAL ROAD PHASE I	PPER
20	MOROCCO	PROGRAMME OF MAINTENANCE AND REHAB. OF SECONDARY AND TERTIARY ROADS	PPER
21	SWAZILAND	MLIBA-MAFUTSENI ROAD	PCR
22	CAMEROON	ROUTE MBALMAYO-EBOLWA	PPER
23	UGANDA	REHAB. OF KAMPALA-JINJA ROAD	PCR
24	BOTSWANA	RURAL ROADS II	PCR
25	MAURITIUS	NOUVELLE FRANCE-PLAISANCE ROAD	PPER
26	SWAZILAND	MBABANE-MHLAMBANYATSI ROAD	PPER
27	UGANDA	ISHAKA-KATUNGURU ROAD	PPER
28	RWANDA	GITARAMA-NGORORERO ROAD	PCR
29	BOTSWANA	NATA-MAUN ROAD	PPER
30	GABON	ROAD MAINTENANCE	PCR

(ii) Airports

<u>S.NO</u>	<u>COUNTRY</u>	<u>PROJECT TITLE</u>	<u>COMPLETION DOCUMENT</u>
01	BURUNDI	BUJUMBURA INTERNATIONAL AIRPORT	PPER
02	BOTSWANA	THE NEW GABORONE (SIR SERETSE KHAMA) INTERNATIONAL AIRPORT	PPER
03	CAMEROON	DOUALA NEW AIR TERMINAL CONSTRUCTION PROJECT	PPER
04	GAMBIA	BANJUL YUNDUM INTERNATIONAL AIRPORT PHASE II DEVELOPMENT PROJECT	PPER
05	GUINEA BISSAU	BISSALANCA AIRPORT REHABILITATION PROJECT	PPER
06	MALAWI	KAMUZU INTERNATIONAL AIRPORT	PPER
07	SEYCHELLES	MAHE INTERNATIONAL AIRPORT	PPER
08	SAO TOME AND PRINCIPE	SAO TOME AIRPORT IMPROVEMENT PROJECT	PCR

(iii) Ports

<u>S.NO.</u>	<u>COUNTRY</u>	<u>PROJECT TITLE</u>	<u>COMPLETION DOCUMENT</u>
01	COMOROS	MUTSAMUDU PORT	PPER
02	GAMBIA	BANJUL PORT PROJECT	PCR

(iv) Railways

<u>S.NO.</u>	<u>COUNTRY</u>	<u>PROJECT TITLE</u>	<u>COMPLETION DOCUMENT</u>
01	GHANA	RAILWAYS PROJECT	AR
02	SUDAN	RAILWAYS EMERGENCY RECOVERY PROJECT	PCR
03	TUNISIA	SFAX REGION RAILWAY NETWORK IMPROVEMENT PROJECT	PCR

HIERARCHY OF GOALS AND OBJECTIVES IN SELECTED RECENT BANK PROJECTS

A: CHAD: DJERMAYA-MASSAGUET ROAD DEVELOPMENT PROJECT- PROJECT MATRIX

Hierarchy of Objectives	Objectively Verifiable Indicators	Means of Verification	Assumptions/Risks
<p><u>Sectoral Objective:</u></p> <p>1. Reduction in the transport cost on the priority network that participates in the opening up access to the country and regional integration, with a view to supporting economic recovery.</p>	<p>1.1 Substantial drop in transport fares from 1999.</p>	<p>National road user surveys by the MTPHT</p>	<p>Link with Adre-Khartour secured</p>
<p><u>Project Objectives:</u></p> <p>1. Sustainable improvement of liaison between Djermaya and Massaguet, within the framework of developing the N'Djamena-Abeche-Sudanese Border route.</p> <p>2. Development of the priority network by the other donors, in particular the continuation of the following axes: Massaguet-NgouraBokoro-Abeche-jAdre-Sudanese Border.</p> <p>3. Maintenance of secondary axes secured.</p>	<p>1.1 Permanent link between Djermaya and Massaguet through the suppression of rain barriers as from 1999.</p> <p>1.2 Reduction in the vehicle operating cost between 35 and 45% as from 1999.</p> <p>1.3 Reduction in the transport time as from 1999, attributable to an average 50% increase in running speed.</p> <p>1.4 4General traffic increases as from 1999 between Djermaya and Massaguet (6.6% for light vehicles and 5.4% for heavy vehicles).</p>	<p>1.1 Traffic data collection by the MTPHT.</p> <p>1.2 Calculation of the VOC - deflection measure.</p> <p>1.3 Surveys carried out by the MTPHT.</p> <p>1.4 Traffic counting data by the MTPHT.</p>	
<p><u>Achievements:</u></p> <p>1. New 47 km two-lane tarred road linking Djermaya and Massaquet.</p> <p>2. Adequate maintenance of the project road.</p>	<p>1.1 47 km of road and four village parking areas built in 1999.</p> <p>1.2 8 430 linear metres of kerb built in 1999.</p> <p>1.3 4 culverts in reinforced concrete built in 1999.</p> <p>1.4 122 units erected and 46 830 linear metres of road signs marked in 1999.</p>	<p>1.1 Site progress reports.</p> <p>1.2 Minutes of provisional and final works handing over.</p> <p>1.3 Bank's supervision report.</p> <p>1.4 Project completion report.</p> <p>1.5 Project audit report.</p>	

<p>Activities</p>	<p>A. Works Wearing surface dressing Road sign works Pavements Drainage works Earth and preparatory works Site installation Contract award International competitive bidding Competitive bidding document.</p> <p>B. Works monitoring and Supervision works reception works supervision and monitoring geo-technical survey contract award consultancy preparation of consultancy dossier.</p> <p>C. Project Implementation Unit (PIU) Works coordination Appointment of the head of the PIU.</p> <p>D. Auditing of Components Accounts auditing Accounting system monitoring Contract award Consultancy Consultancy dossier .</p> <p>2. RESOURCE INPUT (In UA million):</p> <table border="1"> <thead> <tr> <th></th> <th>1997</th> <th>1998</th> <th>1999</th> <th>TOT</th> </tr> </thead> <tbody> <tr> <td>A.</td> <td>4.19</td> <td>7.38</td> <td>2.09</td> <td>13.66</td> </tr> <tr> <td>B.</td> <td>0.30</td> <td>0.52</td> <td>0.14</td> <td>0.96</td> </tr> <tr> <td>C.</td> <td>0.07</td> <td>0.02</td> <td>0.01</td> <td>0.10</td> </tr> <tr> <td>D.</td> <td>-</td> <td>0.01</td> <td>0.01</td> <td>00.02</td> </tr> <tr> <td>TOT.</td> <td>4.56</td> <td>7.93</td> <td>2.25</td> <td>14.74</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Source</th> <th>1997</th> <th>1998</th> <th>1999</th> <th>TOT</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>ADF</td> <td>4.10</td> <td>7.12</td> <td>2.03</td> <td>13.25</td> <td>89.90</td> </tr> <tr> <td>GVT</td> <td>0.46</td> <td>0.80</td> <td>0.23</td> <td>1.49</td> <td>10.10</td> </tr> <tr> <td>TOT</td> <td>4.56</td> <td>7.92</td> <td>2.26</td> <td>14.74</td> <td>100</td> </tr> </tbody> </table>		1997	1998	1999	TOT	A.	4.19	7.38	2.09	13.66	B.	0.30	0.52	0.14	0.96	C.	0.07	0.02	0.01	0.10	D.	-	0.01	0.01	00.02	TOT.	4.56	7.93	2.25	14.74	Source	1997	1998	1999	TOT	%	ADF	4.10	7.12	2.03	13.25	89.90	GVT	0.46	0.80	0.23	1.49	10.10	TOT	4.56	7.92	2.26	14.74	100	<ol style="list-style-type: none"> 1. Contracts signed. Monthly statements Status of disbursement Final statements Audit report 2. Adequate coordination by the Project implementation Unit 3. Government's ability to meet its contribution 4. Political stability. 	
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B. MOZAMBIQUE: PEMBA-MONTEPUEZ ROAD PROJECT -PROJECT MATRIX

Hierarchy of Objectives	Objectively Verifiable Indicators	Means of Verification	Assumptions/Risks																														
<p>Goal:</p> <p>1.To improve the existing national road network, thereby integrating the rural population living in remote areas into the mainstream of the country’s social and economic life.</p>	<p>1.1 Increase in the total length of rehabilitated/ bitumenized rural roads in the country.</p> <p>1.2 Overall growth in traffic.</p> <p>1.3 1.3 Socio-economic welfare improved in the project area.</p>	<p>1.1 Annual road construction statistics from DNEP Roads.</p> <p>1.2 Traffic statistics.</p> <p>1.3 1.3 National Income Statistics.</p>	<p>1.1 Adequate Government Commitment.</p>																														
<p>Project Objective:</p> <p>1. To improve road transport service in the area served by the road and the reduction of maintenance and vehicle operating costs.</p>	<p>1.1 Traffic counts.</p> <p>1.2 VOC to be reduced by 10-50%.</p> <p>1.3 Maintenance Budgets.</p>	<p>1.1 Regular traffic counts to be taken subsequent to the project’s completion.</p> <p>1.2 Review of annual statistics from MOPWH.</p> <p>1.3 Annual DNEP budgets.</p> <p>1.4 VOC Surveys.</p>	<p>(Project Object to Goal):</p> <p>1.1 Maintenance Effectively carried out.</p>																														
<p>Outputs:</p> <p>1. Completely rehabilitated road between Pemba and Montepuez (210 km).</p>	<p>1.1 Actual length of completed road.</p>	<p>1.1 Progress Reports from Borrower and ADF Supervision Mission.</p>	<p>(Output to Project Objectives.):</p> <p>1.1 Availability of Counterpart Funds.</p>																														
<p>Activities/Components:</p>	<p>1.1 Award and commence consultancies and construction contracts.</p> <p>1.2 1.2 Construct civil works</p> <p>Inputs/Resources:</p> <p><u>Cost Estimates</u> (in millions)</p> <table border="0"> <thead> <tr> <th></th> <th>US\$</th> <th>UA</th> </tr> </thead> <tbody> <tr> <td>Works</td> <td>32.23</td> <td>23.27</td> </tr> <tr> <td>Supply</td> <td>2.30</td> <td>1.66</td> </tr> <tr> <td>Audit</td> <td>0.07</td> <td>0.05</td> </tr> <tr> <td>Contingency</td> <td><u>5.20</u></td> <td><u>3.76</u></td> </tr> <tr> <td>Total</td> <td>39.80</td> <td>28.74</td> </tr> </tbody> </table> <p><u>Financing Plan :</u></p> <table border="0"> <thead> <tr> <th></th> <th>US\$</th> <th>UA</th> </tr> </thead> <tbody> <tr> <td>ADF</td> <td>35.82</td> <td>25.86</td> </tr> <tr> <td>GOM</td> <td><u>3.98</u></td> <td><u>2.88</u></td> </tr> <tr> <td>Total</td> <td>39.80</td> <td>28.74</td> </tr> </tbody> </table>		US\$	UA	Works	32.23	23.27	Supply	2.30	1.66	Audit	0.07	0.05	Contingency	<u>5.20</u>	<u>3.76</u>	Total	39.80	28.74		US\$	UA	ADF	35.82	25.86	GOM	<u>3.98</u>	<u>2.88</u>	Total	39.80	28.74	<p>1.1 ADF disbursement ledger.</p> <p>1.2 Progress Reports and Technical Supervision Reports.</p> <p>1.3 Annual Audit Reports</p>	<p>(Activity to Output):</p> <p>1.1 No Costs Overruns.</p> <p>1.2 Competent consultants and contractor selected.</p>
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C: CAPE VERDE: ROAD PROJECT 1997- PROJECT MATRIX

Hierarchy of Objectives	Objectively Verifiable Indicators	Means of Verification	Important Assumptions																				
1. <u>Sectoral Objective:</u> 1.1 Improve efficiency of the transport system.	1.1 More than 50% increase of the volume of trade (commodities and individuals) between municipalities. 20% increase in exports.	1.1 National Statistics.																					
2. <u>Project Objective:</u> 2.1 Improve the road network to satisfy at the least cost the Islands road transport Demand.	2.1 Reduction of VOC 10% reduction of the number of accidents on project roads 30% increase of traffic.	2.1 Statistics from the Ministry of Public Works on the assessment of VOC, measure evenness of roadway statistics on accidents.	2.1 a) Ministry of Infrastructure and Transport has sound transport and infrastructure management capacity; b) A liberal transport policy was introduction.																				
3. <u>Performances:</u> 3.1 Rehabilitation of Praia-Trinidadade (5.2 km) road. 3.2 Rehabilitation of road between Furna-Esparadinha (18km). 3.3 Rehabilitation of road between Espargos-Pedra Lume (6.3 km). 3.4 Rehabilitation of road between Mindelo-San Pedro (11.7 km). 3.5 Rehabilitation of road between Espargos-Palmeira (5.5 km) 3.6 Rehabilitation of road Espargos-Santa Maria (18.9 km). 3.7 Rehabilitation of road between Mindelo-Baia das Gatas (12.5 km).	3.1 5.2 km of road are constructed between Praia and Trinidadade. 3.2 18 km of road are rehabilitated between Furna-Esparadinha. 3.3 6.3 km of road are rehabilitated between Espargos-Pedra Lume. 3.4 11.7 km of road are rehabilitated between Mindelo-San Pedro. 3.5 5.5 km of road upgraded between Espargos-Palmeira. 3.6 18.9 km of road are upgraded between Espargos-Santa Maria. 3.7 12.5 km of road are upgraded between Mindelo-Baia das Gatas.	Works Progress Report. Reception of works Report on Completion of Works. Reports on Bank supervision. Borrower's Project Completion Report. Bank project completion report.	Introduction of an efficient road maintenance national policy. Financing adequate road maintenance.																				
4. <u>Activities:</u>	A. Construction and rehabilitation works. B. Inspection/ Supervision C. Programme Audit <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: right;">F.E.</th> <th style="text-align: right;">L.C.</th> <th style="text-align: right;">Total</th> </tr> </thead> <tbody> <tr> <td>Works</td> <td style="text-align: right;">1.85</td> <td style="text-align: right;">1.78</td> <td style="text-align: right;">3.63</td> </tr> <tr> <td>Inspections/ Supervision</td> <td style="text-align: right;">0.12</td> <td style="text-align: right;">0.12</td> <td style="text-align: right;">0.24</td> </tr> <tr> <td>Audit</td> <td style="text-align: right;">0.01</td> <td style="text-align: right;">0.01</td> <td style="text-align: right;">0.02</td> </tr> <tr> <td>Total</td> <td style="text-align: right;">1.98</td> <td style="text-align: right;">1.90</td> <td style="text-align: right;">3.89</td> </tr> </tbody> </table>		F.E.	L.C.	Total	Works	1.85	1.78	3.63	Inspections/ Supervision	0.12	0.12	0.24	Audit	0.01	0.01	0.02	Total	1.98	1.90	3.89	Contracts signed. Monthly detailed account. Disbursement statement. Definitive detailed account Audit report.	Availability of counterpart funds. Compliance with performance deadlines. Compliance with technical standards.
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PERFORMANCE INDICATORS FOR ROAD PROJECTS

Project-cycle stage	Objectives	Verifiable Performance Indicators	Means of Verification	Risk Assumptions
POLICY GOALS:	<p>Promotion/ acceleration of economic activity in key growth sectors such as agriculture, mining, industry, tourism etc. in the country/ region/ area by provision of basic transport infrastructure or improved transport communications.</p> <p>Promotion of social welfare i.e., better health, education etc., for population in project areas by provision of basic transport infrastructure or improved transport communications.</p> <p>Provide greater accessibility to rural villages/ remote/ ill-connected areas/ etc., to regional economic centres.</p> <p>Strengthen regional integration. Provide connection from landlocked countries to seaports.</p> <p>Achieve inter-modal transport co-ordination.</p>	<p>Transport (road) expenditure as a percentage of GDP. Increase in quantity and value of agricultural, forestry, mining and industrial production. Increase in tourism arrivals. Increase in farm-gate prices and reduction in input prices. Increase in rate of employment. Increase in disposable income.</p> <p>Increase in enrolment in schools from the newly opened areas/ proportion of children attending school from the newly opened areas. Increase in patients in primary health care centres/ proportion of population using primary health care services from the newly opened areas.</p> <p>Increase in road km/ sq km. Increase in % of communities in the programme area linked by affordable and reliable public transportation system. Growth in the number of motorized vehicles plying on rural roads. Reduction in maximum journey distance from villages to the nearest point on the road network. Reduction in journey time of travel between selected points. Opening up of new marketing/ shopping centres.</p> <p>Inventory of missing transport links in the region. Increase in trade between the concerned countries. Reduction in time for travel to/ from the seaport from/ to destinations in the landlocked countries. Reduction in travel time between selected points in neighbouring countries.</p> <p>Optimal development of different modes of transport and optimisation of transport investment. Least cost movement of goods and passengers. Nature and effectiveness of the institutional set up for inter-modal co-ordination. Annual and development plan period investments in development of different modes of transport. Share of passenger and goods traffic carried by different modes. Average freight cost (per ton/km) by commodity and by % of selling/export price. Average freight cost for container (per ton/km).</p>	<p>National statistics. Specific studies at the start (base line), mid-term and post project. Monitoring of farm-gate and input prices.</p> <p>National Statistics.</p> <p>District Statistics. Area maps with delineation of road network.</p> <p>Area maps with inter regional or country links. Statistics/ Data on trade between the concerned countries. Special traffic surveys.</p> <p>Annual and development plan budgets and actual investments for different modes of transport. National statistics for carriage of goods (tons and ton km) and passengers (pax. and pax. km) by different modes of transport. Special surveys for determination of average selling/ export price and freight costs by major commodities and containers by different modes of transport.</p>	<p>Favourable macro-economic conditions and terms of trade. Effective application of necessary institutional reforms. Security situation does not prevent execution of works. Adequate allocation of funds. Complimentary investments are made in agricultural, industrial and other related sectors.</p> <p>Effective application of necessary institutional reforms. Adequate allocation of funds. Complimentary investments are made in health education and other related sectors. Security situation does not prevent execution of works. Security situation does not prevent execution of works. Adequate maintenance of roads through sufficient allocation of funds and availability of maintenance capacity and capability.</p> <p>Effective co-ordination in approval and implementation of complementary projects in different countries. Favourable macro-economic conditions and terms of trade. Reform of Customs regulations and procedures for smooth passage of goods and passengers at the border crossing points. Security situation does not prevent execution of works.</p> <p>Adequacy and quality of Inter-modal studies. Government commitment to a balanced development of all modes of transport. Establishment of an appropriate and efficacy of an inter-modal co-ordination machinery. Establishment of a reliable and quality data collection and monitoring system for the entire transport network.</p>

<p>SECTOR/ PROJECT GOALS</p>	<p>To handle growth in traffic.</p> <p>Improve and rehabilitate existing road infra-structure/ contribute to protection of road heritage.</p> <p>To provide all-weather transport links between selected points and in selected areas.</p> <p>To provide efficient road transport network and improved client service.</p> <p>To reduce transport costs.</p> <p>Increased and better road maintenance.</p>	<p>Traffic Growth. Increase in road length per capita for the country or area.</p> <p>Increase in total length of bitumen paved road network. Increase in road network. Increase in road length per capita for the country or region. % of different categories of roads in Good, Fair and Poor condition. Reduction in unit costs of goods and passenger transport for different types of vehicles. Increase in road speeds and reduction in transport times for different kinds of roads and vehicles.</p> <p>Reduction in annual percentage of days when roads were unpassable and traffic interruptions occurred. Reduction in unit costs of goods and passenger transport for different types of vehicles.</p> <p>Increase in road network. Increase in road length per capita for the country or region. % of different categories of roads in Good, Fair and Poor condition.</p> <p>Reduction in unit costs of goods and passenger transport for different types of vehicles. Reduction in freight and passenger tariffs for selected origin/ destination pairs, per km etc. Reduction in operating cost to clients. Improvement in comfort in ride.</p> <p>Better productivity of road maintenance equipment. Annual budgets allocations for road maintenance. Increase in maintenance activities (in lane km per year). % of roads in 'Good', 'Fair' and 'Poor' condition. Improvement in smoothness and deflection of pavement. Reduction in cost of repair per lane km for different types of roads. Reduction in unit costs of goods and passenger transport for different types of vehicles. Increase in road speeds and reduction in transport times for different kinds of roads and vehicles. Increase in availability and reduction in down time of major items of road maintenance equipment.</p>	<p>Traffic counts/ surveys and Traffic Statistics. Infrastructure statistics.</p> <p>Annual road condition and construction statistics. Periodic data collection on costs, speeds and travel time through existing or project monitoring systems. Inspections, interviews and enquiries.</p> <p>Time gain for different kinds of vehicles per km. Annual road condition statistics.</p> <p>Periodic data collection on costs, speeds and travel time through existing or project monitoring systems. Inspections, interviews and enquiries.</p> <p>Annual government budgets.</p> <p>Annual road condition and construction statistics. Periodical data collection on costs, speeds and travel time through existing or project monitoring systems. Inspections, interviews and enquiries.</p>	<p>Effective application of necessary institutional reforms. Forecast traffic growth materialises. Sustained budgetary allocations are available. Project management/ maintenance capability and qualified personnel is available.</p> <p>Effective application of necessary institutional reforms. Sustained budgetary provisions for rehabilitation and maintenance. Adequate maintenance of roads.</p> <p>Sustained budgetary provisions for rehabilitation and maintenance.</p> <p>Adequate maintenance of the roads. (i) Vehicle Operating Costs (VOC), (ii) Road roughness, (iii) Deflection of pavement, and (iv) Road speeds and transport times for different kinds of roads and vehicles. Periodical data collection on costs, speeds and travel time through existing or project monitoring systems. Inspections, interviews and enquiries.</p> <p>Sustained and adequate budgetary allocations.</p> <p>Availability of qualified personnel and equipment. Adequate maintenance of the roads.</p>
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	<p>Development of road sector institutions.</p> <p>To develop local road construction and maintenance industry.</p> <p>To improve road safety.</p>	<p>Improve the management capability of government's sectoral and project planning, appraisal and management capability. Quality of pre-investment and feasibility studies. Increase in % of road traffic related revenues returned to the road sector/ agencies. Reduction in administrative expenses/ total road budget. Increase in planning and appraisal assignments handled in-house. % of roads in `Good', `Fair' and `Poor' condition. Reduction in cost of construction and maintenance per lane km, for different kinds of roads. Reduction in unit costs of goods and passenger transport for different types of vehicles. Increase in road speeds and reduction in transport times for different kinds of roads and vehicles. Increase in capacity of mechanised and manual maintenance units (in km). Review of pre-investment and feasibility studies prepared in-house.</p> <p>Percentage of road construction and maintenance works awarded to private sector. Augmentation in the number of local contractors with managerial and technical capability competent to handle small and medium construction contracts. Augmentation in the number of contractors who own or have access to road maintenance equipment for small and medium contracts. Augmentation in the number of contractors who are participating in large construction and maintenance contracts in the country in association with expatriate contractors.</p> <p>Reduction in accident rates. Reduction in fatalities.</p>	<p>Annual government budgets. Annual road condition and construction statistics. Periodical data collection on costs, speeds and travel time through existing or project monitoring systems. Inspections, interviews and enquiries.</p> <p>Information available with the Ministries of Works/ Construction etc.</p> <p>Statistics on accidents.</p>	<p>Sustained and adequate budgetary allocations. Availability of qualified personnel and equipment. Adequate maintenance of the roads. Availability of local qualified engineers and technicians. Availability of requisite financial capability with local contractors.</p> <p>Speed and axle load restrictions enforced.</p>
<p>OUTPUTS</p>	<p>Construction/ upgradation/ rehabilitation/ resurfacing/ maintenance (lanes and km) of roads. Installation of road signage. Construction of civil structures. .Rehabilitation of bridges, culverts and drainage facilities. Training of managerial/ technical staff.</p> <p>For safety, geometrical corrections in vertical and horizontal alignments carried out. Bye-passes constructed.</p>	<p>Lengths of roads constructed/ upgraded/ rehabilitated/ resurfaced/ maintained (lanes and km). Types and numbers of civil structures constructed. Number of bridges, culverts and drainage facilities rehabilitated. Number of managerial/ technical staff trained.</p> <p>Number of geometrical corrections in vertical and horizontal alignments. Number of bye-passes constructed.</p>	<p>Periodic progress/activity reports. Bank supervision reports. Completion reports of borrower and Bank. Summary records of contractors' provisional and final hand-over. Completion and maintenance certificates.</p> <p>Periodic progress/activity reports. Bank supervision reports. Completion reports of borrower and Bank. Summary records of contractors' provisional and final hand-over. Completion and maintenance certificates.</p>	<p>PIU is of appropriate institutional capacity is put in place in time. PIU staffing proceeds unhindered. Qualified and experienced staff can be retained. No delay in tying up co-financing needs. Adequate and timely budgetary allocations are made by the borrower. Effective monitoring, quality control and supervision by consultants and Bank. No interruptions of project implementation work for any reason whatsoever.</p> <p>Adequate and timely budgetary allocations are made by the borrower. Effective monitoring, quality control and supervision by consultants and Bank. No interruptions of project implementation work for any reason whatsoever.</p>

	Equipment procured. Staff trained.	Type and numbers of equipment procured. Quality of training. Numbers of managerial, technical and support staff trained. Quality of reports.	Periodic progress/activity reports. Bank supervision reports. Completion reports of borrower and Bank. Equipment ledgers. Periodic progress/activity reports. Bank supervision reports. Completion reports of borrower and Bank. Staff interviews. Critical review of reports. Full counterpart staff and assistance provided.	Adequate and timely budgetary allocations are made by the borrower. Effective monitoring, quality control and supervision by consultants and Bank. Adequate and timely budgetary allocations are made by the borrower. Effective monitoring quality control and supervision by consultants and Bank. Technical assistance reports, feasibility reports, design reports etc.
ACTIVITIES	Fulfilment of conditions of effectiveness. Establishment of PIU. Procurement of consultancy services. Establishment of data collection and benefit measuring and evaluation (BME) systems. Preparation of bid documents. Invitation of tenders. Evaluation of bids. Selection of contractor. Road works. Road construction.	Completion dates & implementation schedule. Bar and PERT charts. Supervision and monitoring reports. Data collection and BME system. -Mobilisation. -Land acquisition and clearing of right of way. -Engineering structures and drainage. - Earth works. Material and specification checks. Works supervision and control. Training. Release of co-financing. Studies. Delivery of equipment.	Review of periodic progress reports. Review of progress as per implementation schedule/PERT charts. Review of establishment of data collection and BME system. Review of disbursements. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions. Implementation schedule. Bar and PERT charts. Supervision and monitoring reports. Test results. Cost of construction/ maintenance per lane km.	Promised donor funds are released in time. Borrowers counterpart funds provided in time. Timely land acquisition. All procurement actions are on schedule. Timely recruitment of competent consultants and contractors. Review of periodic progress reports. Review of disbursements. Review of progress as per implementation schedule/PERT charts. Review of test reports. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions. Promised donor funds are released in time. Borrowers counterpart funds provided in time. Timely land acquisition. All procurement actions are on schedule. Timely recruitment of competent consultants and contractors.
INPUTS	Borrower financing. Donor financing. Grant financing. Technical assistance provided by donors.		Implementation schedule. PERT charts. Supervision and monitoring reports.	Review of periodic progress reports. Review of disbursements. Review of progress as per implementation schedule/PERT charts. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions.

Notes:

- The above items are only illustrative. Depending on the specific goals and objectives of the project, the selection of the applicable indicators would have to be made. The indicators will also depend on the capability of Borrowers and Executing agencies and their needs and priorities and have to be selected in consultation with them.
- A specific set of indicators and means of their verification have to be selected and tailored to the needs of each project, reflecting its objectives, outputs and inputs. Choice of indicators for each project will also involve trade-off among indicators themselves depending on the cost of information and data collection and analysis. In this process, the listed indicators and the means of verification could also be combined and/or rearranged.
- The selection of indicators and means of verification has to be accompanied by assignment of desirable numbers or target levels to quantify performance levels and the time frame.
- A clear identification of the means of verification is essential. The data sources and, to the extent possible, the names of agencies and the publications, tables etc., to be referred to would need to be identified. The expression "National Statistics" by itself would be inadequate in a specific project logframe. It has necessarily to be amplified and accompanied by identification of the compiling authority of the country and the specific section or series of National Statistics where the suggested indicator or data for its computation is available.

PERFORMANCE INDICATORS FOR RAILWAY PROJECTS

Project-cycle stage	Objectives	Verifiable Performance Indicators	Means of Verification	Risk Assumptions
POLICY GOALS	<p>Promotion/ acceleration of economic activity in key growth sectors such as agriculture, mining, industry, tourism etc. in the country/ region/ area by provision of basic transport infrastructure or improved transport communications.</p> <p>Promotion of social welfare i.e., better health, education etc., for population in project areas by provision of basic transport infrastructure or improved transport communications.</p> <p>Provide greater accessibility to rural villages/ remote/ ill-connected areas/ etc., to regional economic centres.</p> <p>Strengthen regional integration. Provide connection from landlocked countries to seaports.</p> <p>Achieve inter-modal transport co-ordination.</p>	<p>Transport (railways) expenditure as a percentage of GDP. Increase in quantity and value of agricultural, forestry, mining and industrial production. Increase in tourism arrivals. Increase in farm-gate prices and reduction in input prices in the country/ area. Increase in rate of employment. Increase in disposable income.</p> <p>Increase in enrolment in schools from the newly opened areas/ proportion of children attending school from the newly opened areas. Increase in patients in primary health care centres/ proportion of population using primary health care services from the newly opened areas.</p> <p>Increase in route km/ sq km. Increase in % of communities in the programme area linked by affordable and reliable rail transportation system. Reduction in maximum journey distance from villages to the nearest point on the rail network. Reduction in journey time of travel between selected points. Opening up of new marketing/ shopping centres.</p> <p>Inventory of missing rail links in the region. Increase in trade between the concerned countries. Share of railways in carriage of goods and passenger traffic. Reduction in time for travel to/ from the seaport from/ to destinations in the landlocked countries. Reduction in travel time between selected points in neighbouring countries.</p> <p>Facilitate optimal development of different modes of transport and optimisation of transport investment. Achieve least cost movement of goods and passengers. Institutional set up for inter-modal co-ordination and its effectiveness. Annual and development plan period investments in development of different modes of transport. Share of passenger and goods traffic carried by different modes. Average freight cost (per ton/km) by commodity and by % of selling/export price. Average freight cost for container (per ton/km). Institutional set-up for inter-modal co-ordination. Annual and development plan budgets and actual investments for different modes of transport.</p>	<p>National statistics.</p> <p>National Statistics</p> <p>Railway Statistics. Area maps with delineation of rail network.</p> <p>Area maps with inter regional or country links. Statistics/ Data on trade between the concerned countries.</p> <p>National statistics for carriage of goods (tons and ton km) and passengers (pax. and pax. km) by different modes of transport. Special surveys for determination of average selling/ export price and freight costs by major commodities and containers by different modes of transport.</p>	<p>Specific studies at the start (base line), mid-term and post project. Monitoring of farm-gate and input prices. Favourable macro-economic conditions and terms of trade. Effective application of necessary institutional reforms. Security situation does not prevent execution of works. Adequate allocation of funds. Complimentary investments are made in agricultural, industrial and other related sectors.</p> <p>Effective application of necessary institutional reforms. Adequate allocation of funds. Complimentary investments are made in health education and other related sectors. Security situation does not prevent execution of works.</p> <p>Security situation does not prevent execution of works. Adequate maintenance of railways through sufficient allocation of funds and availability of maintenance capacity and capability.</p> <p>Effective co-ordination in approval and implementation of complementary projects in different countries. Favourable macro-economic conditions and terms of trade. Reform of Customs regulations and procedures for smooth passage of goods and passengers at the border crossing points. Security situation does not prevent execution of works.</p> <p>Adequacy and quality of Inter-modal studies. Government commitment to a balanced development of all modes of transport. Establishment of an appropriate and efficacy of an inter-modal co-ordination machinery. Establishment of a reliable and quality data collection and monitoring system for the entire transport network.</p>

<p>SECTOR PROJECT GOALS</p>	<p>To handle growth in traffic.</p> <p>Modernise and rehabilitate existing railway track and infra-structure.</p> <p>To provide all-weather transport links between selected points and in selected areas. To provide connection from hinterland to seaports.</p> <p>To provide efficient railway transport network and improved client service. To reduce transport costs.</p> <p>Better productivity of railway track, rolling stock, signalling, telecom, manufacturing and maintenance workshop equipment etc.</p>	<p>Increase in rail length per capita for the country or area. Network density (route km per sq km of area). Track Length (km). Number of Locomotives. Number of Freight Cars. Traffic Levels (ton-km & pax-km). Originating traffic levels (tons and passengers). Annualised growth in rail traffic. Rail share of overall goods and passenger traffic.</p> <p>Maximum & average speed for freight and passenger trains (kph). Track operated under restrictions for speed (as % of total route km). Locomotive/ freight car turnaround time. Maintenance cost per route km. Train accidents (per million train km).</p> <p>Reduction in annual percentage of days when railway communication was disrupted. Reduction in unit costs of goods and passenger transport for different types of vehicles.</p> <p>Increase in railway network. Increase in rail length per capita for the country or region. Reduction in unit costs of goods and passenger transport. Reduction in freight and passenger tariffs for selected origin/ destination pairs. Reduction in operating cost to clients. Improvement in comfort in ride. Average speeds for main-line passenger and goods trains. Time gain per km and between selected points. Punctuality of passenger trains.</p> <p>Track availability. Mainline/ shunting loco availability. Mainline loco reliability. Mainline/ shunting loco utilisation (hours/ year). Locomotive output (ton-km per year). Freight car availability. Freight car output (ton-km per year). Average freight car detention time (hours). Freight car turn-around time (days). Travel and turnaround time of freight trains on dedicated routes (hours). Passenger coach availability. Telecom efficiency. Increase in availability and reduction in down time of major items of workshop equipment. Time taken for periodical over haul (POH) of locus and passenger and freight cars. Reduction in cost of repair km of track. Reduction in unit costs of goods and passenger transport. Labour productivity (ton-km per employee per year). Major accidents.</p>	<p>Overall transport statistics. Railway statistics. Infrastructure statistics.</p> <p>Railway operational statistics.</p> <p>Time gain for different kinds of vehicles per km. Annual railway operational statistics. Periodic data collection on costs, speeds and travel time through existing or project monitoring systems. Inspections, interviews and enquiries.</p> <p>Annual railway operational statistics. Periodic data collection on costs, speeds and travel time through existing or project monitoring systems. Inspections, interviews and enquiries.</p> <p>Railway operational statistics. Number of track failures per year. Mean km between loco failures. Loco hours/ day/ loco in use. km/ day/ per loco in use. Hours of control interruption per month on mainline. Down time per month/ year for telephone/ microwave circuit lines. Reservation computers downtime per month/ year. Workshop productivity statistics. POH and running repair time for locos and passenger and freight cars. Number of derailments/ collisions. Number of fatalities/ serious injuries.</p> <p>Goods and passenger traffic. Financial results and operating ratio. Operating statements and operational performance indicators (see preceding item). Periodical data collection on costs, speeds and travel</p>	<p>Effective application of necessary institutional reforms. Forecast traffic growth materialises. Sustained budgetary allocations are available. Project management/ maintenance capability and qualified personnel is available.</p> <p>Effective application of necessary institutional reforms. Sustained budgetary provisions for rehabilitation and maintenance. Adequate maintenance of railways.</p> <p>Sustained budgetary provisions for rehabilitation and maintenance. Adequate maintenance of the railway track and rolling stock.</p> <p>Sustained budgetary provisions for rehabilitation and maintenance. Adequate maintenance of the railway track and rolling stock.</p> <p>Improvement in railway organization's operational and maintenance capability. Sustained and adequate budgetary allocations. Availability of qualified personnel and equipment.</p>
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	<p>To improve and strengthen railways' operational and management capability. Improve the management capability of railways' sectoral and project planning and appraisal.</p> <p>To develop local construction industry.</p> <p>To improve rail safety.</p>	<p>Capacity to carry traffic. Reduction in administrative expenses and operating ratio. Improvement in operational performance indicators. Reduction in cost of construction and maintenance per km of track, locomotives and freight cars. Reduction in unit costs of goods and passenger transport for different types of vehicles. Quality of pre-investment and feasibility studies. Increase in planning and appraisal assignments handled in-house.</p> <p>Percentage of railway construction works awarded to private sector. Augmentation in the number of local contractors with managerial and technical capability competent to handle small and medium construction contracts. Augmentation in the number of contractors who are participating in large construction contracts in the country in association with expatriate contractors.</p> <p>Reduction in accident rates. Reduction in fatalities.</p>	<p>time through existing or project monitoring systems. Inspections, interviews and enquiries.</p> <p>Information available with the Ministries of railways/ construction etc.</p> <p>Statistics on accidents. Accidents per year. Collisions per year. Fatalities/ serious injuries per year. Accidents per million train km.</p>	<p>Review of pre-investment and feasibility studies prepared in-house. Sustained and adequate budgetary allocations. Availability of qualified personnel and equipment.</p> <p>Availability of local qualified engineers and technicians. Availability of requisite financial capability with local contractors.</p> <p>Improvement in railway organization's operational and maintenance capability.</p>
OUTPUTS	<p>Construction/ upgradation/ rehabilitation/maintenance (km) of rail tracks. Construction of civil structures. Construction and rehabilitation of bridges, culverts and drainage facilities.</p> <p>Acquisition of new rolling stock (locos and passenger and freight cars). Provision of new signalling and telephone/ microwave facilities. Upgradation of telephone/ microwave lines/ circuits. Construction/ modernization/ rehabilitation of workshop facilities.</p> <p>Training of managerial/ technical staff. Development of new/ improved management, financial, procurement and inventory control, maintenance etc., systems.</p>	<p>Lengths of rail track constructed/ upgraded/ rehabilitated/ maintained (km). Types and numbers of civil structures constructed. Number of bridges, culverts and drainage facilities constructed and rehabilitated.</p> <p>Number of rolling stock (locos and passenger and freight cars) acquired. Lengths/ circuits of signalling, telephone and microwave lines provided/ upgraded. Numbers of major items of machinery and plant acquired/ upgrade/ rehabilitated.</p> <p>Quality and number of managerial/ technical staff trained. Quality and numbers of new systems installed. Labour productivity.</p>	<p>Periodic progress/activity reports. Bank supervision reports. Completion reports of borrower and Bank. Summary records of contractors' provisional and final hand-over. Completion and maintenance certificates.</p> <p>Periodic progress/activity reports. Bank supervision reports. Completion reports of borrower and Bank. Equipment ledgers.</p> <p>Periodic progress/activity reports. Labour productivity (ton-km/ employee). Bank supervision reports. Completion reports of borrower and Bank. Staff interviews. Technical assistance reports, feasibility reports, design reports etc. Quality of reports. Critical review of reports.</p>	<p>PIU is of appropriate institutional capacity is put in place in time. PIU staffing proceeds unhindered. Qualified and experienced staff can be retained. No delay in tying up co-financing needs. Adequate and timely budgetary allocations are made by the borrower. Effective monitoring, quality control and supervision by consultants and Bank. No interruptions of project implementation work for any reason whatsoever.</p> <p>Adequate and timely budgetary allocations are made by the borrower. Effective monitoring, quality control and supervision by consultants and Bank.</p> <p>Adequate and timely budgetary allocations are made by the borrower. Effective monitoring quality control and supervision by consultants and Bank. Full counterpart staff and assistance provided.</p>
ACTIVITY	<p>Fulfilment of conditions of effectiveness. Establishment of PIU. Procurement of</p>	<p>Completion dates & implementation schedule. Bar and PERT charts. Supervision and monitoring reports. Data</p>	<p>Review of periodic progress reports. Review of progress as per</p>	<p>Promised donor funds are released in time. Borrowers counterpart funds provided in time.</p>

	<p>consultancy services. Establishment of data collection and benefit measuring and evaluation (BME) systems. Preparation of bid documents for works and supply of goods. Invitation of tenders for works/ supply of goods. Evaluation of bids. Selection of contractor.</p> <p>-Works -Mobilisation. –Land acquisition and clearing of right of way. -Engineering structures and drainage. -Earth works -Track construction.</p>	<p>collection and BME system.</p> <p>Material and specification checks. Works supervision and control. Training. Release of co-financing. Studies. Delivery of equipment.Implementation schedule. Bar and F</p>	<p>implementation schedule/PERT charts. Review of establishment of data collection and BME system. Review of disbursements. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions.</p> <p>Review of periodic progress reports. Review of disbursements. Review of progress as per implementation schedule/PERT charts. Review of test reports. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions.</p>	<p>Timely land acquisition. All procurement actions are on schedule. Timely recruitment of competent consultants and contractors.</p> <p>Promised donor funds are released in time. Borrowers counterpart funds provided in time. Timely land acquisition. All procurement actions are on schedule. Timely recruitment of competent consultants and contractors.</p>
INPUTS	<p>Borrower financing. Donor financing. Grant financing. Technical assistance provided by donors. Training.</p>	<p>Implementation schedule. PERT charts. Supervision and monitoring reports. Training programmes.</p>	<p>Review of periodic progress reports. Review of disbursements. Review of progress as per implementation schedule/PERT charts. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions.</p>	<p>Conditions of effectiveness of loan are fulfilled in time. Timely land acquisition. All procurement actions are on schedule. Timely recruitment of competent consultants and contractors.</p>

Notes:

- The above items are only illustrative. Depending on the specific goals and objectives of the project, the selection of the applicable indicators would have to be made. The indicators will also depend on the capability of Borrowers and Executing agencies and their needs and priorities and have to be selected in consultation with them.
- A specific set of indicators and means of their verification have to be selected and tailored to the needs of each project, reflecting its objectives, outputs and inputs. Choice of indicators for each project will also involve trade-off among indicators themselves depending on the cost of information and data collection and analysis. In this process, the listed indicators and the means of verification could also be combined and/or rearranged.
- The selection of indicators and means of verification has to be accompanied by assignment of desirable numbers or target levels to quantify performance levels and the time frame.
- A clear identification of the means of verification is essential. The data sources and, to the extent possible, the names of agencies and the publications, tables etc., to be referred to would need to be identified. The expression "National Statistics" by itself would be inadequate in a specific project logframe. It has necessarily to be amplified and accompanied by identification of the compiling authority of the country and the specific section or series of National Statistics where the suggested indicator or data for its computation is available.

PERFORMANCE INDICATORS FOR PORT PROJECTS

Project-cycle stage	Objectives	Verifiable Performance Indicators	Means of Verification	Risk Assumptions
POLICY GOALS	<p>Promotion/ acceleration of economic activity in the country/ region/ area by removal of infra-structural constraints.</p> <p>Provide greater accessibility to remote islands or ill-served areas and hinterland.</p>	<p>Transport (ports) expenditure as a percentage of GDP. Increase in quantity and value of country's international sea borne trade. Increase in sea-borne exports. Increase in disposable income.</p> <p>Total number of ports. Number of ports per km of coast line. Increase in % of communities in the programme area served by all-weather reliable ports and shipping services. Average distance to port travelled. Reduction in maximum journey distance from island villages to the nearest port. Reduction in journey time of travel between selected points.</p>	<p>National statistics.</p> <p>National Statistics. Area maps with delineation of port network.</p>	<p>Favourable macro-economic conditions and terms of trade. Effective application of necessary institutional reforms. Security situation does not prevent execution of works. Adequate allocation of funds. Complimentary investments are made in land interfaces.</p> <p>Security situation does not prevent execution of works. Adequate operation and maintenance of ports through sufficient allocation of funds and availability of maintenance capacity and capability.</p>
SECTOR/ PROJECT GOALS	<p>To handle growth in international and domestic water-borne traffic.</p> <p>Modernise, upgrade and rehabilitate existing ports infra-structure.</p> <p>Provide, rehabilitate, upgrade, and modernize container handling equipment and facilities.</p> <p>To provide efficient port infrastructure and improved client service. To reduce transport costs.</p> <p>Better productivity of port equipment etc.</p> <p>To improve and strengthen ports' operational and management capability. Improve the port capability for project planning and appraisal.</p>	<p>Handling capacity of ports (separately for liquid bulk, dry bulk and break-bulk in tons/annum). Handling capacity for containers (TEUs/annum). International and domestic water-borne trade (\$) and traffic (tons) levels. Annualised growth in international and domestic water-borne trade and traffic. Share of water-borne traffic of the overall goods and passenger traffic. Average ship waiting time (hours). Average ship turn-around time. Average container ship turn-around time.</p> <p>Maximum draft available. Number of berths. Area of transit sheds (sqm). Area of storage godowns (sqm). Capacity of storage tanks (kl). Average ship waiting time (hours). Dwell time of cargo. Cargo handling productivity by major commodity (tonnage/gang hour, tonnage/ship hour, tonnage/ quay metre).</p> <p>Container traffic handled (TEUs). Container penetration (%). Containerizable traffic (%). Number of container berths. Draft at container berths (m). Waiting time for container ships (hours). Turnaround time for container ships (hours).</p> <p>Container handling rate (TEUs/ crane hour). Container handling charges (\$/box). Number and capacity of shore/ yard handling gantry cranes. Area and capacity of container yards. Container crane availability (%).</p> <p>Increase in port capacity. Reduction in unit costs of goods and passenger transport. Reduction in freight and passenger tariffs for selected origin/ destination pairs. Average ship waiting time (hours). Dwell time of cargo. Cargo handling productivity by major commodity (tonnage/gang hour, tonnage/ship hour, tonnage/ quay metre).</p> <p>Increase in availability and reduction in down time of major items of port equipment. Labour productivity (ton-km per employee per year). Average ship waiting time (hours). Average ship turn-around time hrs). Dwell time of cargo. Cargo handling productivity by major commodity (tonnage/gang hour, tonnage/ship hour, tonnage/ quay metre). Major accidents. Reduction in administrative expenses. Reduction in operating ratio. Increase in availability and reduction in down time of major items of port</p>	<p>Overall transport statistics. Ports statistics.</p> <p>Port statistics.</p> <p>Port statistics.</p> <p>Port statistics. Periodic data collection on costs, speeds and travel time through existing or project monitoring systems. Inspections, interviews and enquiries.</p> <p>Port statistics.</p> <p>Port financial and operational results and statistics. Review of pre-investment and feasibility studies</p>	<p>Effective application of necessary institutional reforms. Forecast traffic growth materialises. Sustained budgetary allocations are available. Project management/ maintenance capability and qualified personnel is available.</p> <p>Effective application of necessary institutional reforms. Sustained budgetary provisions for rehabilitation and maintenance. Adequate maintenance of port facilities.</p> <p>Effective application of necessary institutional reforms. Sustained budgetary provisions for rehabilitation and maintenance. Adequate maintenance of port facilities.</p> <p>Sustained budgetary provisions for rehabilitation and maintenance. Adequate maintenance of the port facilities and equipment.</p> <p>Improvement in operational and maintenance capability. Sustained and adequate budgetary allocations. Availability of qualified personnel and equipment.</p> <p>Sustained and adequate budgetary allocations. Availability of qualified personnel and equipment.</p>

		equipment. Labour productivity (tons per employee per year). Improvement in operational performance indicators. Average ship waiting time (hours). Average ship turn-around time hrs). Dwell time of cargo in the port. Cargo handling productivity by major commodity (tonnage/gang hour, tonnage/ship hour, tonnage/ ship day, and tonnage/ quay metre). Major accidents. Quality of pre-investment and feasibility studies. Increase in planning and appraisal assignments handled in-house.	prepared in-house.	
OUTPUTS	<p>Construction/ upgradation/ rehabilitation/maintenance (km) of port berths, jetties, pipelines etc. Capital and maintenance dredging. Construction/ rehabilitation of civil structures such as office blocks, sheds, godowns, storage yards etc. Construction and rehabilitation of roads, bridges, culverts and drainage facilities.</p> <p>Acquisition of new container and cargo handling equipment. Acquisition of new locomotives, pilot launches and tug boats. Installation of computerized ship handling and pilotage systems. Provision of new electronic data processing and ship to shore and other communication and microwave facilities. Construction, modernization and rehabilitation of workshop facilities.</p> <p>Training of managerial/ technical staff. Development of new/ improved management, financial, procurement and inventory control, maintenance etc., systems.</p>	<p>Lengths and width of berths, jetties, pipelines etc., constructed/ upgraded/ rehabilitated/ maintained. Amount of dredging. Types and numbers of civil structures constructed. Length/number of roads, bridges, culverts and drainage facilities constructed and rehabilitated.</p> <p>Numbers of container and cargo handling equipment. Number of new locomotives, pilot launches and tug boats procured. Details of computerized ship handling and pilotage systems. Details of electronic data processing and ship to shore and other communication and microwave facilities installed. Details of modernization and rehabilitation of workshop facilities.</p> <p>Quality and number of managerial/ technical staff trained. Quality and numbers of new systems installed.</p>	<p>Periodic progress/ activity reports. Bank supervision reports. Completion reports of borrower and Bank. Summary records of contractors' provisional and final hand-over. Completion and maintenance certificates.</p> <p>Periodic progress/ activity reports. Bank supervision reports. Completion reports of borrower and Bank. Asset and equipment ledgers.</p> <p>Periodic progress/activity reports. Bank supervision reports. Completion reports of borrower and Bank. Staff interviews.</p> <p>Technical assistance reports, feasibility reports, design reports etc.</p>	<p>PIU with appropriate institutional capacity is put in place in time. PIU staffing proceeds unhindered. Qualified and experienced staff can be retained. No delay in tying up co-financing needs. Adequate and timely budgetary allocations are made by the borrower. Effective monitoring, quality control and supervision by consultants and Bank. No interruptions of project implementation work for any reason whatsoever.</p> <p>Adequate and timely budgetary allocations are made by the borrower. Effective monitoring, quality control and supervision by consultants and Bank.</p> <p>Adequate and timely budgetary allocations are made by the borrower. Effective monitoring quality control and supervision by consultants and Bank.</p> <p>Quality of reports. Critical review of reports. Full counterpart staff and assistance provided.</p>
ACTIVITIES	Fulfilment of conditions of effectiveness Establishment of PIU. Procurement of consultancy services. Establishment of data collection and benefit measuring and evaluation (BME) systems. Preparation of bid documents for works and supply of goods. Invitation of tenders for works/ supply of goods. Evaluation of bids. Selection of suppliers/ contractor. Finalization of purchase order/ agreements/ contracts.	Conditions of effectiveness and covenants. Completion dates & implementation schedule. Bar and PERT charts. Supervision and monitoring reports. Data collection and BME system.	Review of periodic progress reports. Review of progress as per implementation schedule/PERT charts. Review of establishment of data collection and BME system. Review of disbursements. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions.	Promised donor funds are released in time. Borrowers counterpart funds provided in time. Timely land acquisition. All procurement actions are on schedule. Timely recruitment of competent consultants and contractors.

	Construction/ upgrading/ rehabilitation/ maintenance of port berths, jetties and pipelines. Dredging. Construction and rehabilitation of office blocks, sheds, godowns, storage yards etc. Construction and rehabilitation of roads, bridges, culverts and drainage facilities. Material and specification checks. Works supervision and control. Training. Release of co-financing. Studies. Delivery of equipment and machinery.	Conditions of effectiveness and covenants. Implementation schedule. Bar and PERT charts. Specification and design standards. Supervision and monitoring reports. Test results. Unit costs of construction of berths, jetties and pipelines (per running metre). Unit cost of dredging (per cum). Unit cost of construction of civil structures (per sqm) and storage yards (per sqm).	Review of periodic progress reports. Review of disbursements. Review of progress as per implementation schedule/PERT charts. Review of test reports. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions.	Promised donor funds are released in time. Borrowers counterpart funds provided in time. Timely land acquisition. All procurement actions are on schedule. Timely recruitment of competent consultants and contractors.
INPUTS	Institutional and human resource inputs. Borrower financing. Donor financing. Grant financing. Technical assistance provided by donors. Training. Consultancy services. Executive agency/ consultant/ Borrower/ Bank supervision.	Implementation schedule. PERT charts. Budgetary allocations and fund releases. Disbursement applications/ statements. Supervision and monitoring reports. Training programmes.	Review of progress as per implementation schedule/PERT charts. Review of periodic progress reports. Review of disbursements. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions.	Institutional strengthening measures proceed as planned. PIU with appropriate institutional capacity is put in place in time. PIU staffing proceeds unhindered. Conditions of effectiveness of loan are fulfilled in time. Timely land acquisition. All procurement actions are on schedule. Timely recruitment of competent consultants and contractors.

Notes:

- The above items are only illustrative. Depending on the specific goals and objectives of the project, the selection of the applicable indicators would have to be made. The indicators will also depend on the capability of Borrowers and Executing agencies and their needs and priorities and have to be selected in consultation with them.
- A specific set of indicators and means of their verification have to be selected and tailored to the needs of each project, reflecting its objectives, outputs and inputs. Choice of indicators for each project will also involve trade-off among indicators themselves depending on the cost of information and data collection and analysis. In this process, the listed indicators and the means of verification could also be combined and/or rearranged.
- The selection of indicators and means of verification has to be accompanied by assignment of desirable numbers or target levels to quantify performance levels and the time frame.
- A clear identification of the means of verification is essential. The data sources and, to the extent possible, the names of agencies and the publications, tables etc., to be referred to would need to be identified. The expression "National Statistics" by itself would be inadequate in a specific project logframe. It has necessarily to be amplified and accompanied by identification of the compiling authority of the country and the specific section or series of National Statistics where the suggested indicator or data for its computation is available.

PERFORMANCE INDICATORS FOR AIRPORT PROJECTS

Project-cycle stage	Objectives	Verifiable Performance Indicators	Means of Verification	Risk Assumptions
POLICY GOALS	<p>Promotion/ acceleration of economic activity in the country/ region/ area by providing better transport and communication links.</p> <p>Strengthen regional integration. Provide connection from landlocked countries to other countries. Provide greater accessibility to remote islands or inaccessible and ill-served areas and hinterland.</p>	<p>Increase in quantity and value of country's international airborne trade. Increase in quantity and value of air-borne exports. Increase in number of tourists' Increase in gross foreign exchange earnings from international tourists. Increase in disposable income.</p> <p>Total number of airports. Number of airports per sq km of area/ region. Reduction in maximum journey distance from inaccessible or island villages to the nearest airport. Reduction in journey time of travel between selected points.</p>	<p>National statistics. Specific studies at the start (base line), mid-term and post project.</p> <p>National Statistics. Area maps with delineation of airport network.</p>	<p>Favourable macro-economic conditions and terms of trade. Effective application of necessary institutional reforms. Security situation does not prevent execution of works. Adequate allocation of funds. Investments are made in complimentary activities such as tourism, promotion of business and investment opportunities for foreign investors, promotion of high value low volume export industry etc.</p> <p>Security situation does not prevent execution of works. Adequate operation and maintenance of airports through sufficient allocation of funds and availability of maintenance capacity and capability.</p>
SECTOR/ PROJECT GOALS	<p>To handle growth in international and domestic air traffic.</p> <p>Modernise, upgrade and rehabilitate existing airports infra-structure. To enable airport to receive bigger aircraft.</p>	<p>Number, length and capacity of runways. Size and type of aircraft that can be handled. Area of parking apron. Handling capacity of airports (separately for passengers and cargo in pax/tons per annum). Handling capacity for containers (TEUs/annum). International and domestic air-borne trade (\$) and traffic (tons) levels (passengers & cargo separately). Annualised growth in international and domestic air-borne trade and traffic. Share of air-borne traffic of the overall goods and passenger traffic. Peak hour pax. /average pax. per hour. Peak flight arrivals/ departures per hour. Average flight arrivals/ departures per hour. Average aircraft queuing delay (minutes). Average clearance time for passengers/ cargo. Area of transit sheds (sqm). Area of storage godowns (sqm). Average dwell time of cargo.</p> <p>Number, length and capacity of runways. Size and type of aircraft that can be handled. Area of parking apron. Handling capacity of airports (separately for passengers and cargo in pax/tons per annum). Handling capacity for containers (TEUs/annum). International and domestic air-borne trade (\$) and traffic (tons) levels (passengers & cargo separately). Annualised growth in international and domestic air-borne trade and traffic. Share of air-borne traffic of the overall goods and passenger traffic. Peak hour pax. /average pax. per hour. Peak flight arrivals/ departures per hour. Average flight arrivals/ departures per hour. Average aircraft queuing delay (minutes). Average clearance time for passengers/ cargo. Average dwell time of cargo. Days airport closed</p>	<p>Overall transport statistics. Airports and air traffic statistics.</p> <p>Overall transport statistics. Airports and air traffic statistics.</p>	<p>Effective application of necessary institutional reforms. Forecast traffic growth materialises. Sustained budgetary allocations are available. Project management/ maintenance capability and qualified personnel is available.</p> <p>Effective application of necessary institutional reforms. Sustained budgetary provisions for rehabilitation and maintenance. Adequate maintenance of airport facilities.</p>

	<p>Provide, rehabilitate, upgrade, and modernize air traffic control systems, electronic beacons, navigational and radio aids for landing and approach, meteorological equipment, approach lights, lighting of aprons, fire fighting equipment & crash and rescue vehicles etc.</p> <p>To provide efficient airport infrastructure and improved client service. To provide aero-bridges, improved passenger halls, X-ray equipment for baggage control and baggage conveyor systems. To reduce transport costs. To improve airport safety.</p> <p>To improve and strengthen airports' operational and management capability. Improve the airport capability for project planning and appraisal.</p>	<p>per year. Area of transit sheds (sqm). Area of storage godowns (sqm).</p> <p>Size and type of aircraft that can be handled. Handling capacity of airports (separately for passengers and cargo in pax/tons per annum). International and domestic air-borne trade (\$) and traffic (tons) levels (passengers & cargo separately). Annualised growth in international and domestic air-borne trade and traffic. Peak hour pax./average pax. per hour. Peak flight arrivals/ departures per hour. Average flight arrivals/ departures per hour. Average aircraft queuing delay (minutes). Average clearance time for passengers/ cargo. Average dwell time of cargo. Incidents, accidents and fatalities per million aircraft and passenger landings/ take-off.</p> <p>Increase in airport capacity. Saving in passenger time. Average clearance time for passengers/ cargo. Average dwell time of cargo. Reduction in unit costs of goods and passenger transport. Reduction in freight and passenger tariffs for selected origin/ destination pairs. Average aircraft queuing delay (minutes). Incidents, accidents and fatalities per million aircraft and passenger landings/ take-offs.</p> <p>Reduction in administrative expenses. Reduction in operating ratio. Labour productivity (passengers/ aircraft movement per staff employed). Reduction in unit costs of goods and passenger transport. Reduction in freight and passenger tariffs for selected origin/ destination pairs. Average aircraft queuing delay (minutes). Average clearance time for passengers/ cargo. Average dwell time of cargo. Incidents, accidents and fatalities per million aircraft and passenger movements- by type and level of operation. Quality of pre-investment and feasibility studies. Increase in planning and appraisal assignments handled in-house.</p>	<p>Overall transport statistics. Airports and air traffic statistics.</p> <p>Air traffic and airport statistics. Periodic data collection on costs, speeds and travel time through existing or project monitoring systems. Inspections, interviews and enquiries.</p> <p>Airport financial and operational results and statistics. Review of pre-investment and feasibility studies prepared in-house.</p>	<p>Effective application of necessary institutional reforms. Sustained budgetary provisions for rehabilitation and maintenance. Adequate maintenance of airport facilities.</p> <p>Sustained budgetary provisions for rehabilitation and maintenance. Adequate maintenance of the airport facilities and equipment.</p> <p>Sustained and adequate budgetary allocations. Availability of qualified personnel and equipment.</p>
<p>OUTPUTS</p>	<p>Construction/ upgradation/ rehabilitation/ maintenance of airport runways, parking aprons, air traffic control systems, electronic beacons, navigational and radio aids for landing and approach, electronic data processing and air to ground (or vice versa) and other communication and microwave facilities, meteorological equipment, approach and apron lights, fire fighting equipment & crash and rescue vehicles etc. Construction/ rehabilitation of civil structures such as office blocks, terminal building, sheds, godowns, storage yards etc. Construction and rehabilitation of roads, culverts and drainage facilities.</p>	<p>Lengths and width and design strength of runways and parking aprons constructed/ upgraded/ rehabilitated/ maintained. Quantity and types of systems installed. Details of traffic control systems, air/ ground and other electronic data processing and other communication and microwave facilities installed. Number of vehicles. Types, numbers and area of civil structures constructed. Length/number of roads, bridges and drainage facilities constructed and rehabilitated.</p>	<p>Periodic progress/ activity reports. Bank supervision reports. Completion reports of borrower and Bank. Summary records of contractors' provisional and final hand-over. Completion and maintenance certificates.</p>	<p>PIU with appropriate institutional capacity is put in place in time. PIU staffing proceeds unhindered. Qualified and experienced staff can be retained. No delay in tying up co-financing needs. Adequate and timely budgetary allocations are made by the borrower. Effective monitoring, quality control and supervision by consultants and Bank. No interruptions of project implementation work for any reason whatsoever.</p>

	<p>Installation of aero-bridges, improved passenger halls, X-ray equipment for baggage control and baggage conveyor systems. Installation of computerized passenger/ cargo handling systems.</p> <p>Acquisition of new container and cargo handling equipment. Acquisition of new aircraft maintenance facilities. Construction, modernization and rehabilitation of workshop and hangar facilities.</p> <p>Training of managerial/ technical staff. Development of new/ improved management, financial, procurement and inventory control, maintenance etc., systems.</p>	<p>Quantity and types of systems installed. Numbers of container and cargo handling equipment. Details of modernization and rehabilitation of workshop and hangar facilities.</p> <p>Quality and number of managerial/ technical staff trained. Quality and numbers of new systems installed.</p>	<p>Periodic progress/ activity reports. Bank supervision reports. Summary records of contractors' provisional and final hand-over. Completion reports of borrower and Bank. Asset and equipment ledgers.</p> <p>Periodic progress/ activity reports. Bank supervision reports. Completion reports of borrower and Bank. Staff interviews. Technical assistance reports, feasibility reports, design reports etc. Quality of reports.</p>	<p>Adequate and timely budgetary allocations are made by the borrower. Effective monitoring, quality control and supervision by consultants and Bank.</p> <p>Adequate and timely budgetary allocations are made by the borrower. Effective monitoring quality control and supervision by consultants and Bank. Critical review of reports. Full counterpart staff and assistance provided.</p>
ACTIVITY	<p>Fulfilment of conditions of effectiveness. Establishment of PIU. Procurement of consultancy services. Establishment of data collection and benefit measuring and evaluation (BME) systems.</p> <p>Construction/ installation/ upgrading/ rehabilitation/ maintenance of airport runways, parking aprons, air traffic control systems, electronic beacons, navigational and radio aids, data processing and other communication and microwave facilities, meteorological equipment, approach lights, fire fighting equipment & crash and rescue vehicles etc. Construction/ rehabilitation of civil structures, roads, culverts and drainage facilities. Material and specification checks. Works supervision and control. Training. Release of co-financing. Studies. Delivery of equipment and machinery.</p>	<p>Preparation of bid documents for works and supply of goods. Invitation of tenders for works/ supply of goods. Evaluation of bids. Selection of suppliers/ contractor. Finalization of purchase order/ agreements/ contracts. Conditions of effectiveness and covenants. Completion dates & implementation schedule. Bar and PERT charts. Supervision and monitoring reports. Data collection and BME system.</p> <p>Implementation schedule. Bar and PERT charts. Supervision and monitoring reports. Specification and design standards. Test results. Unit costs of construction of runways (per running metre), parking apron (per sqm) etc. Unit cost of construction of civil structures (per sqm) and storage yards (per sqm).</p>	<p>Review of periodic progress reports. Review of progress as per implementation schedule/PERT charts. Review of establishment of data collection and BME system. Review of disbursements. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions.</p> <p>Review of periodic progress reports. Review of disbursements. Review of progress as per implementation schedule/PERT charts. Review of test reports. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions.</p>	<p>Promised donor funds are released in time. Borrowers counterpart funds provided in time. Timely land acquisition. All procurement actions are on schedule. Timely recruitment of competent consultants and contractors.</p> <p>Promised donor funds are released in time. Borrowers counterpart funds provided in time. Timely land acquisition. All procurement actions are on schedule. Timely recruitment of competent consultants and contractors.</p>
INPUTS	<p>Institutional and human resource inputs. Borrower financing. Donor financing. Grant financing. Technical assistance provided by donors. Training. Consultancy services. Executive agency/ consultant/ Borrower/ Bank supervision.</p>	<p>Implementation schedule. PERT charts. Budgetary allocations and fund releases. Disbursement applications/ statements. Supervision and monitoring reports. Training programmes.</p>	<p>Review of progress as per implementation schedule/PERT charts. Review of periodic progress reports. Review of budgetary allotments and release of funds. Review of disbursements. Review of supervision and monitoring reports of the executing agency/ consultants and the Bank. Bank missions.</p>	<p>Institutional strengthening measures proceed as planned. PIU with appropriate institutional capacity is put in place in time. PIU staffing proceeds unhindered. Conditions of effectiveness of loan are fulfilled in time. Timely land acquisition. All procurement actions are on schedule. Timely recruitment of competent consultants and contractors.</p>

Notes:

- The above items are only illustrative. Depending on the specific goals and objectives of the project, the selection of the applicable indicators would have to be made. The indicators will also depend on the capability of Borrowers and Executing agencies and their needs and priorities and have to be selected in consultation with them.
- A specific set of indicators and means of their verification have to be selected and tailored to the needs of each project, reflecting its objectives, outputs and inputs. Choice of indicators for each project will also involve trade-off among indicators themselves depending on the cost of information and data collection and analysis. In this process, the listed indicators and the means of verification could also be combined and/or rearranged.
- The selection of indicators and means of verification has to be accompanied by assignment of desirable numbers or target levels to quantify performance levels and the time frame.
- A clear identification of the means of verification is essential. The data sources and, to the extent possible, the names of agencies and the publications, tables etc., to be referred to would need to be identified. The expression "National Statistics" by itself would be inadequate in a specific project logframe. It has necessarily to be amplified and accompanied by identification of the compiling authority of the country and the specific section or series of National Statistics where the suggested indicator or data for its computation is available.

FIGURE 1

