



Public Private Partnership Support Facility

Risk Management Report

For the Period Ended Jul to Sep 2024

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1. EXECUTIVE SUMMARY

A. Status of PSF's update on the implementation of PPP fiscal risk assessment and updates to PPP Policy Board

The following section of the risk report explains the general form of the risk report, the content of the various sections, and

its implementation status based on the outline. The outline also highlights the need for further improvement in some key areas that are dependent on external factors. The report is addressed to its recipients within the PPP Framework, for examples PSF, PPP Unit, PPP Policy Board and the Board of PSF.

Table 1: Risk Report Outline

S.No	Process Outline/Objective	Status	Action Needed if any
1.	PPP Related Risk Issues/Methods	Under Implementation	In this section, any general matters which either explain a facet of PPPs in terms of risk related issues and/or methods which help in risk estimation etc. are to be outlined.
2.	Sectoral Coverage for PPPs	Under Implementation	This section is intended to demonstrate the general overview of various sectors in which PPPs are implemented. It covers an evaluation of the risks, potential and realized benefits engendered by PPPs within these sectors while effectively mitigating the observed risks.
3.	Project Wise Coverage for Projects approved by PSF Board	Under Implementation	This section provides recommendations for enhancing risk transference for the relevant stakeholders, namely the PSF BoD and the PPP Policy Board. Recommendations pertain to issues such as for instance, it's advisable for the GoS to prioritize the completion of its CPs prior to project implementation. Additionally, establishing well-defined KPIs to delineate performance expectations from

			private parties would contribute to a more comprehensive risk management approach.
4.	Affordability and Contingent Liabilities for PPP projects approved by PSF Board	Under Implementation – Needs refinement in information retrieval	Enhancing this process involves refining both the accuracy and promptness of data. The financial model held by the IA for ongoing projects stands as one of the most reliable data sources. Additionally, prioritizing high-quality IE reports further contributes to the reliability of information.
5.	Affordability/Contingent Liabilities for PPP portfolio as a whole	Under Implementation - Needs refinement in information retrieval	This process can be further refined by improving the timeliness and veracity of the data.
6.	Reflect the project costs as per RCF and RVA techniques so Cost and Schedule Over run is accounted for	Under Implementation – Needs refinement in information retrieval	This process can be enhanced by optimizing timely delivery of accurate data

B. Summary of the current risk report

This Risk Report serves multiple purposes such as:

- i. Highlights project-specific risks and elaborates upon risk mitigation measures already embedded in the projects' Concession Agreement, and suggests risk mitigation measures for risks assessed by PSF.
- ii. Provides a complete picture of fiscal commitments that the GoS may have to incur in the likely occurrence of the assessed risk events. These fiscal commitments include direct obligations, contingent obligations, and measures of affordability against available fiscal space.

2. SOME RISK CONCEPTS OUTLINE

Procurement Guidelines by ADB

The following is a summary of certain key requirements as per the ADB Guide on bid evaluation published in June 2018.

Procurement under-investment lending projects financed in whole or in part by an Asian Development Bank (ADB) loan or grant or by ADB-administered funds must be carried out in accordance with the policy, principles, practices, and procedures laid down in the Procurement Guidelines (2015, as amended from time to time) or the Procurement Regulations for ADB Borrowers: Goods, Works, Nonconsulting and Consulting Services (2017, as amended from time to time),¹ hereinafter referred to as “the Guidelines/ Regulations.

The policies applicable to procurement that have been incorporated in the Guidelines/ Regulations are derived from the provisions of The Agreement Establishing the Asian Development Bank (“the Charter”).

In accordance with the Guidelines/Regulations, ADB requires its borrowers or recipients of grants (hereinafter referred to as “Borrowers”) or their Project Executing Agencies (“Executing Agencies”) to submit a “Bid Evaluation Report” for ADB’s approval (as early as possible) prior to award of contract in case the contract is subject to ADB prior review. The project procurement plan specifies which contracts are subject to ADB prior review. The bid evaluation report and recommendation for contract award should be sent to ADB. For contracts subject to ADB’s prior review, the Executing Agency should furnish to ADB, at least 4 weeks prior to expiration of bid validity, three copies of the complete bid evaluation report together with a covering letter upon award of contract or as otherwise specified in the financing agreement.

Bid Evaluation Reports prepared by Borrowers, Executing Agencies, and their consultants (“Consultants”) in response to ADB’s requirements have often been inadequate in form and substance; in many cases, ADB principles and procedures for procurement have not been fully met or, in some instances, violated. In such cases, it becomes necessary for ADB to obtain additional information or to request clarifications and additional analyses after the receipt and initial review of the report.

Any report and recommendation of the consultant (if such consultant is funded under an ADB technical assistance or loan and engaged for the implementation of the project) should also be sent to ADB. If the Executing Agency and its consultants reach different conclusions and views regarding any matter affecting the selection of the lowest evaluated substantially responsive bid, such differences should be fully explained in the body of the report.

ADB is responsible, under the terms of its Charter, to **ensure that projects which it finances are carried out with due regard to “economy and efficiency.”** ADB shall ensure that the proceeds of any loan made by ADB are used only for the purpose for which it was approved, with due attention given to considerations of economy and efficiency.

The Guidelines/Regulations built upon these Articles to define six core principles to guide ADB’s procurement procedures and requirements: economy, efficiency, fairness, transparency, quality, and value for money.

All procurements financed or administered by ADB must conform to the above core principles set forth in the Charter and the Guidelines/Regulations. Further, ADB, being a public international, multilateral development finance institution, has an obligation to provide adequate, fair, and equal opportunity to supply goods, works, and services under ADB-financed or administered projects to interested and eligible bidders. If any of these core principles are not followed in the procurement process, including bid evaluation and contract award, ADB may refuse to finance that particular procurement and cancel the corresponding portion of the loan.

Bidding documents approved for ADB-financed or administered procurements should include the provisions necessary to satisfy ADB’s principles, practices and procedures. Evaluation of bids must be consistent with the terms and conditions stipulated in the bidding document. Fair, accurate, and transparent evaluation of bids is one of the most important aspects of procurement. Also, ADB must be satisfied that its objectives of economy, efficiency, transparency, and fairness among bidders have been met.

Purpose of Bid Evaluation

The main purpose of bid evaluation is to determine the lowest evaluated substantially responsive bid among the bids submitted on or before the bid closing date and time specified in the bidding document. In order to determine accurately the lowest evaluated substantially responsive bid in accordance with the terms and conditions of the bidding document, a logical systematic evaluation procedure designed to cover all aspects of the evaluation process as described in the bidding document should be followed.

ADB issues Standard Bidding Documents (SBDs) for different bidding procedures and for different types of procurement (Goods, Works, or Plant). It is assumed that the actual bidding document issued by an Executing Agency has closely followed the SBD issued by ADB for the particular type of procurement and bidding procedure.

There are certain principles and practices of ADB in a bid evaluation that must be clearly understood and observed in the bid evaluation process.

Clarification and Modification of Bids

No bidder will be permitted to modify its bid after the bids have been opened. Only clarifications, which do not change the substance or price of the bid may be requested or accepted by the Executing Agency.

Qualifications and Track Record of the Bidder

Only the qualifications and track record of the Bidder itself are considered in the evaluation, and not those of the Bidder's subsidiaries, parent entities, affiliates, or subcontractors, unless specifically permitted in the bidding document. For certain key elements or activities of required experience the bidding document may allow the required experience to be met by specialist subcontractors/manufacturers.

Lead Partner's project experience in terms of cost should be clear as to what nature of project and the corresponding cost submitted as part of the bid. Experience on key activities should be given, If lead Partner's similar projects submitted scope of work does not cover construction but is only building renovation work then it is not considered similar. Thus similar projects submitted may turn out not to be similar in scope.

Determination of Substantial Responsiveness of Bids

Bids without any deviations from the requirements of the bidding document are declared responsive, while those with deviations that are confirmed to be material or major are declared non-responsive. A bid is also considered non-responsive if any deviation on critical requirements of the bidding document or any condition stated in the submitted bid cannot be reasonably translated into monetary values for financial adjustment.

Substantial Responsiveness to Commercial Terms and Conditions

Key examples of **nonconformance to commercial terms and conditions, which are justifiable grounds for rejection of a bid**, are **inability to meet the critical delivery schedule or work schedule** clearly specified in the bidding document, where such schedule is a crucial condition with which bidders must comply or the inability to accept the price adjustment formula of the bidding document

Substantial Responsiveness to Technical Requirements in Procurement of Goods and Procurement of Plant (Supply Component)

All bids must be checked for substantial responsiveness to the technical requirements of the bidding document. Examples of **nonconformance to technical requirements, which are justifiable grounds for rejection** of a bid, are as follows:

- a) failure to bid for the required scope of work (e.g., for the entire works or a complete package or a complete schedule) as instructed in the bidding document and where failure to do so has been indicated as unacceptable;
- b) failure to quote for a major item in the package; **A major item is approximately 10 percent or more of the total bid price or is an item that, if omitted, makes the bid substantially incomplete**
- c) failure to meet major technical requirements (e.g., offering completely different types specified, plant capacity well below the minimum specified,);
- d) failure to submit type-test reports for critical equipment, as clearly specified in the bidding document.

Substantial Responsiveness to Technical Requirements in Procurement of Works and Procurement of Plant (Adequacy of Technical Proposal)

In works and plant contracts, the evaluation of the technical proposal and technical alternatives is intended to confirm to the Executing Agency that a bidder demonstrates sufficient understanding of the requirements of the contract, and **possesses an acceptable plan or strategy to complete the works within the required time.** An **adequate technical proposal should exhibit internal consistency among the required elements of the technical proposal covering the entire scope of work** as described in Employer's Requirements of the bidding document. These are the statement of work methods, including sourcing of materials, site organization, personnel and equipment mobilization schedule, and the construction and completion schedule.

Preparation of Tables of Substantial Responsiveness of Bids

The process of evaluation of commercial or technical details, bidders may again be requested to provide clarifications of their bids where such clarifications are deemed necessary. **Bidders are not permitted, however, to change the substance or price of their bids. Such clarifications and responses must be in writing.** The records of all clarifications sought and received must be kept by the Executing Agency responsible for bid evaluation.

Bid price comparison is usually the final and the most critical step in the bid evaluation process. Factors or other criteria not listed in the bidding document shall not be introduced during the bid evaluation.

Adjustment for Deviation from the Delivery Schedule or Completion

In principle, unless specifically stipulated as a basis for rejection in the bidding document, bids offering marginally different delivery or completion schedules should not be rejected. However, the bidding document should specify the time limits which are acceptable to the Executing Agency and the manner in which any price adjustment will be applied. The price adjustment for later delivery or

completion is calculated using the liquidated damages provision in the Conditions of Contract. Liquidated damages are intended to provide a clear, pre-agreed method of compensating the public sector for any loss or inconvenience resulting from a delay or non-performance by the private partner. These damages serve as a deterrent against delays and as a way to quantify the losses resulting from such delays, without the need for lengthy legal disputes. They ensure that the private partner has a financial incentive to complete the project on time and to the required standards.

The maximum limit for the price adjustment should normally be 10% of the bid price. Where bidders offer an **earlier delivery or completion schedule that results in the Executing Agency incurring additional costs** for storage, double handling, interest for early payments, early take-over, etc., the **price adjustment should be calculated on the basis of such costs. Any bid which requires a price adjustment in excess of 10% for late or early delivery should be considered nonresponsive and the bid rejected.**

Adjustment for Technical Compliance

Similarly, a **minor deficiency** in technical compliance should not be a cause for rejection of the bid. The cost of making good any deficiency, including replacing ineligible items with eligible ones, should be added to the bid price concerned. Rectification in the awarded contract of minor deficiencies, including replacement of non-compliant, missing, or ineligible items may be based on the evaluated price adjustments or the agency estimates for the items with minor deviations. Deviations are declared “minor” because their **costs “to be made good” can be estimated and are less than 10% of the bid price.**

The **final contract amount agreed between the Executing Agency and the successful bidder should not exceed the bid price** (as corrected for arithmetical errors, with discounts applied if offered, **and the amount to make good any minor deviations in the scope of supply and technical compliance**) **of the second lowest evaluated substantially responsive bidder.** The final additional amount to be included in the contract shall be agreed between the Executing Agency and the successful bidder during contract finalization. In proposing the additional amount, the Executing Agency should note the following: cost of making good the minor deviations should be included in the contract amount, provided that this cost **does not involve new items** that would constitute a violation of the Guidelines or of the Regulations, i.e., that “a **bidder shall not be required, as a condition of award, to undertake responsibilities for work not stipulated in the bidding documents or otherwise to modify the bid as originally submitted**

Maximum Amount of Adjustment for Deviations

In some cases, bids contain so many deviations requiring adjustments to the bid price such that the total value of all adjustments constitutes a large percentage of the bid price. In such cases, each deviation by itself may be considered minor but both the number of deviations and their total value make it necessary to consider the bid nonresponsive as a whole. In other instances, adjustments for

only one or a few deviations have a relatively high monetary value, as would be the case with deviations regarding retention money or liquidated damages. It is, therefore, useful to adopt a percentage of the bid price as the maximum amount of adjustments which can be made without considering the bid nonresponsive. **Fifteen percent of the bid price is considered an appropriate limit for the total monetary value of all adjustments to the bid price; if the total exceeds 15% of the bid price, the bid may be rejected as nonresponsive.**

If the bid contains several deviations, it is useful to review what major adjustments will be necessary before calculating all other adjustments. Such review may show that the total adjustments would exceed the limit, in which event, the bid can be rejected before carrying out a more detailed price evaluation.

Detailed Evaluation of Bids for a Civil Works Contract.

To verify whether the bid price is reasonable. An **unreasonably low bid price may reflect the bidder's misunderstanding of the specifications** and, accordingly, this bidder may incur substantial financial losses and **fail to complete the work satisfactorily if awarded the contract.** To determine the reasonableness of a bid price, it is necessary to consider all circumstances affecting the bid.

Where bidding documents require the bidder to provide drawings and/or a breakdown of the price of any bid item in support of its unit rate or price for that item, any component that is missing from the drawings and/or the breakdown of the price of a bid item shall be loaded during evaluation for the price of the missing component. This adjustment, however, needs to be specifically provided in the bidding document.

A bid is considered unbalanced if the unit rates in relation to the estimate and the rates quoted by other bidders are substantially higher for certain items of work, and lower for others. This becomes an issue when the items with substantially higher rates are those to be performed early in the contract or for possibly underestimated quantities. In this case, a bidder may purposely quote high unit prices for those work elements to be performed early in the contract period so as to increase the early payments. The same situation can arise in some supply, delivery, and installation contracts. This results in a higher cost for the Executing Agency (i.e., interest on early payment) and more importantly, the incentives for the contractor to complete the works are considerably reduced since the payments the contractor will receive during later phases of the contract may be smaller than the actual costs.

Confirmation of Qualifications and Recommendation for Contract Award

As a final step prior to award, the Executing Agency should always ensure that the bidder whose bid has been evaluated as the lowest evaluated substantially responsive bid has the **financial and technical capability or qualifications to execute the contract satisfactorily**. If this is established,

the contract shall be awarded to the bidder who submitted the lowest evaluated substantially responsive bid.

Award of Contract

The Bid Evaluation Report should include such information and documentation to establish to the satisfaction of ADB that the results of the evaluation are consistent with the procurement arrangements provided in the financing agreement, and the methods and procedures indicated in the procurement plan. When so established, it may be concluded that the bidding, the bid evaluation process, and the proposed award of contract abide by the principles embodied in the Guidelines or the Regulations Key ones are that the transparency of the bidding process has provided adequate, fair, and equal opportunity to contractors from all the eligible member countries of ADB; and the principle of “economy and efficiency” has been applied in the bidding and in the bid evaluation process by establishing the lowest evaluated substantially responsive bid.

The principle of "economy and efficiency" in ADB procurement refers to ensuring that the procurement process achieves the best value for money while minimizing waste and optimizing resource use. This principle emphasizes **achieving the desired outcomes of the project at the lowest possible cost without compromising quality or effectiveness**. It aims to ensure that the goods, **works, and services procured are delivered in the most cost-effective and timely manner**.

The resources (financial, technical, and human) allocated for the project should be **used efficiently, avoiding over-expenditure and ensuring that the project is completed within its budget**. Ensuring that **project milestones are achieved on schedule is a key part of maintaining both economy and efficiency**. Delays can lead to higher costs and inefficiencies. In Practice the economy and efficiency principle is applied at every stage of the procurement process, from planning and bidding to execution and monitoring.

Cost Drivers of Infrastructure Project

The following is a review of cost overrun drivers. It provides a reference to evaluate which kind of cost drivers are controllable and which are not in the context of project management throughout the project life cycle.

Reducing cost is a critical objective for project teams. However, unlike the research on topics such as cost overruns, cost reduction literature is limited. It is **necessary to identify specific actions that project teams can take to reduce cost**. It focuses on cost drivers, which project team members can actually reduce, i.e., **controllable cost drivers**. Public bodies aiming to reduce the cost of infrastructure projects should put **more emphasis on benchmarking project teams members' effective cost reduction practices associated with the controllable cost drivers**.

Budget adherence topics have dominated infrastructure project literature, and consequently **almost all cost driver studies focus on how they can reduce estimate inaccuracy rather than reduce actual cost**. The paper produce a taxonomy of 14 key cost drivers. A conceptual framework (two-by-two matrix) of cost driver types was developed to acknowledge the influence project teams can have. The practical contribution is a deepened awareness of the key opportunities for - and threats to - cost reduction for project teams, as well as a knowledge of those cost drivers that they actually have an influence over, i.e., to reduce their project's cost.

Privately funded infrastructure projects (e.g., railways, energy generation, etc.) **must be delivered cost-effectively as for investors to get a return on investment and to create value for shareholders**. For publicly funded infrastructure projects, a return on investment is not always possible (e.g., bridges or roads without tolls), and thus **public bodies must be able to reduce costs "to ensure that taxpayers and consumers get more for less" (HM Treasury 2014 p. 3), i.e., value for money for the public**.

In the UK, for instance, the infrastructure cost initiative aimed to reduce the delivery cost of the UK's infrastructure project portfolio with a focus on pre-execution improvements (HM Treasury 2014; HM Treasury and Infrastructure UK 2010a; b). These reports highlighted several cost reduction strategies including **effective governance, improved infrastructure pipeline visibility and certainty, increased front-end definition, and whole life planning, which were effectively implemented**.

Most studies in the realm of cost and/or schedule reduction are on the quantitative models side, aiming to better their ease of use in practice. This is supported by Bilge and Yaman's(2022) recent review, which **emphasized schedule and cost optimization (i.e., models) as one of the biggest construction management research trends of the past 20 years**. Indeed, these digital

tool approaches to cost reduction have proven to be of considerable benefit in industry and are paramount in this sustainability-conscious age (Forbes 2023).

Cost drivers can have a direct or indirect impact on a project's cost. There is a dichotomy in how researchers view cost drivers those who observe direct cost impacts and those who observe the cost impact of infrastructure project characteristics. **The former group considers the high-cost areas of the bill of quantities (BoQ) to provide cost drivers, whereas the latter describe features - physical or otherwise - of the project that cause the project to be costly.**

Cost drivers are not the same as cost overrun drivers, but cost **overrun drivers that have a substantial impact on actual cost are cost drivers**. Flyvbjerg et al. (2018) note that the **drivers of cost overrun come under root causes and causes**. The former entails human bias or psychological or political impacts which leads to inaccurate cost and time estimation (Flyvbjerg2006). These are **not cost drivers because they significantly affect budget accuracy rather than actual cost**. In contrast, the latter describes **factors such as scope changes and client competence which can be considered cost drivers since they have a strong influence on total actual cost**.

The taxonomy of infrastructure project cost drivers highlights 14 level 1 cost drivers, presented in order of most common in literature: Although these cost drivers are applicable across infrastructure projects, they must be prioritized on a case-by-case basis.

As seen in the taxonomy in **Annexure 4**, **cost driver explicit sources mainly recognized *materials (specifically total direct cost), labour, schedule (specifically the total duration), regulations, and size of infrastructure and/or its components* as the fundamental level 1 cost drivers**. In contrast, cost driver synonym sources have considerable focus on ***project team cohesiveness, contract and procurement, and rework and additional work, also acknowledging materials (specifically inflation and shortages), uncertainty and complexity, schedules (specifically delays), and economy (specifically inflation)***.

Cost driver explicit sources tend to focus on the **planned/measurable totals of the project that strongly influence the overall project cost**, which could be considered the “traditional” view. Cost driver synonym sources, however, tend to focus on the **unplanned/hard-to-measure hindrances of the project that can cause a substantial deviation from the forecasted variables; high-cost hindrances identified in cost driver synonym sources could be considered cost drivers alongside the measurable totals**. This is a forward-looking view of cost drivers since it widens the set of cost drivers to be considered.

		Definition dimension <i>Do the project team define the cost driver's occurrence or impact in planning?</i>	
		Defined	Undefined
Control dimension <i>Is the cost driver's actual cost impact under the control of the project team?</i>	Controllable	FLEXIBLE	ERROR-INDUCED
	Uncontrollable	FIXED	UNFORESEEABLE

Fig. 1 - Control/definition matrix of cost driver types

Towards conceptualizing cost drivers

This section presents a conceptual framework: a control/definition matrix of cost driver types (Fig. 1). For the **control dimension**, the project team itself has the ability to reduce (or increase) the cost / cost impact associated with the cost driver. For the **definition dimension**, if a cost driver's occurrence or impact is able to be defined by the project team, i.e., in planning/front-end stages, or not. There is a rich body of knowledge highlighting that poor planning by the project team is a key contributor to errors.

For added clarity, the authors have defined the four different types of cost driver as follows, also highlighting how the ability to reduce the cost associated with each type lessens:

1. Flexible (FL) cost drivers are able to have their **actual cost impact controlled by the project team and they are defined in planning**. The project team has a direct influence in these, so their **actual cost reduction is the most accessible of the four types**. For *uncertainty and complexity*, however, the **actual cost impact is indirectly reducible**; this is referred to as **"known unknowns"**, where risk management is able to mitigate the specific effects of this cost, thus making it flexible.
2. Error-induced (E) cost drivers stem from **lack of definition by the project team. Better front-end definition could reduce their occurrence or severity**.
3. Fixed (FI) cost drivers are defined by the project team but **the project team cannot reduce their cost impact; it is "fixed in place"**.

4. Unforeseeable (U) cost drivers are **not controllable by the project team and, omitting contingencies, are not defined in planning**. Their cost is therefore the most challenging for the project team to address. Some of these cost drivers are still on the “known unknowns” spectrum as the project team are aware that they (will) impact actual cost **and so conventional risk management can apply**. For others, it is impossible to control or even be aware of them impacting actual cost, akin to that of “unknown unknowns”. Although unknown unknowns take greater effect on projects with a higher degree of novelty (again emphasizing a case-by-case assessment of cost drivers), project teams can respond to unknown unknowns by establishing a culture of continual and flexible adjustment / adaptability in planning and testing multiple solutions simultaneously to identify the appropriate response.

The matrix’s dimensions and types were conceived based on the cost drivers from the taxonomy. This research would therefore be incomplete if each cost driver in the taxonomy was not assigned a type, so Annexure 4 is presented. Some FL, E, and FI cost drivers in the table have also been assigned a U. For the FL/U and E/U cost drivers, this accounts for the fact that projects are guaranteed to entail circumstances that cannot be defined and are out of the project team’s control, which can be due to, e.g., supply chain issues, existing conditions, weather, or stakeholder influence. For the FI/U cost driver, exchange rates, it refers to the defined (at the time of planning) but fluctuating nature of exchange rates.

The **cost reduction of each controllable cost driver (i.e., flexible or error-induced) can take place in either the planning stages or execution stage of projects**. Cost reduction research has more value if contextualizing the former since **all of the controllable cost drivers’ actual cost is more significantly reduced with good front-end definition rather than good execution**. This could be termed “reducing actual cost in planning” going forward; “reducing the cost estimate” can be misleading in the topic of cost reduction due to its association with reducing estimate inaccuracy rather than outright reduction of the estimate.

A research question relating to *project team cohesiveness* and *labour* could consider how, in the cases where poor competence/collaboration of project team members or competence/productivity of the labour workforce may be unavoidable in the execution stage, how can costs be controlled? For *health & safety*, it is surprising that research on mental wellbeing is an area that is considerably lacking in project management to this day let alone its relationship with cost reduction. Researchers must particularly strive to identify what is (not) done by project team members and/or organizations to ensure cost associated with

mental health/wellbeing is controlled, acknowledging that health & safety assurance is arguably the most important duty for infrastructure project teams. Noteworthy, this research stream applies to the planning stage as well as execution.

There are eight cost drivers that can have their associated actual cost reduced in planning and require further research: *project team cohesiveness, contract and procurement, materials, labor, uncertainty and complexity, socio-political stakeholders, schedule, and equipment and plant.*

1. Selecting competent, productive, and collaborative personnel is a significantly important part of planning and cost reduction. The question is: how is the optimal balance of personnel cost and achieving project objectives determined when selecting project team members and/or labour? This requires examination of cost- schedule trade-offs i.e., by focusing on “cost-competence” trade-offs.
2. *Contract and procurement* researchers generally agree that incentive mechanisms and partnering/alliances have a positive correlation with (cost) performance as compared to non-relational contracts. However, more clarity is required on how procurement strategies are formed in the ever-evolving project setting. Cost certainty between owner and contractor in contract and procurement strategies is relatively understood, but how are **contract or procurement strategies selected in terms of ensuring costs are as low/controllable as can be for a particular project?**
3. *Materials and equipment and plant* are similar cost drivers in that they are strongly influenced by supply chain management. The substantial complexity associated with coordinating the supply chain can be alleviated with systems integrators / integrated teams, known to benefit cost. There is a need to examine **tacit knowledge gained by project team members in their cost-efficient selection of materials or equipment and plant.** This places a necessary focus on the people that manage projects and can advance knowledge management.
4. *Uncertainty and complexity*, directly linked with risk and its management, is a cost driver that continues to be highly researched in project management. However, with risk

management continuing to receive inadequate investment in the front-end and ambiguity surrounding uncertainty and complexity researchers should consider why this is the case and focus on what project teams do in planning to sufficiently define projects whilst controlling/optimising the associated costs.

5. The importance of *socio-political stakeholders* as a cost driver cannot be underestimated in planning. Social and political groups have the power to terminate projects, not least cause delays, therefore assessing the influence of and gaining support from these parties is paramount. This cost driver has not been fully explored; researchers have tended towards examining engagement processes with socio-political stakeholders that positively correlate with cost, with much to be learnt on the micro level, e.g., engagement practices with stakeholders in planning to reduce cost.
6. **Schedule is a cost driver influenced by duration and delays. Reducing/optimising the project duration using models such as the critical path method falls under a mature area of project management knowledge.** There are also delays, which are in many cases traced back to planning stage errors of the project team. Delays have already been studied to **mitigate their occurrence and impact** but their prevailing influence on cost in complex projects again necessitates a deeper knowledge of risk management (Morris 2022; Sanchez-Cazorla et al. 2016).

There is also a need to identify cost reduction solutions that are socially and environmentally responsible, i.e., they do not fall into the “dark side” of project management such as modern slavery (Alzoubi et al. 2023) and corruption (Locatelli et al. 2017b).

The project setting, its actors, interactions within the project team, and the range of planning and management considerations that were or were not adequately addressed can be utilised to study actual cost reduction. This could be studied with the aim of benchmarking - i.e., the identification and implementation of exemplar practices of others to self-improve, and to compare and contrast practice across multiple projects. Moreover, taking a project-as-practice approach can provide insightful findings about what project team members actually do to reduce cost

Construction Safeguards for Timely Execution of Project

This write up describes construction safeguards and explains the process in terms of

1. WBS/ Activity Definition
2. Scheduling (Planning and Scheduling)
3. Use of software for planning, scheduling & control of projects
4. EVMS

ACTIVITY

A common technique used to understand and organize complex undertaking is to break the project into smaller pieces. This technique is used both planning and estimating. **Each activity is a discrete task. Activities should be only be specified as per level of management.** Usually for planning purposes activity doesn't exceed from 25 days, if exceeds may be divided into further components. The activities must have four characteristics; An activity must consume time. It usually consumes Labour, Material or Equipment resources. It represents a definite scope of work i.e. Starting and Ending point in time and lastly the progress towards completion of activity's scope of work must be measureable

One of the most important steps in planning a project is estimating the time required to complete each activity. The duration of each activity is a function of quantity of work and work production rate. Work production rates are based on planned composition of labor and equipment used to perform the task. Careless estimates of production rates may cause un economical use of personnel, materials, equipment and time. When the project bid estimate is prepared, the estimator **calculates the quantity of material that must be put in place and assumes a production rate to get the cost of each work, which is based construction method and technique.** All Activities in a schedule should have same unit of time, which may be in months, weeks, days and hours.

For example In estimating a five storey office building, it was determined that 480 light fixtures would be installed on each floor. The production rate of Five fixtures per man hour may be used for installation. The company has five electrician. The normal working day will be 8 hours. If the cost of one fixture is 1500 PKR and electrician takes around 1500 PKR per 8 hour working day. Then, considered 5% breakage of fixtures during installation, duration for the activity can be calculated as follows

Production Rate: 5 fixture x 5 electrician = 25 fixtures per man hour

1-man hour

Activity Duration = 480 fixture x 5 floors = 96 hours

25

Activity Duration = 96 hours = 12 day

8 hours

Work Breakdown Structure (WBS)

To be able to perform an **accurate estimate of the project targets** it is **very pertinent to divide project into manageable sets of components or activities** called as (WBS) of the project. Patrick (2003) defines WBS as “**a hierarchical system that represents the total project scope in increasing levels of detail to define, organise, and display the project work in measurable and manageable components**” WBS is a preliminary document that provides the basis for planning and managing project schedules, costs and resources.

The number of activities in the WBS grows quite rapidly and it is not unusual that a large construction project is broken down into several hundreds of activities. **A work package is a task at the lowest level of the WBS**

There is no specific rule about which level of detail a WBS should have but a low level of detail may result in insufficient detail for effective planning, whereas a too high level of detail may become unmanageable and increase planning costs. **It is generally the case that the WBS is poorly detailed rather than too detailed.** According to Jackson (2004) the **level of detail should correlate with the control level desired, i.e. to have enough activities and just the right amount of detail so that the work-flow effectively can be monitored and managed.**

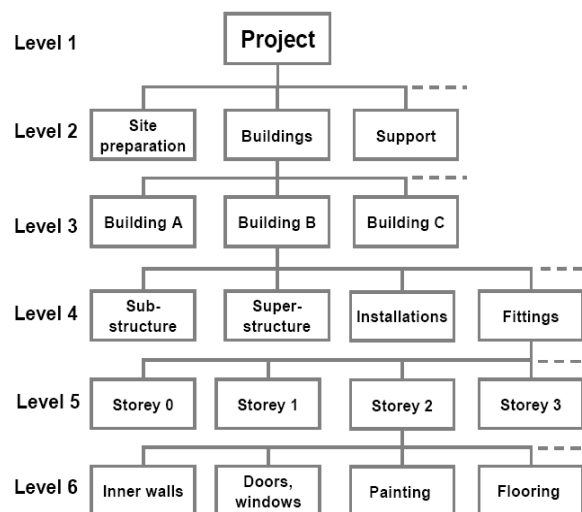


Fig. 2 A proposed WBS for an infrastructure project (multi-storey building project).

WBS is **finalized by assigning each work package to a control account** and establishing a unique identifier for that work package from a code of accounts. These **identifiers provide a structure for hierarchical summation of costs, schedule, and resource information.**

Project Planning:

Process of identifying **all the activities necessary** to successfully complete the project is called project planning.

Project Scheduling:

Process of determining sequential order of planned activities, assigning realistic duration, to each activity and determining start and finish dates of each activity is called project scheduling.

Project planning is prerequisite to project scheduling because there is no way to determine the sequential order of activities until they are identified. The Objectives of project scheduling are to finish project on time, finish project within cost, ensure continuous (uninterrupted) flow of work, reduce amount of rework, minimize confusion and misunderstanding, increased knowledge of status of project to every one (including management).

Thus scheduling helps in improving knowledge of distribution of costs of project, accountability of people / defined responsibility and clear understanding of who does what, when and how much, and ensure optimum use of resources.

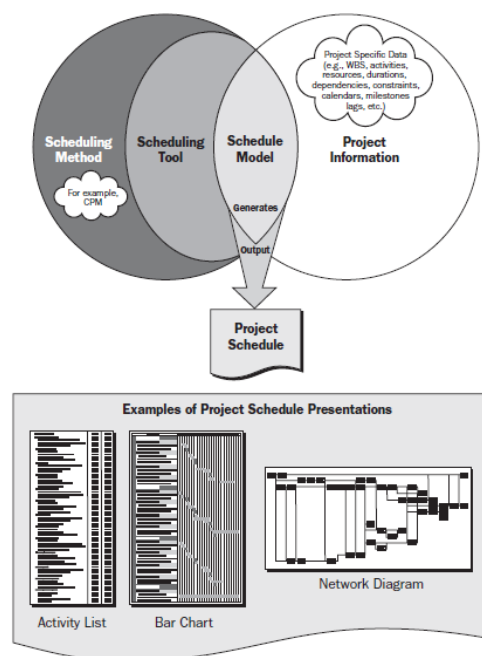


Fig. 3 A Project Scheduling Outcomes

IMPORTANCE OF ACCURATE ESTIMATES

Inaccurate time estimates can result in unrealistic schedule, Inaccurate time estimates can result in inefficient use of resources and late delivery. Inaccurate cost estimates can result in insufficient budget being allocated, or excess budget being set aside for the project when it could be used for other projects. If the cost or benefits estimates are inaccurate this can lead to incorrect decisions about proceeding with the project being made.

TECHNIQUES FOR SCHEDULING

Techniques used for scheduling depends upon the type, size, complexity, duration, personal and owner requirement. It is preferred to use a simpler technique which is simple to use and easily interpreted by all project participants. There are two general techniques which commonly used for planning and scheduling.

Bar Chart (Gantt Chart):

It is the graphical representation of Time (X-axis) and Activities on Y-axis, so that the status of project may be visualized and controlled.

Net work analysis system (CPM and PERT):

It is the **schematic representation of various activities. This method calculates the minimum completion time for a project along with start and finish time of project activities.**

Software application:

(MS Project, Primavera, Pertmaster, Risky Project.

Critical Path Method

The Critical Path Method is a method where **activities are arranged based on interrelationship**. It is a planning and control technique that allows effective scheduling and controlling. One of the most important features of CPM is the logic diagram which portrays the relationship between project activities.

BASIC DEFINITIONS OF CPM TERMS

Activity:- The performance of a task required to complete the project e.g. foundation design, contract document, RCC form work, pouring of concrete.

Network:- A diagram to represents the relationship of activities to complete the project.

Duration:- The estimated time required to perform an activity.

Early Start (ES):- The earliest time an activity can be start.

Early Finish (EF):- The earliest time an activity can be finished.

Late Finish (LF):- The latest time an activity can be finished.

Late Start (LS):- The latest time an activity can be started without delaying the completion of project.
($LS = LF - D$)

Total Float (TF):- The amount of time an activity may be delayed without delaying the completion date of project. Mathematically, $TF = LF - EF = LS - ES$.

Critical Activity:- If total float for an activity is zero, activity is called critical activity.

Critical path is a longest path in terms of time unit in a network, which gives minimum overall duration to complete the project.

Rules:

1. EST is some reference time, normally $EST = 0$ at the start of the project / work. $EFT = EST + \text{Duration}$.
2. Each activity is followed by a predecessor and successor except start and finish activities. Any starting activity must have predecessor none, or finish activity must have no successor.

PROGRAMME EVALUATION AND REVIEW TECHNIQUE (PERT)

PERT is an inherent planning technique forces the manager to develop a comprehensive plan and allows realistic scheduling. The procedure for monitoring, forecasting and simulating allows the manager to respond quickly to unexpected changes in the project, detect trouble areas early and evaluate proposed alternative courses of action.

PERT also helps to evaluate alternatives at any time during projects duration by looking effect of each change on its completion date. *PERT also helps to simulate the project time & cost and effects of alternate decisions.*

RESOURCE HISTOGRAM

It is a graphical representation of time on X-axis and resources on Y-axis. It is a view of project data in which resource requirements, usage, and availabilities are shown against a time scale. The personnel, equipment, materials, and services needed to complete tasks in a project are resources

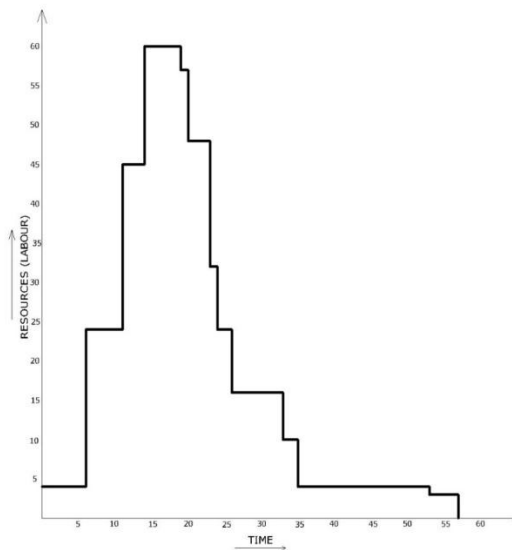


Fig. 4 Resource Histogram

Types of Resource Histogram include, Labor Resource Histogram, Material Resource Histogram, Equipment Resource Histogram, Cost Histogram

PROCEDURE FOR RESOURCE LEVELING

1. Plan and Schedule project activities.

2. Construct a Network for the project.
3. Mark Critical Path (CP).
4. Construct the Bar Chart for the Project.
5. For each working day show resources of each activity at their respective duration on Bar Chart.
6. Sum up the total resources vertically for each working day.
7. Plot the histogram for the resource.
8. Mark the sudden drop or rise in resource histogram.
9. Utilize the total float available for non critical activity to level the resources by hit & trial method.
10. Recheck the leveled histogram and prepare a new schedule of work / execution.

Table 2: EXAMPLE-CONSTRUCTING COST & LABOR HISTOGRAM

Activity	Duration	Pred.	Labour (Per Day)	Total Cost of Activity	ES	EF	LS	LF	Float
A	6	None	4	PKR60,000	0	6	0	6	0
B	20	A	8	PKR400,000	6	26	15	35	9
C	5	A	12	PKR100,000	6	11	6	11	0
D	8	A	4	PKR240,000	6	14	17	25	11
E	10	D	10	PKR300,000	14	24	25	35	11
F	14	C	10	PKR280,000	11	35	11	35	0
G	8	C	3	PKR320,000	11	19	45	53	34
H	12	C	20	PKR360,000	11	23	31	43	20
I	6	B, F	9	PKR180,000	14	20	37	43	23
J	10	E, H	6	PKR400,000	23	33	43	53	20
K	18	G, I, J	4	PKR180,000	35	53	35	53	0
				PKR 2,820,000					

EARNED VALUE MANAGEMENT SYSTEM (EVMS)

EVM is a project performance measurement technique that integrates scope, time, and cost data. Given a baseline (original plan plus approved changes), you can determine how well the project is meeting its goals. You must enter actual information periodically to use EVM. More and more organizations around the world are using EVM to help control project costs.

It's a Management Tool. Used for project status: (1) previous work accomplished and (2) where the project was planned to be. Early warning system to detect deficient or endangered progress.

Why Use EVMS?

EVMS ensures a clear definition of work prior to beginning that work, Presents a logical plan for accomplishing the work, Provides an objective measure of accomplishments, Early and accurate identification of trends and problems. Accurate picture of contract status, cost, schedule, and scope. Basis for course correction. Supports mutual goals of contractor and customer bring project in on schedule and cost **and allows managers to take corrective action.**

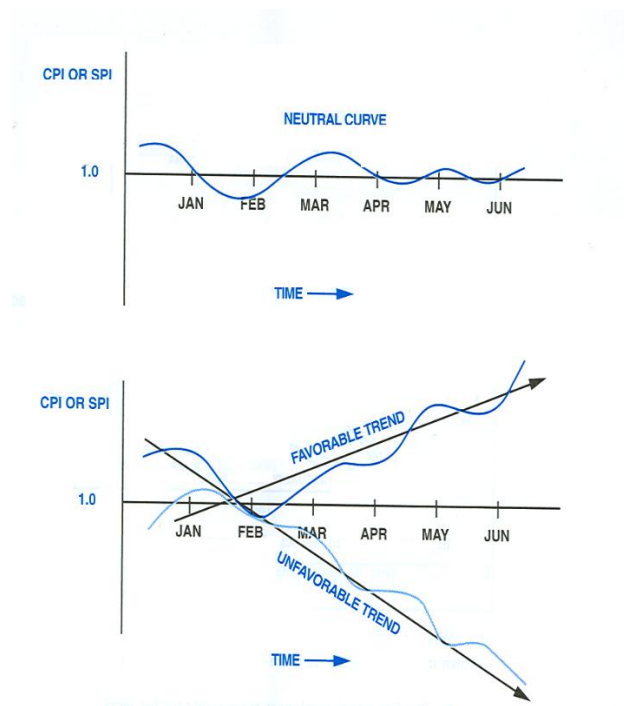


Fig. 5 Application of EVM

Critical Ratio (CR):

This indicator combines both the cost performance index (CPI) and schedule performance index (SPI) to represent the project status. **Critical Ratio (CR) = SPI x CPI**

Project Status (PS):

This indicator is the average of both the cost performance index (CPI) and schedule performance index (SPI) to represent the project status. Project Status (PS) = $(SPI + CPI)/2$

Schedule Variance in Time (SV.t) Variance in Schedule at a particular time on project timeline. Schedule Variance in time (duration) = $(SV \times T) / BAC$

Earned Schedule (ES).

The measure of work performed in terms of schedule as on status date Earned Schedule (ES) = $T - SV(t)$

Longstop Date

Longstop is the date after which a private party is released from the contract if they can't complete.

Evolution of PPP Model in India and Inherent Safeguards

This write-up focuses on Insurance, Performance Guarantees and Reserve funds as inbuilt mechanisms to protect government contingent fiscal commitments.

Public Private Partnership (PPP) was introduced in India as a viable project implementation mechanism to meet the growing demand for new and better infrastructure services. Rise of non-performing assets accompanied by high risk at various stages of PPP made government adopt Engineering, procurement, and construction (EPC) contracts.

Based on poor performance and failing to meet the deliverables of EPC projects, a Hybrid model based on PPP and EPC is necessary. Within the PPP modality a number of mechanisms exist for more effective project management. Some of these safeguards are not frequently utilized, however their utility is described as follows.

One of the essential features of a PPP is to transfer the responsibility and inherent risks of the life-cycle cost of the project. Both construction cost and life-cycle cost risks are transferred (potentially with exceptions) to the private partner. It will therefore be the first party responsible to absorb a loss due to accidents or any event that may affect the physical asset/project, including the costs necessary to re-establish its physical state to the specified state or to meet the specified service requirements.

An important step for conducting a quantitative VfM analysis is to turn the raw PSC into an adjusted PSC to permit a fair comparison. The adjusted PSC typically involves changing the costs so they incorporate the risks that the government retains in the traditional procurement (and would be transferred to the private partner under a PPP model). The risk adjustment is justified because the two cash flows need to reflect, as far as possible, identical risk profiles from the government's perspective. For example, if the construction risk is transferred to the private partner under the proposed PPP scheme, the PSC needs to reflect the risks related to bearing the construction risk, and the economic consequences of possible construction cost overruns should be added to the PSC.

Insurance

However, certain risks events are retained or are shared, especially those regarded as force majeure where the infrastructure is damaged resulting from wars, riots, and natural catastrophes. Typically, the private partner is required to obtain and maintain insurance policies with respect to loss and damage due to accidents and force majeure events.

These policies should cover the losses up to a minimum amount prescribed in the contract. The government is indirectly protected by the insurance package, as the amount received under the insurance policy will be deducted from the compensation payable by the government in respect of such an event. In general terms, the government should not rely entirely on the ability of the private partner to self-insure certain risks, so the prescription for a minimum insurance package is common practice in all PPP contracts.

Insurance should cover not only losses due to physical damages (“all risks insurance”), but also losses due to third party claims (third party liability insurance) that may result from these events and losses due to delay in start-up or business interruption insurance.

Performance guarantees

Main guarantee for the procuring authority is represented by the equity invested by the private partner; this capital is directly provided, and it is the first level of capital at risk of performance and compliance (with debt generally only being at risk if the equity has been exhausted). The private partner is required to provide and maintain a performance guarantee which is usually irrevocable and executable on demand (typically in the form of a bond or a letter of credit).

The use of such a guarantee is to **fund any penalty accrued by the private partner as well as any other loss or cost necessary to re-establish operations or to rectify a breach. When the guarantee is executed (in full or partially), the private partner will have to renew the amount of the guarantee.**

The guaranteed amount may vary depending on the country practice. In the majority of projects and countries, it usually ranges from 2 to 4 percent of the total Capex estimated at the inception of the contract. Typically the amount of the guarantee is higher during construction than during the operations period (for example, 4 percent during construction and 2 percent during operations). **It is common for the amount of the guarantee to be increased yearly by the CPI or another general index.**

Reserve Funds

The private partner **will have to plan** the renewals and major maintenance works that will have to be made during the life of the contract. This requires financial planning, progressively allocating the funds to a specific reserve fund (the “renewal investment fund reserve”) in advance of when they are needed to accomplish the renewal investments.

The means **to fund reserves is part of the financial plan provided at bid submission, and it is likely to be further adjusted at financial close.** It is good practice to establish limits and regulations as to when these reserve funds can be used. Typically, any use of these funds other than for renewal or major maintenance investment requires specific authorization from the procuring authority.

SECTORAL COVERAGE

Transport, Road and Motorways Sector

To date, GoS has 6 ongoing road project, three of which have achieved construction completion, namely Hyderabad Mirpurkhas Dual Carriageway, Jhirk Mulla Katiyar Bridge Project and Karachi Thatta Dual Carriageway Project. Three further projects are under construction, these include Ghotki Kandhkot Bridge Project, Link Road Project and Malir Expressway Project. PSF has reviewed three of these projects since 2019 and two of these namely Ghotki Kandhkot and Malir Expressway were conditionally approved by PSF Board subject to compliance with E&S safeguards. ADB has however dropped these from the priority list of projects to be undertaken under PSF.

Education Sector

Education Management Organization (EMO) reform is one of the GoS initiative focusing on the objectives of improved access and governance, better quality education and effective utilization of public resources. For this purpose, the operation and management of selected public schools/institutes is outsourced to credible and experienced private sector parties to make them helpful in achieving the targets as set out in Key Performance Indicators (KPI) framework based on the objectives of the EMO reform.

The PPP Support Facility (PSF) has, to date, approved funding of 211 schools and 3 (three) Teacher Training Institutes (TTIs), which were outsourced under 8 rounds of procurements, amounting to PKR 19,743 million in terms of nominal value. However, one of the operators of the TTI project requested to withdraw his offer to operate the GECE Sukkur which turned the project comprising 2 (two) TTIs lowering the project amount to PKR 19,113 million.

During the current quarter, the Board of PSF approved the structure for Girls' Elementary Schools (rehabilitated under JICA assistance program) to be outsourced to EMO. The project aims to enhance girls' access to post-primary education in Sindh. The project will be implemented in selected 54 Girls Elementary Schools. In the first phase, the procurement process of outsourcing the management of 19 out of 54 schools has been initiated. Hopefully, the procurement process will be completed in few weeks and the cost of the project (first phase) will be made part of the next quarterly report.

The overall risk profile of the project is low as PSF is of the view that the Concession Agreements have satisfactorily allocated the perceived risks between the Government and the private parties which might be got further mitigated if implemented with true spirit.

Table 3: Education PPP (number of institutes and funding)

Education PPPs	# of Procurements	# of Schools	Funding Approved (Rs. In mn)
EMOs- SBEP	7	211	18031.249
TTIs	1	2	1082.287
EMOs-JICA	1	19	TBD

Health Sector

GoS has initiated numerous health projects under PPP modality which included operations and management of health facilities through Health Management Organizations, outsourcing security and safety services at National Institute of Child Health (NICH), operation and management of Regional Blood Centers (RBCs) etc.. PSF has reviewed all of the aforementioned.

PSF has principally approved the structure of the health sector project to procure a management contract with a credible private partner for provision of safety and security services at Jinnah Post Graduate Medical Centre (JPMC) Karachi. The PSF Board, in its meeting held on 17th January 2023, approved to fund the project with some advice to review and explore an option if the salary of human resource under this project may be sorted out from VGF (old VGF).

The Health Department constituted a Technical and Financial Evaluation Committee (TFEC) to launch the JPMC project. The TFEC, in its first meeting, proposed some changes in the structure of the project and asked the consultant to prepare the final draft of project documents based on the revised structure. PSF has asked PPP-Unit and PPP-Node of the health department to share the changes for assessing whether they might be considered substantial changes. In that case, PSF Board will be presented the changes to get their approval accordingly.

Minutes of the meeting is in process of signing by TFEC member, RFP to be launched soon after minutes are signed from all members.

Apparently, a potential financial risk may be faced by the project due to the delay in the procurement process.

PSF Board, in its meeting held on 14 July 2024, also approved another health sector project i.e. Outsourcing the management of RBC Jamshoro for its funding from EPPP. PSF informed ADB about approval of the project and shared with them all the relevant documents for seeking the endorsement from ADB. The project cost is estimated as PKR 5,719 million out of which PKR 3,059 million will be funded from EPPP with effective date from April 2028 to December 2024.

The project has been operated by private partners for more than six years. Based on the progress evaluation reports by the Independent Expert, the project may be categorized, overall, at low risk.

Water Supply Sector

The Government of Sindh is working on multiple projects for the supply of water transmission, filtration and distribution. These include Nabisar Vajihar project (under construction) TP1, (Feasibility completed), TP4, 5MiGD Desalination Project, 65 MiGD water supply project.

Table 4: General Risks of PPP Projects

Ongoing projects / Under Development	General Issues/Lessons from projects
Road Construction Projects <i>Malir, Ghotki,</i>	• Need to consider all technical alternatives and identify least cost solutions • Lack of good quality feasibility studies with accurate estimates • Define and lock in baseline, cost, scope, timeline • Identify all E&S impacts • Define comprehensive Key Performance Indicators • Risk transference, need to transfer design, construction and maintenance risk completely • Identify all potential relief events • Land procurement needs to be completed in all respects along the ROW, all affectees need to be paid prior to start of construction • Detailed design completed and approved prior to start of construction • All tests completed before start of construction, • Financial Close achieved before start of construction • IA/IE fees paid through independent escrow • IA/IE approvals mandatory • No deemed approval for essential aspects such as detailed design, test, financial close, E&S safeguards • Change of Scope limited to ancillary activities not for scope necessities missed in the original baseline • Escalation on four major items initial 10% on concessionaire thereafter equally. • Ownership from the department and administrative arrangements on ground i.e. PD, PMiU, Land Revenue department etc. • Recurring monitor as-built drawings, conduct tests, and approved by IA/IE • Monitor schedule and cost variance and estimate cost at completion
Water Treatment/transmission project TP1	• Prioritization of projects essential • Define comprehensive Key Performance Indicators • Meet all E&S requirements • Consider Affordability and contingent liability • Land procurement should be completed prior to tender or engagement with private concessionaires • All approvals in place prior to commencement • Engage local contractors as much as possible • Maximum reliance on local equipment and content, • park offshore risk with onshore contractor, recover sites, no horizontal defenses or Extension of Time (EOT)

	• Avoid International Arbitration • Recurring monitor as-built drawings, conduct tests, and approved by IA/IE • Monitor schedule and cost variance and estimate cost at completion
Management Contracts Health, HMOs, EMOs, TTIs, RBCs	Key Issues • Challenges of selecting credible consultants for feasibility studies of the proposed projects. • Challenges to meet defined deliverables, which require due diligence of required technical aspects and the KPIs to be monitored diligently. • Optimal service levels should be identified from the service levels requirement and resource levels available. E.g the number of beds for former and number of donors for later in RBC project. • Lack of providing data/information for a timely and evidence-based baseline, which should be verified by the IE Lesson learned based on challenges faced previously • Follow competitive procurement process, avoid any instance of direct award and limit post project negotiations or amendments to project structure. • Complete any construction and/or supply works pending prior to tender • Complete all codal formalities of handing-over of primary and ancillary facilities prior to commencement • Ensure IE/IA know the scope of their work and follow diligently in terms of timely reports and approvals. • Allow concessionaire to do construction/refurbishment and maintenance and repair • Avoid in any delay in opening of escrow account and handing-over of facility • Empower Nodes/PMIU and provide adequate manpower, to enforce contracts. • Ensure bottlenecks to projects are removed in timely fashion. • Fulfillment of CPs to be ensured timely and due diligently. • Avoid the practice of delay or deferment of fulfillment of CPs

3. PROJECT WISE RISK ANALYSIS

A. Ongoing PPP Projects in Sindh Education Sector

During this quarter, PSF Board approved Girls' Elementary School Project for provision of EPPP funding through PSF managed VGF. The project to outsource O&M 54 public sector schools, rehabilitated under Japan International Cooperation Agency (JICA) assistance, has been proposed by SELD under PPP mode. In the first phase of this project, SELD initiated the procurement process of 03 packages comprising 19 girls' elementary schools for public private partnership contracts. Hopefully, the procurement process will be completed, and concession agreement will be signed in the next quarter.

In respect of EMO-7, which was approved by the Board in January 2024. The effective date notification was issued after a substantial delay, which occurred subsequent to a meeting with Secretary Education on 12th September 2024. Notifications of effective date have been issued for 3 packages i.e. Package 2, 5 and 6. For district package 2 one key CP about availability of key staff members has been deferred. Furthermore, to enable payment IA certificates of 2-3 packages of RFP7 may be issued till the end of November 2024. IA certificates of remaining packages may be issued in next quarter.

A key prospective PPP project in education sector is to seek partnership with private sector for the establishment, management and operations of non-formal education centers to cater the needs of out-of-school children providing them life skills base education. Currently, a feasibility study of this project is being carried out to assess its feasibility for PPP mode. PSF is providing technical advice for identifying and mitigating potential risks of the proposed project structure. PSF also held a meeting with Secretary SELD, DG PPP Unit and Senior Director PPP-Node requesting them to coordinate with the consultant for speeding up completion of the study and their recommendations for the project. PPP Node on their part have requested consultants to expedite their assignment. PSF will follow up the implementation of the decisions taken in the meeting.

Ongoing/Emergent Issues in Sindh Education Sector

Table 5: Ongoing and Emergent Issues in Education Sector

S.No	Project/Issue	Nature of Issue
1	Teachers Training Institutes – Handing Over of Facilities	The handing over of TTIs facilities is delayed over a year now. Out of six packages, EMOs of three packages managed to complete the Condition Precedents (CPs). The process of completing the Condition Precedents (CPs) of the other three packages needs to be expedited. PSF, in a meeting with Secretary SELD and DG PPP Unit emphasized the PPP-Node of SELD to immediately remove the hurdles in fulfilling the CPs so that the facilities may be handed over without any delay. The handing-over of schools of two packages has been completed (Mid of September 2024). However, the operational risk is still categorized to medium level.

2	Teachers Training Institutes - Delay in Rehabilitation Work	As mentioned in the last two quarterly reports, the issue of delay in rehabilitation activities, due to delay handing-over of the facilities, remained unresolved during this quarter. Rehabilitation of the TTIs buildings is the scope of work of the operators which needs to be completed in the six months installation period. The delay in handing over the facilities under TTIs project may also lead to delay in the rehabilitation of the building as the operator may face challenges of high escalation in inflation. There might not be sufficient provision in the budget (as bid by the operators) to undertake this activity effectively. Hence a potential risk of quality or quantity of the rehabilitation work may happen. In a meeting with Secretary SELD and DG PPP Unit, PPP-Node was asked to speed up handing over the facilities to the operators to mitigate the potential risk relating to construction/ rehabilitation work. Issues persist in regards to implementation of installation activities in TTIs, if they are resolved in next 10-15 days then IA certificates may be issued in next 2-3 months.
3	Education Projects Overall – Contract Management	This issue still remains prominent due to insufficient staff at PPP-Node of SELD which works as PIU of EMO reform as well. Effective contract management is still a big challenge as it was in the initial days of the project. The remedial strategy of appointment of contract compliance manager in the project team also couldn't bring the desired results. Hence general weakness in accountability remains strong. The other reasons for ineffective contract management include insufficient number of staff, weak administrative powers and capacity to timely address the project issues and poor record keeping at PPP-N of SELD. The PPP-Node of SELD recently started to monitor the progress of the EMOs through online dashboard of the data management software. This provision may help to increase efficacy of the progress monitoring mechanism. However, it may take 2-3 quarters to determine whether the initiative had been as effective as it was conceived. This risk may also be further mitigated if human resource of PPP-Node is strengthened.

5	Education Management Organization Project - Data Management/ Availability of Effective Information System	Data management and effective information system is a fundamental deliverable of the EMOs to be used as an evaluation source for assessing the progress of the project. However, this system was not able to provide real-time data and information about the progress/ status of the project. PPP-Node has worked out a centralized Education Management and Reporting System (EMIRS) where to the EMO will transfer or update their data in real time. It was expected that an orientation session would be held in the previous quarter, which was not achieved as per the plan. PSF will coordinate PPP-Node to have an orientation session about the EMIRS. After its successful launch, several risks pertaining to contract management, quarterly reports and governance will be reduced.
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Affordability and Contingent Liability of Education Sector Projects

One new project of education sector i.e. Girls Elementary Schools project is included in this quarterly report, however, the potential financial activity couldn't take place which may affect the financial scenario of the education PPP projects in this quarter. Hence, the affordability, contingent analysis and funding ratio analysis will remain the same as done in the previous quarter.

As per the Affordability and Contingent Liability Analysis conducted by the PSF, both these amounts will not make an adverse financing burden on the GoS budgetary outlays and resources. Our finding is based on the following indicators:

For affordability analysis, the total bid cost of all education projects, so far, for 10 years' period was compared to the current FY 2024-25 ADP budget of GoS which ranges from 0.012% - 0.403% of the GoS provincial ADP Budget of FY 2024-25. When it is compared to ADP budget of SELD for the same FY i.e. 2024-25, the EMO cost of all these projects shall have an impact range, in percentage terms, between 0.128 % (2016) and 4.141% (2024)

Table 6: Annual recurring obligations in Education PPPs i.e. EMOs and TTIs

											493,092.00	48,030
Year	EMO-1	EMO-2	EMO-3	EMO-4	EMO-5	EMO-6	EMO-7	TTIs	Total (EMOs+TTIs)	Total in Million	% of Provincial GoS-ADP 2024-25	% of Provincial SELD-ADP 2024-25
2016	61,437,904								61,437,904	61.44	0.012%	0.128%
2017	59,022,910	84,856,882							143,879,792	143.88	0.029%	0.300%
2018	62,934,982	65,909,743	286,973,716						415,818,441	415.82	0.084%	0.866%
2019	68,534,496	72,553,938	163,065,486	296,965,825					601,119,745	601.12	0.122%	1.252%
2020	72,481,312	78,124,444	181,541,039	135,395,648					467,542,443	467.54	0.095%	0.973%
2021	78,037,474	85,141,360	197,453,389	147,896,044	377,598,205				886,126,471	886.13	0.180%	1.845%
2022	84,819,841	90,951,542	208,516,956	163,417,024	183,849,508	140,361,818			871,916,689	871.92	0.177%	1.815%
2023	90,904,561	103,306,649	217,934,278	173,336,804	186,421,231	76,052,258		144,273,085	992,228,867	992.23	0.201%	2.066%
2024	97,425,198	108,765,504	266,146,314	188,243,032	219,165,519	82,791,155	958,212,491	68,079,370	1,988,828,584	1,988.83	0.403%	4.141%
2025	105,444,147	120,763,092	244,848,128	205,733,456	209,435,917	91,057,165	575,785,579	71,613,195	1,624,680,678	1,624.68	0.329%	3.383%
2026		130,883,929	267,004,519	227,936,504	221,203,410	100,476,777	580,016,352	77,915,532	1,605,437,022	1,605.44	0.326%	3.343%
2027			279,446,590		243,149,336	245,462,103	124,085,408	633,276,756	1,610,215,013	1,610.22	0.327%	3.353%
2028				264,810,864	236,580,748	121,118,881	692,913,402	100,373,595	1,415,797,490	1,415.80	0.287%	2.948%
2029					245,587,865	133,188,587	828,446,107	108,626,678	1,315,849,237	1,315.85	0.267%	2.740%
2030					259,352,468	146,961,938	852,710,147	109,567,147	1,368,591,700	1,368.59	0.278%	2.849%
2031						161,592,695	906,798,223	119,325,971	1,187,716,888	1,187.72	0.241%	2.473%
2032							993,563,474	129,960,756	1,123,524,230	1,123.52	0.228%	2.339%
2033							1,087,294,851	67,756,808	1,155,051,659	1,155.05	0.234%	2.405%
2034							277,773,958		277,773,958	277.77	0.056%	0.578%
	781,042,825	941,257,084	2,312,930,414	2,046,884,537	2,384,656,972	1,177,686,682	8,386,791,341	1,082,286,957	19,113,536,811	19,113.55		

The contingent liabilities as percentage of GoS-School Education provincial ADP Budget (without FPA) of current FY 2024-25 ranges from 0.49% (2033) – 1.00% (2024) for a period from 2024- 2033.

Table 7: Contingent Liabilities in Education PPPs i.e. EMOs and TTIs

Year	EMO-1	EMO-2	EMO-3	EMO-4	EMO-5	EMO-6	TTIs	EMO-7	Total	Percentage of Annual Development Budget		
										SELD @ Rs. 20.0 billion (without FPA)	SELD @ Rs. 48.03 billion (with FPA)	GoS @ Rs.493.09 billion
2016	4,200,000	-	-	-	-	-	-	-	4,200,000			
2017	4,220,000	7,671,394	-	-	-	-	-	-	11,891,394			
2018	4,242,000	7,766,394	34,024,146	-	-	-	-	-	46,032,540			
2019	4,266,200	7,869,394	21,660,897	-	-	-	-	-	33,796,491			
2020	4,292,820	7,981,119	24,235,756	14,848,291	-	-	-	-	51,357,986			
2021	4,322,102	8,102,363	26,157,853	6,769,782	34,482,192	-	-	-	79,834,292			
2022	4,354,312	8,233,995	27,512,480	7,394,802	19,333,017	10,039,636	-	-	76,868,242			
2023	4,389,744	8,376,966	28,432,289	8,170,851	19,848,746	9,287,475	14,841,291	-	93,347,362	0.47%	0.19%	0.02%
2024	4,428,718	8,532,320	33,596,916	8,666,840	23,611,194	10,172,662	19,538,339	92,253,437	200,800,426	1.00%	0.42%	0.04%
2025	4,471,590	8,701,200	32,241,407	9,412,152	23,121,025	11,189,929	21,034,861	48,430,577	158,602,741	0.79%	0.33%	0.03%
2026	-	8,884,857	34,932,419	10,286,673	24,439,612	12,308,921	22,649,024	52,816,935	166,318,441	0.83%	0.35%	0.03%
2027	-	-	36,316,000	11,396,825	27,641,628	13,963,092	24,390,350	57,623,553	171,331,448	0.86%	0.36%	0.03%
2028	-	-	-	12,157,467	27,417,960	14,893,795	26,269,159	62,891,540	143,629,921	0.72%	0.30%	0.03%
2029	-	-	-	13,240,543	28,801,147	16,383,174	28,296,633	73,952,817	160,674,314	0.80%	0.33%	0.03%
2030	-	-	-	-	31,754,554	18,021,492	30,484,893	74,996,775	155,257,713	0.78%	0.32%	0.03%
2031	-	-	-	-	-	19,823,641	32,847,081	81,938,219	134,608,940	0.67%	0.28%	0.03%
2032	-	-	-	-	-	-	35,397,446	89,550,355	124,947,802	0.62%	0.26%	0.03%
2033	-	-	-	-	-	-	-	97,899,081	97,899,081	0.49%	0.20%	0.02%

PSF Board so far approved seven projects (RFP#1 to RFP#7) of schools, one project of Teacher Training Institutes (3 TTIs) and one project of Girls Elementary School (JICA Assisted Schools phase-I) in education sector for their funding from VGF-PSF. PSF provides support funds to these projects from new VGF with the financial assistance of the EPPP project effective from April 2018 to December 2024. Whereas funding before that date i.e. April 2018 (if any) to be done through old VGF

The EPPP funding is provided by three agencies with ratio as below; - Partners' share formula has been given below;

Table 8: Funding Ratio of EPPP

- Partner Name	Initial Ratio	Revised Ratio	Current Ratio ¹
ADB	58.49%	68.33%	76.49%
FCDO	6.99 %	8.16%	NIL
GOS	34.52 %	23.51%	23.51%

- GOS to bear Tax Amount in addition to its agreed share.

Following table² elaborates PSF ratio separately and accumulative for funding support to all procurements under EMO reform and PPP mode.

Table 9: Funding Detail of PPP Education Projects by PSF

RFP#	No. of Schools	Total Bid Cost	Expenditure before EPPP	PSF-EPPP (April 2018-December 2024)				PSF-GoS	PSF Total	
				Total EPPP Share	ADB+FCDO	GoS				
				Initial Ratio (Upto June 2022)	65.48%	34.52%	Tax	From Jan 2025-onward	Outstanding till End of the Project	
				Revised Ratio (July 2022 and December 2022)	76.49%	23.51%		Outstanding		
				Current Ratio (July 2022 and December 2022)	76.49%	23.51%				
1	4	781,042,825	120,460,814	531,205,673	302,025,616	128,250,978	100,929,078	129,376,338	660,582,011	
2	5	941,257,084	84,856,882	577,965,661	329,162,607	138,989,578	109,813,476	278,434,541	856,400,202	
3	14	2,312,930,414	0	1,404,473,648	797,972,589	339,615,250	266,885,809	908,456,767	2,312,930,414	
4	45	2,046,884,537	0	1,058,193,619	600,232,593	256,904,238	201,056,788	988,690,918	2,046,884,537	
5	71	2,384,656,972	-	912,243,084	565,197,535	173,719,363	173,326,186	1,472,413,889	2,384,656,972	
6	32	1,177,686,682	-	257,809,654	159,730,869	49,094,950	48,983,834	919,877,028	1,177,686,682	
7	40	8,386,791,341	-	958,212,491	564,361,286	220,388,873	173,462,333	7,428,578,849	8,386,791,341	
Sub-Total (EMOs)		211	18,031,249,854	205,317,696	5,700,103,828	3,318,683,095	1,306,963,230	1,074,457,503	12,125,828,330	17,825,932,158
TTIs		2	1,082,286,957	-	246,652,897	152,818,489	46,970,358	46,864,050	835,634,060	1,082,286,957
Total		213	19,113,536,811	205,317,696	5,946,756,725	3,471,501,584	1,353,933,588	1,121,321,553	12,961,462,390	18,908,219,115

As such 57% (Rs. 10.91 billion) of total bid cost (Rs. 19.11 billion) of all education PPP projects approved by PSF Board is projected as payable amount by PSF from April 2018 till project life (each

¹ This funding ratio has been kept changing, after mutual agreement between ADB and GoS, initial ratio was applicable till June 2022 (EMO 1-5); revised ratio was applicable from July 2022 to December 2022 (EMO-6 and TTIs) and current ratio is applicable from January 2023 to December 2024 (EMO-7). All funding amount is taken from relevant PARs as approved by PSF Boards.

² Extracted from approved PARs of all i.e. RFP#1 to RFP#7 and TTIs. However, the cost of Girls Elementary School Project is not included as the project is in process of procurement.

project is of 10-year duration except TTIs which is of 10.5 year and EMO-7 as of 10.25 years) of each school/project.

The cumulative funding of education PPP projects is projected as amount of Rs. 6,016³ million which accounts for 19.07% of total EPPP project.

Table 10: Funding and its proportions in EMOs

Partner Name	VGF Amount under EPPP (US\$)	PKR Amount @ PKR/USD 278.22*	% Loan**			Total-Education PPPs (EMOs+TTIs)	Education PPPs' % of Total VGF
			Initial	Revised	Current		
ADB	70	19,475	58.50%	68.30%	76.50%	3150	16.17%
FCDO	11.41	3,174	7.00%	8.20%	0.00%	309	9.74%
GoS	25.02	6,961	34.50%	23.50%	23.50%	1297	18.63%
Taxes (GoS)						1260	18.10%
Total	106.43	29,611	100%	100%	100%	6016	20.32%

B. Ongoing PPP Projects in Sindh Health Sector

PSF Board, so far, approved two health sector projects. One project is “Outsourcing Safety and Security Services at JPMC” and another is “Outsourcing Management of Regional Blood Centre (RBC)-Jamshoro”

JPMC project is in the procurement phase; hence the actual financial implications of the project are not included in this report.

RBC-Jamshoro is the sub-project of ‘Outsourcing Management of 4 RBCs in Sindh’ project. The project was started in 2018 through a management contract between Health Department GoS and Indus Hospital Network. The scope of the network was initially mapped at screening of 20,000 blood bags annually. However, the screening of blood bags reached 70,000 bags annually in its first year of operation. The operator requested to revise the scope of work accordingly. It took longer time to determine the scope of work along with the enhancement of the cost of the project. After due process, an amended agreement has been signed between the two parties with scope agreed as 100,000 blood bags screening on the revised cost of Rs. 5.7 billion for the 10 years project period ending in 2028.

³ Amount difference is due to changing exchange rates.

Table 11: Ongoing/ Emerging Issues in PPP Projects in Health Sector

S. No	Project/Issue	Nature of Issue
1	JPMC	The feasibility study of JPMC was supposed to be completed a long time ago. PSF provided its technical feedback in devising the project structure and assessment of its viability for PPP mode. PSF also provided feedback on drafting the project documents including RFP and management contract. However, PSF couldn't find the evidence if its feedback on draft management contract was addressed. However, PSF continuously followed up in reminding the PPP-Unit and PPP-Node of Health Department to address the PSF observation accordingly. The TFEC of the JPMC project, in its first meeting, also provided some observations on the structure of the project and proposed certain changes. PSF asked to share the observations and changes, if any, in the structure. The response is still awaited.
2	RBC Jamshoro	The project was started in 2018 and has entered its sixth year of total 10 years project period. The scope as well as cost of the project has been enhanced due to higher than the initially assessed demand for blood begs. However, four out of seven Hospital Based Blood Banks (HBBs) couldn't be operationalized in the first half life of the project. If non-operationalization of the four HBBs remains consistent, the project objectives may be compromised which might lead the project risks to an upper level from the existing low level.

Affordability and Contingent Liability of Health Sector Projects

- As per the Affordability and Contingent Liability Analysis conducted by the PSF, both these amounts will not make an adverse financing burden on the GoS budgetary outlays and resources. Our finding is based on the following indicators:
- For affordability analysis, the total bid cost of health sector projects, so far, for 10 years' period was compared to the current FY 2024-25 ADP budget of GoS which ranges from 0.016% - 0.18% of the GoS provincial ADP Budget of FY 2024-25. When it is compared to ADP

budget of Health Department for the same FY i.e. 2024-25, the project cost shall have an impact range, in percentage terms, between 2.44 % (2025) and 2.82% (2027)

Table 12: Annual recurring obligations in RBC Jamshoro

Total Budget Outlay for Health Sector PPP Projects				
Year	RBC Jamshoro	% of Development Budget		
		GoS- Rs. 493,092,000,000	Health Department (with FPA)- Rs. 31,467,330,000	Health Department (without FPA)- Rs. 18,000,000,000
2018	421,401,414			
2019	211,536,249			
2020	219,997,699			
2021	228,797,607			
2022	578,695,890			
2023	754,048,075			
2024	823,396,412	0.17%	2.62%	4.57%
2025	768,416,929	0.16%	2.44%	4.27%
2026	825,629,998	0.17%	2.62%	4.59%
2027	887,284,790	0.18%	2.82%	4.93%
2028		0.00%	0.00%	0.00%
	5,719,205,063			

- The contingent liabilities as percentage of GoS and Health Department provincial ADP Budget (without FPA) of current FY 2024-25 ranges from 0.49% (2033) – 1.00% (2024) for a period from 2024- 2033. These are conservative estimates based on other management contracts for PPP projects.

Table 13: Contingent Liabilities in Health PPPs i.e. RBC- Jamshoro

Year	RBC Jamshoro	Percentage of Annual Development Budget 2024-25		
		HD @ Rs. 18 billion (without FPA)	HD @ Rs. 31.47 billion (with FPA)	GoS @ Rs.493.09 billion
2018	31,214,920			
2019	15,669,352			
2020	16,296,126			
2021	16,947,971			
2022	17,625,890			
2023	18,330,925			
2024	19,064,162	0.11%	0.06%	0.004%
2025	19,826,729	0.11%	0.06%	0.004%
2026	20,619,798	0.11%	0.07%	0.004%
2027	21,444,590	0.12%	0.07%	0.004%
2028	-	0	0.00%	0.000%

PSF Funding Ratio

PSF Board so far approved two projects of health sector which include Provision of safety and security services in JPMC Karachi and operation & management of RBC Jamshoro for their funding from EPPP funds through VGF-PSF.

The EPPP funding is provided by three agencies with ratio as below; - Partners' share formula has been given below;

Table 14: Funding Ratio of EPPP

- Partner Name	Initial Ratio	Revised Ratio	Current Ratio ⁴
ADB	58.49%	68.33%	76.49%
FCDO	6.99 %	8.16%	NIL
GOS	34.52 %	23.51%	23.51%

- GOS to bear Tax Amount in addition to its agreed share.

Following table⁵ elaborates PSF ratio separately and accumulative for funding support to all procurements PPP mode.

Table 15: Funding Detail of PPP Health Projects by PSF

Regional Blood Centre (RBC) Jamshoro Project under PPP Mode										
S. No.	Project Name	HMO	Bid Cost	Bid Cost under EPPP (April 2018 to December 2024)		ADB Share	GoS Share (Excl. Tax)	Tax Amount	GoS Share (Incl. Tax)	Remaining Amount to be paid by GoS
			10 years budget	Inclus. of Tax	Exclus. of Tax	76.49%	23.51%	13% (SST) of the EPPP period	EPPP period	After December 2024 till end of project life
1	RBC Jamshoro	Indus Hospital	5,719,205,063	3,058,629,756	2,661,007,887	2,035,404,933	625,602,954	397,621,868	1,023,224,823	2,660,575,308
	Total		5,719,205,063	3,058,629,756	2,661,007,887	2,035,404,933	625,602,954	397,621,868	1,023,224,823	2,660,575,308

The cumulative funding of health PPP projects is projected as amount of Rs. 3,059 million which accounts for 10.3% of total EPPP project.

Table 16: Funding and its proportions in PPP projects in Health Sector

Partner Name	VGF under	VGF under EPPP (PKR)	% Loan Ratios	Health Sector
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⁴ This funding ratio has been kept changing, after mutual agreement between ADB and GoS, initial ratio was applicable till June 2022; revised ratio was applicable from July 2022 to December 2022 and current ratio is applicable from January 2023 to December 2024. All funding amount is taken from relevant PARs as approved by PSF Boards.

⁵ Extracted from approved PARs of RBC- Jamshoro. However, the cost of JPMC is not included as the project is in process of procurement.

	EPPP (US\$)	@ 278.1188)*	Updated	RBC Jamshoro	Total Health Sector Projects	% share of VGF
ADB	70.00	19,468	76.5%	2,035	2,035	6.9%
FCDO	11.41	3,173	0.0%	-	-	0.0%
GoS	25.02	6,959	23.5%	626	626	2.1%
Taxes (GoS)				398	398	0.0%
Total	106.43	29,600	100.0%	3,059	3,059	10.3%

*Exchange Rate of PKR 278.21 / USD on 03 May 2024 (source <https://www.sbp.org.pk/DFMD/fem.asp>)

C. Projects to date reviewed by PSF Board

Table 17: Projects reviewed by PSF Board and pending Issues

S. #	Project Name/ Stage	PSF Board Status	Project Status /Policy Board	Remarks/Comments
	JPMC/ Pre-Procurement Phase	This project has been conditionally approved by the PSF Board. Government has decided to launch the RFP soon.	TEFEC held the first meeting and shared some observations with the consultant to address them accordingly. The procurement documents are being finalized by the consultant. Hopefully, the project may be launched in the next quarter.	In PSF's view the concession agreement can be strengthened further and the comments in this regard have been shared by PSF with the PPP Unit. A comprehensive service/ops manual should also be prepared with KPIs clearly linked to each service area.

4. PPP PORTFOLIO LEVEL IMPACTS

1. Size of PPP portfolio, relative budgetary position

Over the past 10 years Government Development space has been shrinking due to increasing non development outlay and weak revenues due to reliance on federal transfers which have ranged around 80% of the total revenues. The Development space on average has remained around 15% which doesn't account for PPP Projects as on average one project has featured in any fiscal year and of that PPP liabilities (outlays) are usually on accrual basis.

2. Affordability Analysis:

Affordability analysis is a key element, used to ensure that an individual / entity's fiscal obligations remain under budget and no untoward large burden surfaces later on in the project.

Methodology employed:

PSF employed the following methodology to conduct an Affordability Analysis:

1. Analysis of annual fiscal commitments, using a forecast budget limit approach on how overall budget limits will evolve and considers whether the estimated annual payments for projects could be accommodated.
2. Cumulative analysis of PPP projects within an Agency/Departmental Portfolio with their ADP allocations/projections.
3. Agency wise cumulative PPP outlays versus the Annual Development Plan of the Government of Sindh

3. Project Wise Cost Impact

Table 18: Estimated Projects Costs with Risk Estimates (PSF Approved Projects)

S.No	Projects in Operations (Post Debt Payoff)	ception Da	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF	RVA	RCF	2023	2024	2025	Sum of RCF
	Projects in Operations (Prior to Debt Payoff)	ception Da	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF	RVA	RCF	2023	2024	2025	Sum of RCF
	Projects in Construction/Implementation	ception Da	Total PV of Project Co	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF/EAC/PB Minute	RVA	RCF	2023	2024	2025	Sum of RCF
1	Education Management Organisation	2016	6,931,643,675		2,851,882,544	834,941,517	803,951,083	901,772,184	2,574,054,887
2	Teachers Training Institutes	2017	835,452,469	-	724,958,312	110,494,157	67,557,855	68,600,884	221,804,983.2
	Project Post Financial Close	ception Da	Total PV of Project Co	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Project Post Tender FBC	ception Da	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF	RVA	RCF	2023	2024	2025	Sum of RCF
	Projects Post Full Feasibility	ception Da	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF	RVA	RCF	2023	2024	2025	Sum of RCF
3	JPMC Safety and Security Project	2024	1,601,964,291	379,580,419	1,007,486,059	-	240,797,804	295,226,800	905,723,841
4	Hub Canal Project	2026	42,452,657,311	22,484,078,041	31,887,336,257	-	1,289,941,123	1,474,574,018	15,017,704,833
	Projects During Feasibility	ception Da	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF	RVA	RCF	2023	2024	2025	Sum of RCF
5	Non Formal Education	2024							
6	TP 1	2024	55,893,826,732	39,579,834,758	45,260,874,240	8,039,378,083	16,078,756,166	14,429,411,308	68,877,347,742
	Projects Prior to Feasibility	ception Da	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
			RCF	RVA	RCF	Actual	As Incurred	RVA	Sum of RCF
	Total PPP Portfolio Risk Adjusted Cost		107,715,544,477	62,443,493,218	81,732,537,412	8,984,813,757	18,481,004,031	17,169,585,194	87,596,636,286

**These are estimated values which need to be firmed up once we receive final financial models*

Table 19: Estimated Projects Costs with Risk Estimates (All PPP Projects)

**These are estimated values which need to be firmed up once we receive final financial models*

S.No	Projects in Operations (Post Debt Payoff)	Inception Date	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF	RVA	RCF	2023	2024	2025	Sum of RCF
1	Hyderabad MirpurKhas	2010	7,603,668,296	6,806,809,181	-	1,340,000,000	1,340,000,000	-	-
	Projects in Operations (Prior to Debt Payoff)	Inception Date	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF	RVA	RCF	2023	2024	2025	Sum of RCF
2	Jhirk Mulla Katiyar	2013	14,477,930,506	5,000,000,000	5,532,359,109	310,566,387	329,160,017	365,628,225	2,366,088,513
3	Karachi Thatta Dual Carrigeway	2015	28,807,798,408	8,856,298,066	15,930,972,000	1,751,385,130	1,678,719,719	1,607,383,554	2,807,192,418
	Projects in Construction/Implementation	Inception Date	Total PV of Project Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF/EAC/PB Minutes	RVA	RCF	2023	2024	2025	Sum of RCF
4	Ghotki Kandhkot Bridge Project	2018	50,009,400,000	42,494,907,498	48,437,268,591	1,727,875,420	1,220,384,171	15,026,615,673	29,502,970,962
5	Malir Expressway	2024	110,309,077,957	62,684,662,577	47,624,415,381	4,915,966,784	6,903,495,337	6,604,217,058	19,094,737,347
6	Nabisar Vajihar	2022	268,119,695,951.14	60,466,000,000	207,653,695,951	4,698,331,109	30,909,000,000	27,376,821,934	123,184,740,447
7	Education Management Organisation	2016	9,802,538,769.05		5,722,777,638	834,941,517	803,951,083	1,809,556,183	5,165,270,140
8	Teachers Training Institutes	2017	835,452,469		724,958,312	110,494,157	67,557,855	68,600,884	445,088,666.2
9	NICH Security and Safety Project	2013	559,567,339		74,697,262	83,382,991	89,636,715	-	149,892,507
10	Health Management Organisations	2016	58,687,576,847		-	11,324,114,010	-	-	-
11	Childrens Hospital North Karachi	2017	6,141,862,033		1,969,145,227	779,180,891	857,098,981	942,808,879	3,951,418,089
12	Sindh Medical Support Program	2017	1,500,000,000		-	-	-	-	-
13	Aman Ambulance	2017	1,844,360,000		-	-	-	-	-
14	Regional Blood Centres	2019	5,598,665,544		3,007,143,203	461,734,623	477,580,478	989,774,291	3,007,143,203
	Project Post Financial Close	Inception Date	Total PV of Project Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Project Post Tender FBC	Inception Date	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF	RVA	RCF	2023	2024	2025	Sum of RCF
15	Education Management Organisation	2016							
16	Teachers Training Institutes								
	Projects Post Full Feasibility	Inception Date	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF	RVA	RCF	2023	2024	2025	Sum of RCF
17	JPMC Safety and Security Project	2024	1,601,964,291	379,580,419	2,021,688,692	-	240,797,804	295,226,800	1,480,858,480
18	Hub Canal Project	2026	43,693,705,003	22,484,078,041	31,887,336,257	-	1,289,941,123	1,474,574,018	23,447,344,123
19	NED Technology Park	2024	3,294,350,407	22,359,166,497	1,715,962,803	-	88,048,237	261,345,260	2,806,643,918
	Projects During Feasibility	Inception Date	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF	RVA	RCF	2023	2024	2025	Sum of RCF
20	Non Formal Education	2024							
21	TP 1	2024	105,518,917,010	39,579,834,758	90,823,487,642	8,039,378,083	16,078,756,166	14,429,411,308	71,035,825,088
22	TP 4	2024	270,875,063,358	196,337,412,759	230,005,060,249	-	27,787,500,000	14,962,500,000	142,605,661,926
23	5 MIGD	2024	54,386,461,292	14,528,616,807	51,933,866,910	-	5,187,450,912	5,249,017,812	24,306,923,073
24	Rani Bagh	2024	-	6,273,853,183					
25	Drug Rehabilitation Centres	2024	193,550,024		331,795,309		20,904,444	25,294,377	73,745,056
26	Marble City	2024	14,633,627,941	10,528,947,000	-		-	8,087,414,564	14,633,627,941
	Projects Prior to Feasibility	Inception Date	Total PV of Cost	PV of Construction Cost	PV of O&M Cost	Prior Yr	Current Year	Next Year	Next 5 Years
	Adjustment		RCF	RVA	RCF	Actual	As Incurred	RVA	Sum of RCF
	Total PPP Portfolio Risk Adjusted Cost		1,058,495,233,444	498,780,166,787	745,396,630,537	36,377,351,102	95,369,983,041	99,576,190,820	470,065,171,898

ANNEXURES – ADDITIONAL INFORMATION

ANNEXURE 1: LIST OF PROJECTS COVERED BY PSF

S.No	Project Name	Line Department	Projects Recived in Prefeasibility Stage	Projects Recived in feasibility Stage	Projects Reviewed or Recived During Bidding	Projects Recived in Implementation phase
Education Sector						
1	EMOS 1-4	SELD				
2	EMOS 5-6	SELD				
3	EMO 7 -8	SELD				
4	Teachers Training Institute Hussinabad	SELD				
5	Teachers Training Institute (3 Institutes)	SELD				
6	Non Formal Education	SELD				
7	JICA Girls School					
8	Four Public Schools Project	Education				
Health Sector						
9	Regional Blood Banks	Health				
10	JPMC Security and Safety Contract	Health				
11	NICH Security and Safety	Health				
12	Health Management Organisations	Health				
13	Drugs Addiction Treatment Centre Project	Social Welfare Department				
Roads and Motorways Sector						
14	MEW	LGD				
15	GKBP	W&S				
16	URI Mauripur	LGD				
17	URI Korangi	LGD				
18	Link Road Project	W&S				
19	Karachi Thatta Dual Carrigeway	W&S				
20	TMK to Sajwal Hyd to TMD	Works & Services				
Water and Irrigation Sector						
21	Hub Canal	KWSB				
22	TP1	KWSB				
23	TP4	KWSB				
24	5MGD Desalination project	KWSB				
25	Sukkur Water Distribution (USP)	LGD				
26	Nabisar Vajihar Water Supply Project	Water Supply				
27	65 MIGD Water Project	KWSB				
28	Karachi Bulk Water Supply Project	LGD				
29	Lyari Sewage Rehabilitation Project	LGD				
30	North Western Canal Project	Irrigation Department				
Industrial, Tech and Economic Zones and Ports						
31	Marble City	Investment Dept				
32	Khairpur Special Economic Zone Project	Investment Dept				
33	NED Park	NED University				
34	Keti-Bander Project	W&S/Energy				
35	Dhabeji Industrial Zone					
Parks and Recreation Sector						
36	Rani Baagh Development Project	LGD				
37	Shaheed Benazir Bhutto Park Project	Karachi Development Authority				
38	Outsourcing of Existing Recreational Facilities	Sindh Tourism Development Corporation				
Transport Sector						
39	Yellow Line Bus Operations Project	Transport & Mass Transit Department				
Real Estate and Housing Sector						
40	Lyari Development Housing Scheme 42 Project (Lyari)	Sindh Civil Servants Housing Foundation				
41	Sindh Civil Servants Housing Foundation (Malir)	Sindh Civil Servants Housing Foundation				
Forestation and Green Financing (Carbon Credits) Sector						
42	Carbon Reduction Project - Carbon Credits	Forest Department				

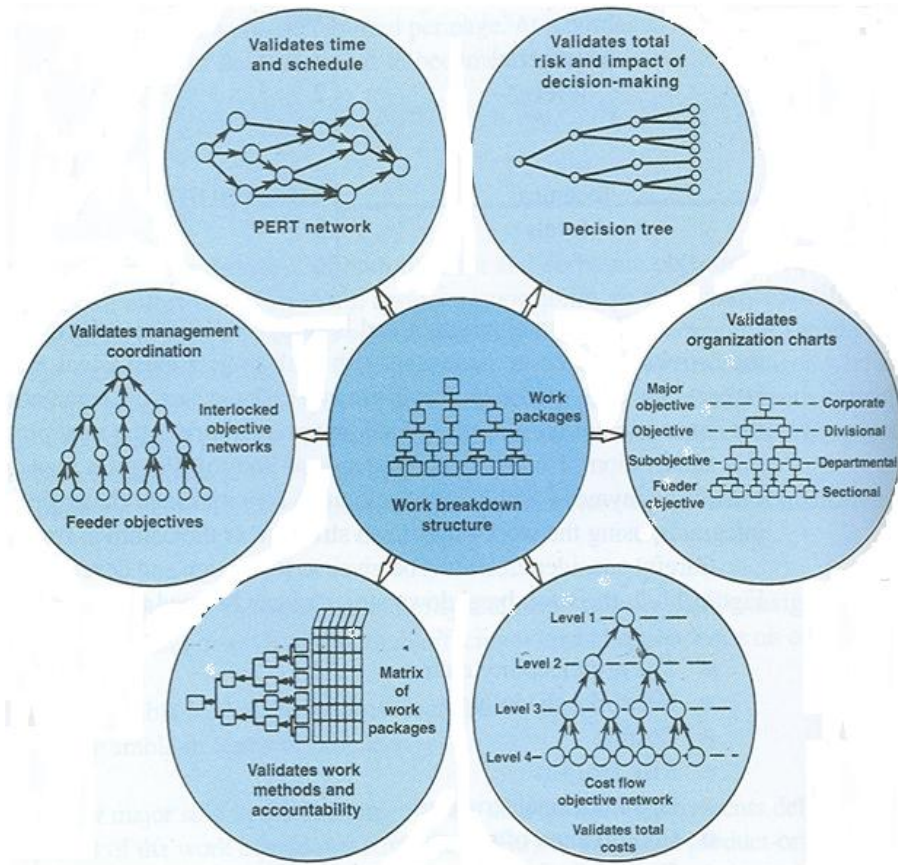
ANNEXURE 2: LIST OF PARs MADE BY PSF

S.No	Project Name	PARs Made	PARs Approved	PARs Funded
Education Sector				
1	EMOs RFP 1-2			
2	EMO RFP 3			
3	EMO RFP 4			
4	EMO RFP 5			
5	EMO RFP 7			
6	Teachers Training Institute Hussinabad			
7	Teachers Training Institute (3 Institutes)			
8	JICA Girls School			
Health Sector				
9	Regional Blood Banks			
10	JPMC Security and Safety Contract			
11	NICH Security and Safety			
Roads and Motorways Sector				
12	MEW			
13	GKBP			
14	URI Mauripur			
16	Link Road Project			
17	Karachi Thatta Dual Carrigeway			
Water and Irrigation Sector				
18	Hub Canal			
19	TP1			
20	TP4			
Industrial, Tech and Economic Zones and Ports				
21	Marble City			
22	NED Park			

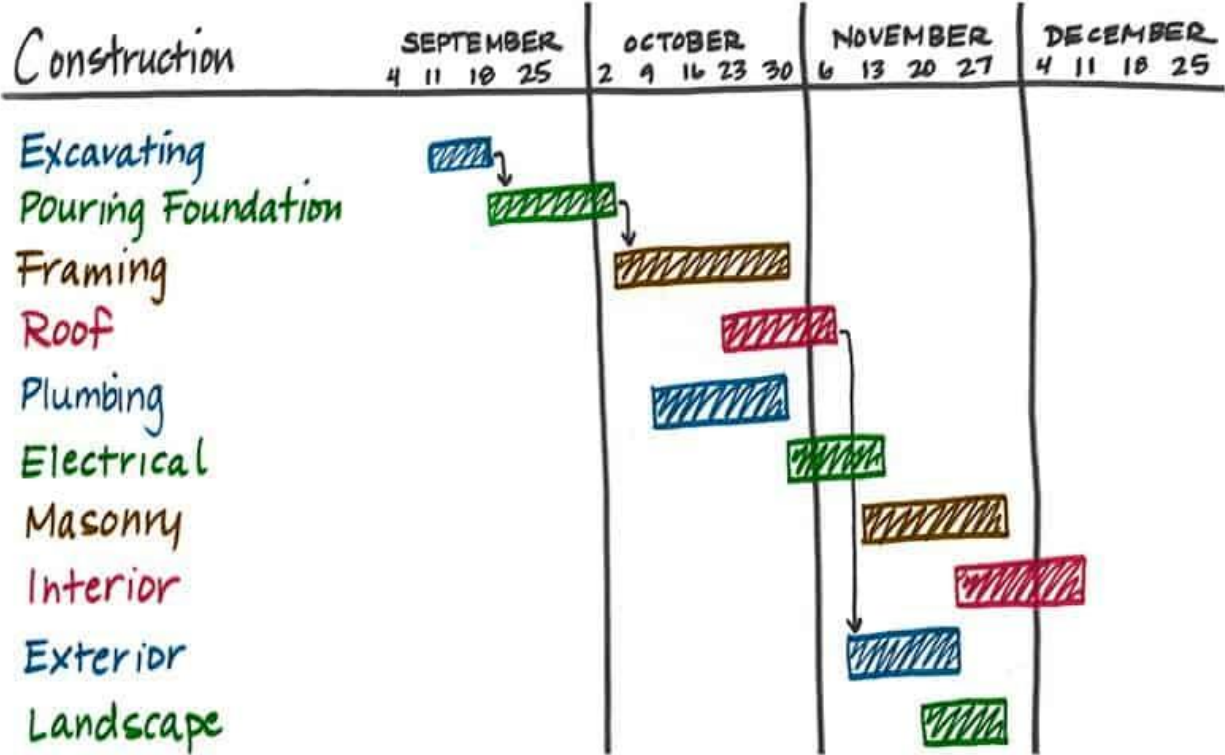
ANNEXURE 3: TAXONOMY OF COST DRIVER TYPES

Level 1 cost drivers	Level 2 cost drivers	Cost driver type
Project team cohesiveness	Client/owner competence	FL
	Contractor competence	FL
	Project manager competence and leadership	FL
	Project team communication	FL
	Subcontractor competence	FL
	Consultant competence	FL
Contract and procurement	Contract/scope disputes, management, and definition	FL
	Procurement method	FL
	Contract/payment method	FL
Rework and additional work	Scope changes stemming from planning errors	E
	Scope changes stemming from client requirements	E
	Execution errors	E
Materials	Materials (direct cost)	FL
	Material cost inflation/fluctuation	U
	Material shortages	U
	Supply chain logistics	FL/U
Labour	Labour (direct cost)	FL
	Competency (and shortage of skill)	FL
	Productivity	FL
	Training costs	FL
Uncertainty and complexity	Uncertainties / unforeseen events	FL/U
	General project complexities	FL/U
Socio-political stakeholders	Social (stakeholder) requirements/influence	FL/U
	Political requirements/issues	FL/U
	Government/public support	FL/U
Schedule	Duration	FL
	Delays	E/U
Regulations	Regulatory compliance	FI
	Country-specific regulatory factors	FI
	Legal compliance	FI
Economy	Inflation/fluctuation	U
	Continental economy	U
	Region	FI
	Exchange rates	FI/U
Size of infrastructure and/or its components	Site/floor area (e.g., GFA, GIFA, GEFA)	FI
	Number of units on site	FI
Equipment and plant	Equipment/plant (direct cost)	FL
	Lack of availability and downtime equipment costs	FL/U
Corruption and conflict	Corruption	U
	Conflict (country-level)	U
Health & safety	Accident-related costs	E/U
	Accident prevention	FL

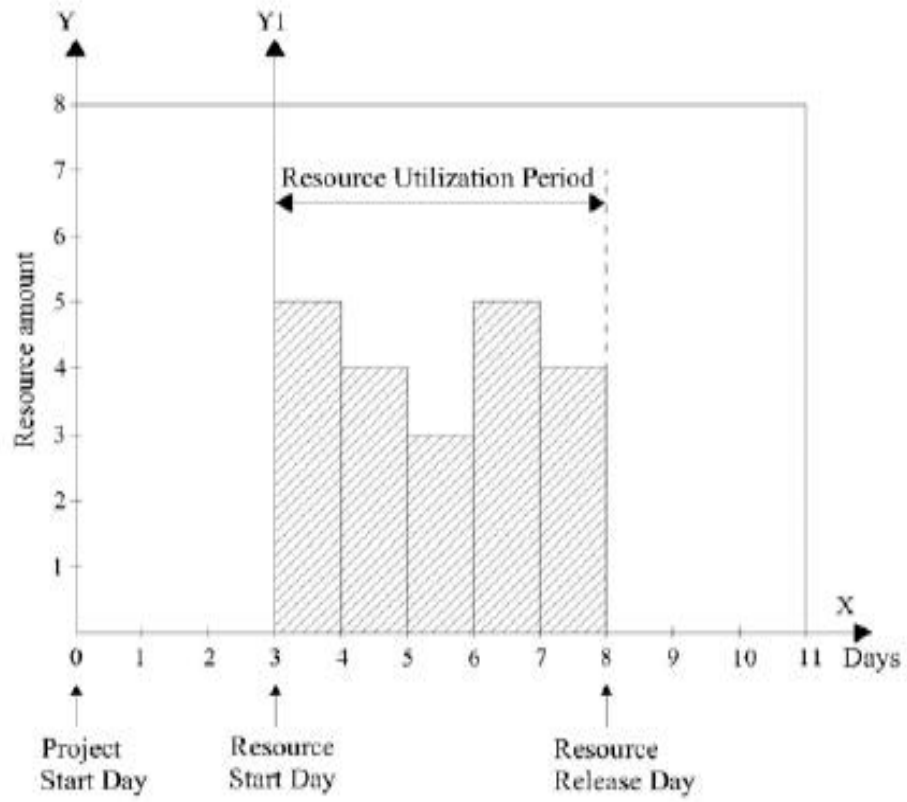
ANNEXURE 4: USES OF WORK BREAK DOWN STRUCTURE



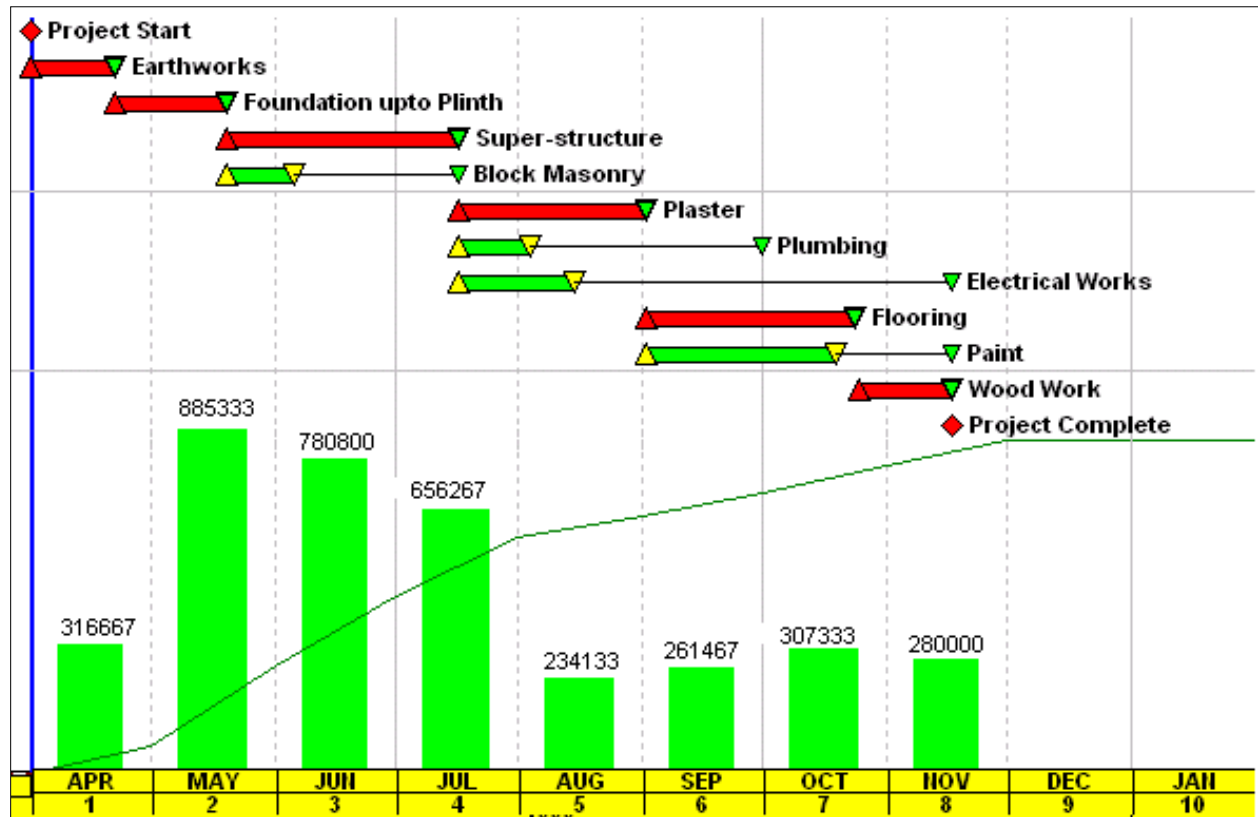
ANNEXURE 5: BAR CHART (GANTT CHART):



ANNEXURE 6: COST HISTOGRAM



ANNEXURE 7: CONSTRUCTION S -CURVE



ANNEXURE 8: COMPARISON OF CPM AND PERT

CPM	PERT
CPM uses one time estimate that represents the normal time.	PERT uses three time estimates (optimistic, most likely, and pessimistic) to derive an expected time.
CPM is deterministic in nature.	PERT is probabilistic in nature,
CPM is used for those projects where percent complete can be determined with reasonable accuracy such as construction.	PERT is used for R&D, where percent complete is almost impossible to determine except a completed milestones.
CPM is activity oriented and can be used as an arrow diagram network.	PERT is event oriented rather than activity oriented and can be used as an arrow diagram network.
CPM as a controlling device for the simple reason that one must repeat the entire evaluation of the project each time the changes are introduced into the network	PERT serves a useful control device as it assist the management in controlling a project by calling attention through constant review to such delays in activities which might lead to a delay in the project completion date.
Cannot be used for risk analysis and management	Can be used for risk analysis and management
CPM Gives Critical Path	PERT gives probability in % to achieve critical path
May be used successfully for projects without uncertainties and risks	May be used successfully for projects with uncertainties and risks

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