PART II: PROJECT PLANNING

Topic 3: Project Cost and Procurement Management
1.0 Project Cost Management

- **Project Cost Management** involves processes in planning, estimating, budgeting, and controlling costs so that the project can be completed within the approved budget".

- At first one has to **estimate the costs** of the project.
- Secondly one has to **budget these costs**.
- And finally one has to **control the costs** by comparing the cost baseline and the budget level.
1.1 Cost Estimating

**Cost Estimating** is the process of "developing an approximation of the costs of the resources needed to complete the project activities".

- Cost estimating is estimating the costs of **each activity**:
- It is executed on the level of the activity list.
- Cost estimates are expressed in units of currency.

- Cost budgeting aggregates and is executed at least on the level of work packages if not on the level of control accounts.
1.1.1 Tools and Techniques

• **Analogous estimating** means estimating on the base of historical information by using a special idea / assumption: the actual costs of an activity should be similar like those of a similar activity of another project, which already has (successfully) been executed. Naturally, cost estimating itself generates costs.

• **Determine resource cost rates** is the step of collecting unit cost rates.
Tools and equipments

• **Bottom up estimating** means decomposing an identified activity, estimating the subtasks and aggregating the results as estimating for the activity as whole.

• **Project management software** often helps to collect, document, and compute estimates and the needed basic values,

• **Vendor bid analysis** means that the bid of a vendor will be compared with bids of other vendors and/or by an own detailed cost analysis
Tools and techniques cont..

• **Reserve analysis** regards the more or less hidden contingency reserves which may be implicitly embedded into activity duration or explicitly integrated by the critical chain method.
1.2. Cost budgeting

- Cost Budgeting is the process for "aggregating the estimated costs of individual activities or work packages to establish a cost baseline"
- it has to "to establish a total cost baseline for measuring project performance" by "aggregating the estimated costs of individual schedule activities or work packages"
1.3 Cost Control

- **Cost Control** is the process for "influencing the factors that create cost variances and controlling changes to the project budget".
- Like other controlling processes the process of project control therefore includes such tasks as handling influencing factors, managing actual changes, detecting wished and unwished changes by comparing the reported real values with the approved cost base line and determining corrective actions.
1.3.1 Tools and Techniques

- **Cost change control system** is the set of procedures and rules by which changes of the cost baseline can methodically be introduced into the project.

- **Performance measurement analysis** is a method for comparing the reported reality and the (pre)defined cost baseline.
  - **Planned Value** "[...] is the budgeted cost for the work scheduled to be completed on an activity.
  - **Earned Value (EV)** "[...] is the budgeted amount for the work actually completed on the schedule activity or WBS component during a given time period".
  - **Actual Cost (AC)** "[...] is the total cost incurred in accomplishing work on the schedule activity or WBS component during a given time period".
Control

• **Project performance reviews** use performance measurement analysis and forecasts to "[...] compare cost performance over time, schedule activities or work packages overrunning and underrunning budget (planned value), milestones due, and milestones met"

• **Project management software** supports necessary collections of data and computations.
Topic 3b

Project Procurement Management
2.0. Project Procurement Management

- The **Project Procurement Management** "includes the processes to purchase or acquire the products, services, or results needed from outside the project team to perform the work".

- An organization can either be the buyer or the seller of these products, services and so on. And the procurement management includes the **contract management** required to administer contracts or purchase orders issued by authorized team members".
2.1 Plan Purchases and Acquisitions

• **Plan Purchases and Acquisitions** is the process for "[...] determining what to purchase or acquire and determining when and how"

• It "[...] identifies which project needs can best be met by purchasing or acquiring products, services, or results outside the project organization, and which project needs can be accomplished by the project team during project execution".

• Mainly this process "[...] includes reviewing the risks involved in each make-or-buy decision [...] (and) [...] reviewing the type of contract planned to be used [...]". Target is to mitigate risks and to transfer risks to the seller
2.2 Procurement Management Plan

- The **Procurement Management Plan** determines
  - which contracts shall be used
  - "who will prepare independent estimates"
  - which **procurement** shall be done by the organizational procurement part and **which by the project team**
  - which standard documents shall be used
  - how multiple providers shall be managed (prequalified)
  - how is the procurement is embedded into the other project management plans
  - which constraints must be respected
Procurement management plan cont..

– how the time for purchasing or acquiring is integrated into the schedule plan
– how the work of make-or-buy-decision is linked into the activity list
– which insurances can be used to mitigate procurement risks
– which sellers are known as good (or bad) partners
– how the contracts and sellers shall be evaluated
2.2.1 Contract Statement of Work

- The **Contract Statement of Work** is a *specific portion of the project work*, that may be a warded to a contractor:

- "Each contract statement of work defines, for those items being purchased or acquired, *just the portion of the project scope that is included within the related contract*".

- **Make-or-by Decisions** are the documented results of the method "make-or-buy-decision"
2.3. Plan Contracting

- **Plan Contracting** is documenting products, services, and result requirements and identifying potentially sellers.
- The main purpose is the generation of procurement documents and the establishment of evaluation criteria.
- At first one "[...] (determines) what to purchase or acquire and (determines) when and how": one plans purchases and acquisitions
Plan contracting

- Secondly is to identify potential sellers: one plans the contracting.
- Then one requests seller responses, ...
- ... one selects a seller, and
- ... one administrates the contracts.
- And last but not least one organizes the contract closure.
2.3.1 Tools and Techniques

- **Standard forms** "[...] include standard contracts, standard descriptions of procurement items, non-disclosure-agreements, proposal evaluation criteria checklists, or standardized versions of all parts of the needed bid documents"

- **Expert judgment** is used to collect and fulfill documents describing the **Statement Of Work** correctly
2.4 Projects Contracts

• A project is ready for execution when the required funds are arranged and necessary statutory approvals are obtained.

• In the case of Government/Public sector projects, the execution is taken up after administrative approval and technical sanctions are accorded and after the funds required for the period are allotted through budgetary allocations.
2.4.1 Contract

• A contract is a legal agreement. It is an exchange of promises by two or more persons.

• The contract must be enforceable by law

• Types of contract
  ➢ Turnkey contracts
  ➢ Non-turnkey contracts
2.4.2. Turnkey contracts

• In a turnkey contract, the entire responsibility of project execution is entrusted on the contractor. The owner only comes into the picture when the project is completed and he turns the key of the plant to start production.

• Till such a time the project reached a ready to start stage, the contractor takes care of all aspects of project execution.

• Turnkey contracts may be for the whole project or for units of the project.
2.4.3 Non-turnkey projects

• Non-turnkey projects are preferred when the projects are small sized, know-how for the projects is available with the promoters and when there is a strong competent and capable project team available with the organization
2.4.4. Sub-Contract

• When a major work is undertaken by a main contractor, he can entrust some of the works to be executed by sub-contractors. There will be separate contracts between the main contractor and his sub-contractors.

• The project promoter is not liable to make any payment to the sub-contractor.

• Such contracts should provide for the execution of work by the sub-contractors as per the requirements of the original contract.
2.5 Procurement Documents

• The **Procurement Documents** build the set of those documents which describe the target and the process of selecting a seller.

• "Procurement documents are used to seek proposals from prospective sellers."

• The main content is of course the statement of work. "A term such as bid, tender, or quotation is generally used when the seller selection decision will be based on the price, 

• while term such as proposal is generally used when other considerations, such as technical skills or technical approach, are paramount."
2.5.1 Tenders

- Tender is an offer in writing by the tenderer (the person who offers the tender) to execute some specified work or to supply some specified good at certain rates within a fixed time frame under certain conditions of agreement

- **Tender Notice**

- It is a notice inviting tenders from interested parties (contractors). The tender notice is a public notice and is published in leading newspapers to give wide publicity
2.5.2 Information in tender notice

- Name of the organization calling for the tender
- The nature of works, the place and estimated cost of the work
- Cost of tender documents and drawings/plans
- Last date and time of receipt of tenders, place and availability of tender documents
- Type of specifications and time of completion
- Amount of security deposits
- Date, time and place of opening tenders
2.5.2 Tender Documents

• Tender documents are meant to keep the tenderers informed about the general and specific conditions applicable for tender. Tender documents usually consist of the following:
  - A letter of invitation to the tenderers
  - Specimen tender form
  - General instructions to the tenderers
  - Details of work (civil/structural work along with complete set of civil/structural drawings)
  - Time schedule for completion of work
  - Security deposits
Tender documents cont..

• **Security deposits**

• Is the amount to be deposited by the successful tenderer after contract is finalized. Normally it is about 15% of the total value of the contract.

• This amount is collected as security measure so that the contractor (successful tenderers) fulfils all the terms and conditions of the contract and completes the work in accordance with the terms of the contract.

• Deposited amount will be forfeited in case the contractor fails to fulfil any of the terms of contract.

• The security deposit amount will be refunded to the contractor on completion of the work and after observing for work for defects if any defects liability period which is normally around six months.
2.5.4. Acceptance of Tender

• Before accepting one among the tenders received, the following aspects are given consideration:
  • Financial capacity of the tenderer
  • The technical infrastructure available with the tenderer
  • Past performance of the tenderer in executing similar works
  • The lowest tender is usually accepted provided the tenderer meets the above criteria.
  • For valid reasons, a tender other than the lowest can also be accepted
2.5.4 Tender Evaluation criteria

• The Evaluation criteria are the set of conditions which must or should be fulfilled by the bidder (in degree of quality) for being able to be selected.

• All the criteria answer the question, how well the seller is able to fulfill the statement of work, the connected conditions and how low is the price he wants to have.
2.6. Organizational Process Assets

• The Organizational Process Assets in this context refer to "[...] lists or files with information on prospective and previously qualified sellers [...]"

• The Procurement Document Package is a exactly that package that has been given to the candidates. It is a fix unit which legally documents what the buyer has asked for.

• The Organizational Process Assets in this context refer to "[...] formal policies that affect the evaluation of proposals"
2.6.1 Request Seller Responses

- **Request Seller Responses** is the process for "[...] obtaining information, quotations, bids, offers, or proposals [...]"
- The offers are generated by the sellers "at no direct cost to the project or buyer"
i) Tools and Techniques

• **Bidder conferences** are meetings for ensuring "[...] that all prospective sellers have a clear common understanding of the procurement". Bidder conferences are also known as "contractor conferences", "vendor conferences", or "pre-bid conferences"

• **Advertising** is a method for expanding existing list of sellers "[...] by placing advertisements in general circulation publications [...]", sometimes the public advertising is required for official institutes etc.

• **Develop qualified sellers list** can generate lists of candidates on the basis of historical (and environmental) information given by the organizational assets
2.6.3 Select Sellers

- **Select Sellers** is the process for "[...] reviewing offers, choosing among potential sellers, and negotiating written contract with each seller"
- this process "[...] receives bids or proposals and applies evaluation criteria, as applicable, to select one or more sellers who are both qualified and acceptable as a seller".
- Factors considered include **price** and **adequacy**.
i) Tools and Techniques

- **Weighting system** is "[...] a method for quantifying qualitative data to minimize the effect of personal prejudice on seller selection"
- **Independent estimates** are used to compare the offered price by the own estimates
- **Screening system** is a more or less raw system of "minimum requirements of performance" and is "[...] used to provide a weighted ranking from best to worst for all sellers who submitted a proposal"
- **Contract negotiation** "[...] clarifies the structure and the requirements of the contract so that mutual agreement can be reached prior to signing the contract"
Tools

- Expert judgment is multiply used, for example by the generation of independent estimates.
- Proposal evaluation techniques are already established techniques. The can be very different, "[...] but all will use some expert judgment and some form of evaluation criteria".
- The Selected Sellers build the list of those sellers, "[...] who have been judged to be in a competitive range [...] and who have negotiated a draft contract, which will be the actual contract when an award is made" (prequalified suppliers).
2.7 Contract Administration

• **Contract Administration** is the process for "[...] for managing the contract and relationship between buyer and seller, reviewing and documenting how a seller is performing or has performed to establish required corrective actions [...]"

• It's a process which both parties have to do for their own purposes: "The Contract Administration process ensures that the seller's performance meets contractual requirements and that the buyer performs according to the terms of contract"
2.7.1 Tools and Techniques

- **A Contract change control system** is the set of rules and procedures "[...] by which the contract can be modified"

- **Buyer conducted performance review** "[...] is a structured review of the seller's progress to deliver project scope and quality, within cost and schedule, as compared to the contract"

- **Inspections and audits** - if specified in the contract - may be required by the buyer and are supported by the seller

- **Performance reporting** is the base for evaluating a seller and his ability to fulfill the contract
Tools and equipment

• A **Payment** system should be used.

• **Claims administration** is the area of "contested changes and constructive changes [...] where the buyer and the seller cannot agree on compensation for the change [...]". These claims must be **documented** and then resolved by administering persons, organizations and so on

• A **Records management system** it's used "[...] to maintain an index of contract documents and correspondence, and assist with retrieving and archiving that documentation"

• **Information technology** can be used "[...] to enhance the efficiency and effectiveness of contract administration by **automating portions of the records management system**"
2.8. Contract Closure

- **Contract Closure** is the process for "[...] completing and settling each contract, including the resolution of any open items, and closing each contract applicable to the project or project phase"

- Part of this process is the "[...] verification that all work and deliverables were acceptable" or - if an "early termination" must be managed - the "[...] mutual agreement" concerning the conditions of the early termination.