ADB ASIAN DEVELOPMENT BANK

FINANCIAL AND ECONOMIC ANALYSIS
Training Session

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National Flood Preparation Plan IV – Phase-II (NFPP-IV)

ADB ASIAN DEVELOPMENT BANK

OBJECTIVES OF EFA TRAINING SESSION

- **For those just beginning their journey in Economic Analysis (EFA) as learning session**
- **And for Those who are seasoned experts, as the refresher course.**
- **Bridge Knowledge Gaps:** Regardless of your starting point, this session is designed to bridge the gap between various levels of knowledge, ensuring a cohesive learning experience that promotes growth and **confidence in EFA.**
- Efforts are regardless of your prior experience, you will find value and opportunity for growth through the training.

TARGET TOWARDS ACHIEVEMENT

(FOR ECONOMIC AND FINANCIAL ANALYSIS OF PROJECTS)

- To strengthen capacity among FFC staff and associates for rigorous economic and financial analysis in the context of flood disaster risk reduction (DRR) initiatives.
- To equip participants with advanced skills in appraising and managing flood DRR investments, emphasizing project and engineering economics.
- To enhance understanding of the economic implications of flood risk management options through practical applications and case studies.

Tell me and I will forget
Show me and I will remember
Involve me and I will understand
Step back and I will act

(Chinese proverb)

No deal gives no gain or loss

POINT OF FOCUS

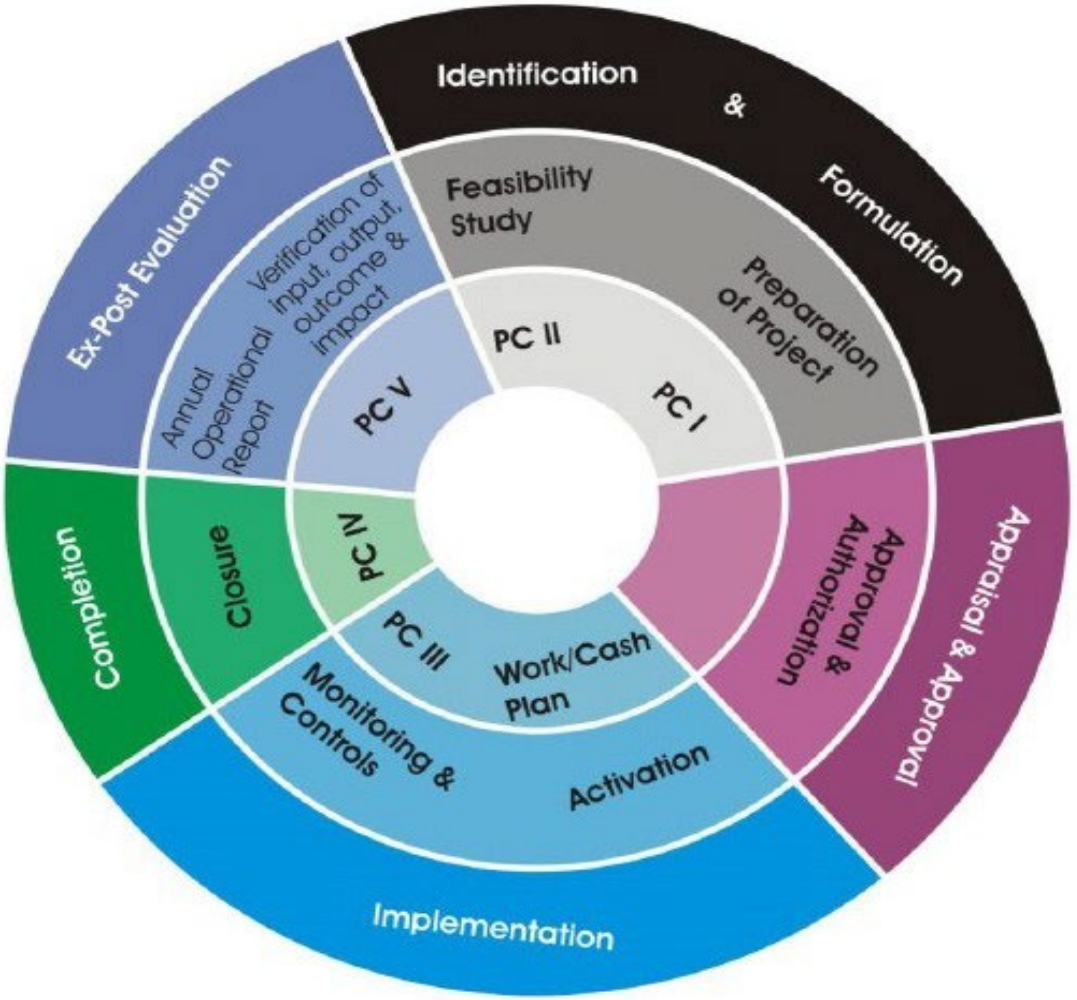
- **Initially enlisted subprojects were 5100**
- **After 2022 floods, the subproject identified were 1500**
- **170 PC-1s were prepared and submitted by 27 different agencies including irrigation, PHE and others**
- **Out of 170 PC-1s 147 PC-1s i.e. 86% were turned back for revision an re-submission (only 14% success with some concessional marks perhaps)**
- **Crafting High-Quality Appraisal Documents: Focus on PC-1**

(meeting the requirements of expectations of major donor agencies, including the World Bank (WB), Asian Development Bank (ADB), United States Agency for International Development (USAID), Asian Infrastructure Investment Bank (AIIB), Food and Agriculture Organization (FAO), Islamic Development Bank, and others.)

In actual, there might be some variation in numbers

PROJECT MANAGEMENT LIFE CYCLE

THROUGH P&D PERFORMA



CONTD.... PROJECT MANAGEMENT CYCLE

1- Additional Types of Project Approval Document

(i) Umbrella PC-I

(ii) Revised PC-I

2- Why PC-I is Necessary

Why

Section-23 of the
MANUAL FOR DEVELOPMENT PROJECTS (Revised 2019)
Requires Economic and Financial Analysis of the Projects

COMPONENTS OF PC-I

Components of PC-I

- **Presently the Focus is on :**

- **Cost Estimates and Financing Plan**: Detailed financial projections for the project, including total cost and sources of funding.

- **Economic and Financial Analysis**: Analysis to determine the project's viability, including NPV, IRR, and BC Ratio.

Basis	Financial Analysis	Economic Analysis
Viewpoint	Prepared from the viewpoint of an individual; person, company etc.	From the viewpoint of the economy or society as a whole.
Interest on capital	Treated thus: interest paid to capital suppliers external to the economy is subtracted from benefits. The result is what is available to owners of capital. Interest imputed to the entity from whose dimension analysis is being done is part of total return not cost	It is total return to society

Basis	Financial Analysis	Economic Analysis
Taxes	Treated as costs to the project	Part of project benefit, treated as transfer payments and not to be considered as cost.
Subsidies	Treated as returns to the project	Cost to society because it is expenditure of resources by government thus from society
Prices	Market prices	Prices adjusted to reflect economic or social values; the prices are 'shadow' or accounting prices. Subsides and taxes are used in the adjustment.

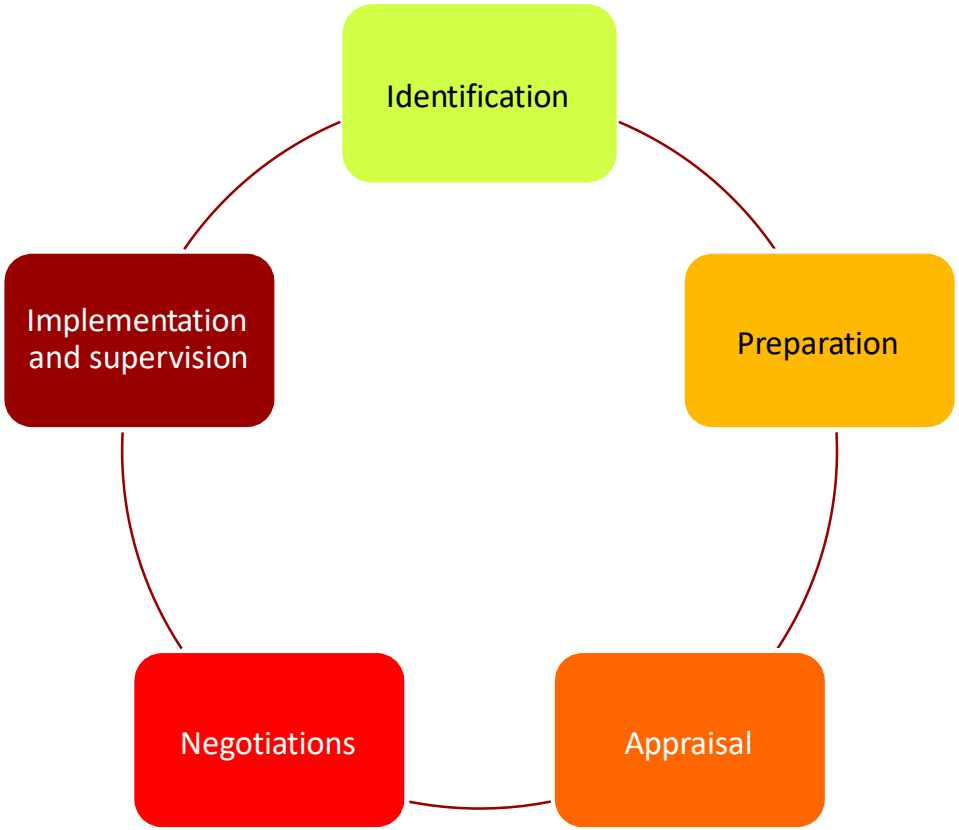
DIFFERENCE BETWEEN FINANCIAL AND ECONOMIC COSTS

Aspect	Financial Costs	Economic Costs
Definition	The actual expenses incurred in carrying out a project, valued at market prices.	The value of resources used in a project, considering opportunity costs and externalities.
Purpose	To determine the actual cash requirement for project implementation.	To assess the overall economic efficiency and impact of a project on society.
Includes	Direct payments to suppliers and contractors Salaries and wages Purchase of materials and equipment	Opportunity cost of resources Externalities (positive or negative) Shadow pricing to adjust market failures

CONTD…..DIFFERENCE BETWEEN ……..

Aspect	Financial Costs	Economic Costs
Excludes	Opportunity costs Externalities unless they have a direct financial impact	Financial transactions that do not reflect true resource costs
Used for	Budgeting and financial planning	Cost-benefit analysis and economic appraisal
Valuation	Market prices	Shadow prices or adjusted values to reflect true economic value
Interest Rate	Market interest rate for financial analysis	Social discount rate for economic analysis
Objective	Ensure financial viability and sustainability	Ensure the project's contribution to social welfare and economic efficiency

PROJECT CYCLE AND COSTING



ASPECTS OF PROJECT PREPARATION AND ANALYSIS

- In the case of projects with profit motive, a detailed business plan follows.
- The time frame for considered for projections in feasibility study is quite long, longer than that of the business plan which is mostly five years.
- In unstable economies, this can be as short as three years.

WHY ECONOMIC AND FINANCIAL ANALYSIS MATTERS

- **Critical Decision-Making:** Economic and financial analysis is vital for making informed decisions on investments in flood risk management.
- **Optimizing Resources:** Helps in prioritizing and allocating limited resources to projects with the highest economic value and impact.
- **Enhancing Project Sustainability:** Aims at ensuring projects are not only viable in the short term but also contribute to long-term sustainability and resilience.

PROJECT PREPARATION AND ANALYSIS

- ***Financial***
- Under the financial aspect, the totality of the financial dimension of the proposed project is examined.
- In social or public projects, there are several participants.
- These participants in an agricultural project include; farmers, suppliers, project agencies and customers.

PROJECT PREPARATION AND ANALYSIS

- ***Financial***
- Separate budgets and accounts (income and expenditure, balance sheet and cashflow) must be prepared.
- The aim is to make judgements of the financial efficiency, incentives, credit worthiness and liquidity of the project and its participants.

ASPECTS OF PROJECT PREPARATION AND ANALYSIS

- ***Financial***
- At this stage what is most required to assess financial feasibility using the cashflow.
- The others only serve as an input. Indeed, some approaches to building the cashflow do not use the income statement and balance sheet.

ASPECTS OF PROJECT PREPARATION AND ANALYSIS

- ***Financial***
- In a production and distribution project of a manufacturer, the participants are customers, distributors, transporters, and finally the company or manufacturer.
- Financial effects must be examined for each participant because participants are impacted differently.
- The financial effects of the participants in the project are examined here.
- There effect on them must be appropriately assessed.

ELEMENTS OF PROJECT PREPARATION

- ***Financial***
- The aim is to find out if the project is viable or not.
- The issue of profitability does not arise here at all. If the project is viable, then, a detailed project plan is prepared.
- Cashflow establishing the feasibility of the project is developd using measures of profit in terms of Net Present Value (NPV), Internal Rate of Return (IRR), and Benefit Cost Ratio (BCR) among others.

….CONTD.

- ***Financial***
- In private sector projects the proforma or projected final accounts (profit and loss, balance sheet, and cashflow) are prepared.
- And this is from the perspective of the company initiating the project.
- It must be stated, that, several participants (suppliers, competitors, customers) are affected differently, but the company is mostly interested in effects on her.

…CONTD.

- ***Economic***
- Economic aspects of project analysis use financial aspects as raw materials.
- Essentially, the financial analysis is adjusted to accomplish economic analysis.
- The overarching goal of economic analysis is the determination of the contribution of a proposed project to the total economy.
- **The principal question is: does the level of contribution of the project warrant the use of scare resources of the society to execute it?**

Feasibility	Business Plan
The feasibility study provides an investigating function.	The business plan provides a planning function.
Answers the question: is the project viable?	Lays out the actions to be taken to bring the ‘ideas’ to ‘reality’.
The feasibility study outlines and analyses several alternatives or methods of achieving project success. Therefore it assists to narrow the scope of the project to identify the best project scenario(s) to about two or three.	The business plan focuses on only one alternative or scenario.
The feasibility study is conducted before the business plan.	A business plan is prepared only* after the business venture has been deemed to be feasible.
It is a decision point; to continue or not based on the outcome.	The outcome does not provide information to continue or drop the project.
Feasibility provides information to choose the ‘blue print’ or ‘roadmap’.	The business plan provides a ‘blue print’ or ‘roadmap’.

Project Cost Tables

- ❑ **Cost by Components**
- ❑ **Cost by Category**

PROJECT COSTING

- Why project costing?
  - Finding the sum of all incremental financial costs that a project incurs during its lifetime
  - But: Not an isolated activity
  - Costing is an important part of project design
- Project costs and project cycle
  - Moving from one stage of planning to the next
  - Costs indicate feasibility
  - Costs versus design refinements

PROJECT CYCLE AND COSTING

- 1. Identification
  - Basic cost information on alternative project designs and resources required to achieve main objectives
- 2. Formulation/Preparation
  - Costs are developed based on extensive consultations with stakeholders, studies etc.
  - Costs illustrate financial requirements and economic viability of the proposed design in enough detail for all financiers to be able to consider getting involved

PROJECT CYCLE AND COSTING

- 3. Appraisal
  - The costs from preparation are reviewed to take into consideration any design changes and any specific requirements from financiers
  - A financing plan is developed, disbursements are scheduled, procurement methods are decided on etc.
  - Costs can now be used for project implementation
- 4. Negotiations
  - Borrower and financiers agree on terms of project financing. They assess whether the resources included in the design will contribute to the project's objectives, and they agree on what resources will be sourced from where.
  - The project costs become basis for legal agreement and must therefore be consistent throughout

PROJECT CYCLE AND COSTING

- 5. Implementation and supervision
  - The most detailed (subaggregated) level of costs will be used at the stage of appraisal
  - Government and project staff use cost tables to create annual work plans and budgets
  - Project monitoring is done against the activities and disbursements given in the cost tables
  - The actual use of resources will be compared to the costs given in the design
  - Financiers will use the costs to keep track of loan disbursement and financial performance of the borrower

GETTING INVOLVED IN COSTING

- Costing should never be left to the economist/financial analyst alone
- Each expert in the design team (agronomist, forester, livestock, business specialist) will have knowledge on the best design and the cost of these in his field
- Government and project staff can provide information from their own ministries and departments, and from other ongoing or recent projects
- If costing is done separately from the design process and without the input of the team, the result may be a poorly designed project where resources do not match the activities and stated objectives of the project

OPERATIONAL COSTS AFTER PROJECT IMPLEMENTATION

- Recurrent costs
  - Incremental salaries
  - Operations and maintenance
  - Other

FINANCING PLAN

- The financing plan gives the sources (financiers) and uses (disbursement categories) for the project
- Financiers are the

1) international financiers (IFIs, international NGOs, private sector, bilateral donors),

2) domestic financiers (central and local government, beneficiaries, local banks, NGOs etc)

AN EXAMPLE OF FINANCING PLAN

Kingdom of Cambodia
Project for Agricultural Development and Economic Empowerment
Disbursement Accounts by Financiers
(US$ '000)

	Govt		ADB		iDE		IFAD GRANT		IFAD LOAN		Beneficiaries				Total	
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%
A. Vehicles & machinery	-	-	-	-	-	-	-	-	-	-	-	-	304.7	100.0	304.7	0.7
1. Cars																
2. Motorcycles	-	-	-	-	-	-	-	-	-	-	-	-	721.8	100.0	721.8	1.7
Subtotal	-	-	-	-	-	-	-	-	-	-	-	-	1,026.5	100.0	1,026.5	2.4
B. Equipment	-	-	-	-	-	-	-	-	295.0	28.6	-	-	736.1	71.4	1,031.1	2.4
C. Technical assistance	-	-	-	-	-	-	3,027.5	92.2	-	-	-	-	255.4	7.8	3,282.9	7.6
D. Training	-	-	-	-	-	-	6,486.3	90.0	-	-	-	-	720.7	10.0	7,207.0	16.7
E. Consulting services & studies	-	-	-	-	-	-	2,678.6	90.0	-	-	-	-	297.6	10.0	2,976.3	6.9
F. Group Conditional Capital Transfer Scheme	-	-	-	-	-	-	-	-	11,857.2	100.0	-	-	-	-	11,857.2	27.4
G. Operating costs	-	-	-	-	-	-	2,145.7	43.2	1,649.4	33.2	-	-	1,174.1	23.6	4,969.2	11.5
H. Priority Operating Costs	-	-	-	-	-	-	-	-	960.5	100.0	-	-	-	-	960.5	2.2
I. Rural Business Stimulus Facility	-	-	-	-	-	-	-	-	225.0	25.0	675.0	75.0	-	-	900.0	2.1
J. FAO Implemented activities	-	-	313.3	10.7	-	-	748.4	25.7	867.8	29.8	918.8	31.5	67.1	2.3	2,915.5	6.7
K. SNV implemented activities	668.5	15.4	-	-	-	-	1,276.5	29.4	1,557.6	35.9	600.0	13.8	234.7	5.4	4,337.3	10.0
L. iDE implemented activties	-	-	-	-	378.5	21.3	1,136.8	63.8	87.6	4.9	-	-	178.1	10.0	1,781.0	4.1
Total PROJECT COSTS	668.5	1.5	313.3	0.7	378.5	0.9	17,500.0	40.5	17,500.1	40.5	2,193.8	5.1	4,690.3	10.8	43,244.5	100.0

DETAILED COST TABLE

- Detailed cost tables outlining the activities and resources needed in each component make up the summary tables we've been going through
- They specify the tasks and resources required, and must be detailed enough for technical experts to estimate their costs
- More details are preferred over lump sums
- Where lump sums are given, a rationale must be given in footnotes to the cost

DETAILED COST TABLES

- In most instances, minimum one detailed table is required per component
- In projects covering several geographical areas, one detailed table per location per component is preferred
- Detailed cost tables are useful for implementation and supervision, and come in handy if costs need to be re-estimated during implementation

DATA COLLECTION FOR EFA

- Macro data
  - The economist/financial analyst will gather macro data from sources such as IMF, WB, Economist Intelligence Unit and government ministries
  - This includes data on inflation, exchange rates etc.
- Project management data
  - Current project management staff are in a unique position to provide the design team with updated project management costs.
  - This includes cost of salaries, DSA, transportation, commonly used vehicles, software, operations and maintenance cost.
  - These costs should be compared across projects and the Implementation Partners (Ips) to ensure that they are not over or underestimated

DATA COLLECTION

- Project activities data
  - For these costs, the economist/financial analyst will rely a great deal on the specialists in the team of FIPs.
  - The FIPs will help provide data on costs of civil works construction through consulting with government staff or private companies
  - The agronomist/forester/livestock/other experts will provide data on the technologies, inputs or trainings being provided through the proposed project by FIP

DATA COLLECTION

- Once these costs have been organized and verified, the economist/financial expert must determine the amount of foreign exchange and the tax percentage included in each of the unit costs.
- He/she uses a combination of information from current or recent projects, information from project management staff, and information from relevant sources to get this information.

DATA COLLECTION

- In sum, cost information must be:
  - Well organized
  - From reliable sources and routinely verified
  - Realistic (neither under or overestimated)
  - Gathered and used through a multi-disciplinary effort
  - Inclusive of foreign exchange percentage
  - Inclusive of tax percentage

TYPES OF PROJECT COSTS

- **Investment costs** represent the costs of goods and services that will generate benefits over many years
- **Recurrent costs** represent the costs of goods and services required to produce benefits within a single year. They usually represent the level of cost that the borrower will need to fund after the project is completed.
- **Financial charges** incurred during construction, i.e. interest payments

LOCAL VS. FOREIGN CURRENCY

- All costs are expressed in both local currency and foreign currency (usually US dollars)
- It is customary to collect and present costs in local currency first
- NDRMF will review the costs in the currency of their reserves, hence the two currency system

LOCAL VS. FOREIGN COSTS

- Local costs are all costs paid for with local currency, meaning local goods and services
- Foreign costs include imported goods and services – directly imported or local goods with imported components.

DUTIES AND TAXES

- Duties and taxes should be included in the cost estimated
- These duties and taxes will in most cases have to be paid, and excluding them would mean underestimating the funding needed for the project
- The duty or tax rate applicable to each type of good should be explicitly stated in the cost tables

CHANGES IN PROJECT COSTS

- Base costs are our best **estimate** of project costs at a specific date
- Project costs during implementation are going to be different than the costs estimated at project preparation
- To account for this, we include price and physical contingency estimates on top of the base costs, usually as a percentage of base costs

CLASS ROOM EXERCISE

1) Increased crop productivity. The key investment is in new and improved irrigation infrastructure in three project districts.

2) Higher value added fish farming. This includes training on fish farming, and improved transport infrastructure to access central markets.

3) Efficient project management. Setting up, training and running a central Project Management Unit.

FINANCIAL AND ECONOMIC ANALYSIS

COST-BENEFIT ANALYSIS

- **Why do we do it?**
- Seeking the most efficient allocation of funds:
  - How can we get the most benefits/results from a limited amount of funds available for investment
  - Are the majority of stakeholders better off due to the project?
  - Is the country as a whole better off due to the project?

COST-BENEFIT ANALYSIS

How do we do it?

- Put a price/value on all relevant costs and benefits (insofar as possible given time and money constraints)
- Discount the net benefits to find a current value for future costs and benefits
- Compare the net benefits with the likely scenario without project

WITH AND WITHOUT PROJECT SCENARIOS

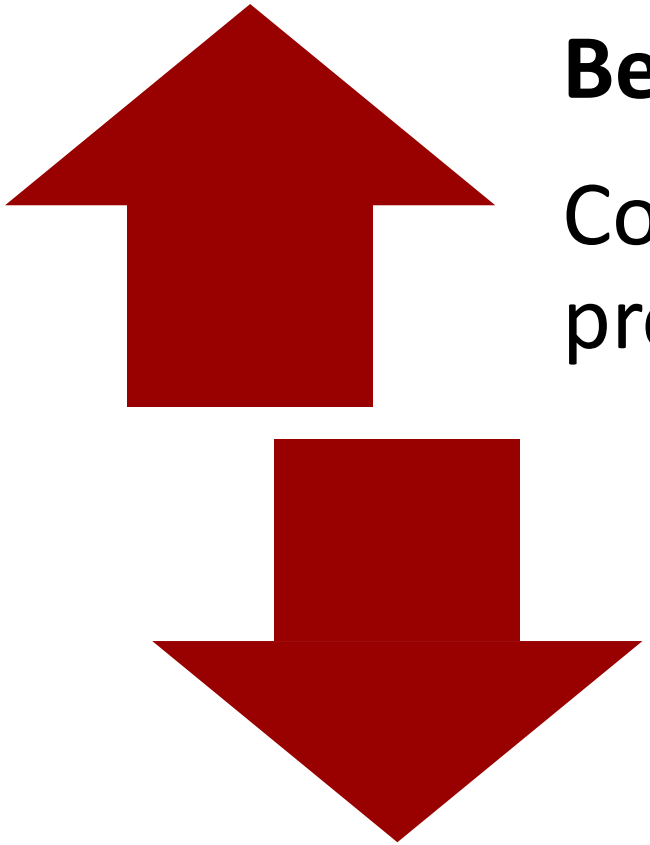
- When carrying out a cost benefit analysis, we compare the project scenario with the 'without project' scenario.

Take some time to consider why we do this, and whether this is different from comparing the situation before and after the project.

WITH AND WITHOUT PROJECT SCENARIOS

- A before and after comparison does not take into account any changes in production that would occur without the project and would thus lead to wrong assumptions about the benefits arising from the proposed project
- When we compare with and without project scenarios, the difference we get is the incremental net benefit – the value which we will use when deciding whether to go forward with the project or not

IDENTIFYING COSTS AND BENEFITS



Benefits:

Contribute to project objective

Costs:

Reduce the project objective

IDENTIFYING COSTS AND BENEFITS

- We have already identified some costs when preparing our project budget. However, the costs used for financial and economic analyses extend beyond these.
- We need to identify the costs at enterprise levels and aggregate these.
- Typically, costs are easier to identify and value than benefits.

IDENTIFYING COSTS AND BENEFITS

- **Physical goods:**
  - Easy to identify
  - Difficult to estimate quantity and timing
- **Labour:**
  - Easy to identify
  - Difficult to estimate quantity and timing
  - Difficult to work with shadow prices, estimate values for family labour

IDENTIFYING COSTS AND BENEFITS

- **Land:**
  - Easy to identify
  - Somewhat difficult to value
- **Taxes:**
  - Costs in financial analysis
  - Transfer payments in economic analysis

IDENTIFYING COSTS AND BENEFITS

- **Debt service**:
  - Cost in financial analysis
  - Omitted from economic accounts (transfer payment
- **Sunk costs**:
  - Incurred in the past
  - Never considered in project analysis
- **Contingencies**

IDENTIFYING COSTS AND BENEFITS

More on types of costs:

- **Marketable**: Goods or services that have a market cost and are sold and bought
- **Unmarketable**: Goods and services that have a cost but not a market (many public goods)

IDENTIFYING COSTS AND BENEFITS

- **Commensurable**: Goods and services that can be measured and compared in a common unit, meaning their value can easily be compared
- **Incommensurable**: Goods and services that can not be compared using a common standard, but may be measurable in natural units (i.e. carbon dioxide released)

IDENTIFYING COSTS AND BENEFITS

- **Tangible**: Things that are material in nature, meaning they can be touched, observed. Examples include increased yields, or reduced pollution,
- **Intangible**: Goods and services that are not material in nature, and cannot be easily valued – access to services, reduced morbidity, etc.

DEVELOPING A CASH FLOW

1) Identify and value costs and benefits

2) Bind the project in time

3) Estimate gross annual costs and benefits

4) Calculate incremental costs and benefits

5) Compute annual cash flows

PROJECT CRITERIA

- Either of the below criteria should give the same project decision when the same information is used
- **Benefit-cost ratio (BCR):**
  - Accept projects with a ratio of one or greater when costs and benefits are discounted at the opportunity cost of capital
  - Drawback: Netting out of costs and benefits must be done in exactly the same way for each project design being compared

PROJECT CRITERIA

- **Net present value (NPV):**
  - Discounted present value of cost is subtracted from discounted present value of benefits
  - Or, incremental net benefit stream is discounted
  - Accept all independent projects with a NPV of 0 or greater
  - Drawback: Projects cannot be ranked because NPV is an absolute, not a relative, measure

PROJECT CRITERIA

- **Internal rate of return (IRR)**
  - Maximum interest rate a project could pay for resources used if it is to recover its costs and break even
  - Not calculated directly
  - Drawback: Cannot be calculated if all discounted NPVs in cash flow are positive
  - Accept all projects with an IRR equal or greater to the opportunity cost of capital

FINANCIAL ANALYSIS

- 1. To evaluate the effect of the project on all stakeholders
- 2. To aggregate costs and benefits for the project as a whole

FINANCIAL ANALYSIS

- Analyze the effect on main stakeholders
  - Farmers/beneficiaries
  - Government
  - Other financing institutions
- Will the project present a **loss** for anyone?
- Will the beneficiaries actually be **better off**?

FINANCIAL ANALYSIS

- Do the beneficiaries have the **incentives** to take part in this project?
- Can the beneficiaries **afford** to take part in this project?
- Does the government/service provider have the **necessary funds** at all stages of project delivery?
- In sum: are the project activities **sustainable**?

FINANCIAL ANALYSIS OF PROJECT

- Analyses what capital outlays and recurrent costs the FPIs will have to cover, and what returns they can expect from the investment
- Analyses the financial ability of the FPIs to support/carry out the project
  - What is their current budget situation?
  - How much will they get from NDRMF?
  - What user fees are the beneficiaries willing and able to pay?

FINANCIAL ANALYSIS OF PROJECT

- What the analyst will need to see:
  - Balance sheet
    - Assets, liabilities, equity, reserves
  - Income and expenditure account
  - Cash flow statement
- Objective is to assess the stability of the FIP, its income and the source of its funds

ECONOMIC ANALYSIS

- Moving from stakeholders to the economy as a whole
- What is the impact of the project for the country?
- "Identify projects that contribute to the welfare of a
  - country"

ECONOMIC ANALYSIS

- Convert the information from the financial analysis into economic values
- Removing distortions, transfer payments etc.

SHADOW PRICES

- Shadow prices = social opportunity costs of resources used and outputs generated through the project
- If market prices and shadow prices do not coincide, economy is distorted
- Market imperfections and distortions mean market prices need to be adjusted to get the economic values of project inputs and outputs
- Seek to avoid investments that are only profitable under current distortions, and promote investments consistent with a long term pattern of efficient resource use

SENSITIVITY ANALYSIS

- Key risk factors are identified.
- Carry out a sensitivity analysis on each of these to assess what the occurrence of such a risk would mean for the project's profitability: changing one variable at a time and see how this affects NPV, EIRR
- Key variables to change usually include:
  - Delays in costs or benefits
  - Increases and decreases in costs and benefits
  - Duration of project

SENSITIVITY ANALYSIS

- Other variables:
  - Changes in input prices
  - Changes in product prices
  - Changes in yields

SWITCHING VALUES

- Changing the value of a variable so that NPV becomes zero
- This is the change in a variable that renders the project no longer profitable

CONCLUSION

- The assumptions used for the analysis must be explicitly stated – this will allow other analysts to review your work and clarify under what circumstances your findings are valid

QUESTIONS AND CONCLUSIONS