Regional Training Workshop on

"The Economic Valuation of The Goods and Services of Coastal Habitats"

REVERSING THE ENVIRONMENTAL DEGRADATION TRENDS IN THE SOUTH CHINA SEA AND GULF OF THAILAND

KASETSART UNIVERSITY OF THAILAND
&
UNEP/GEF SCS PROJECT

Band Tai-Had, Samut Songkram Province, Thailand

March 23-29, 2008

COST-BENEFIT ANALYSIS AND ITS APPLICATION

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WHAT IS COST - BENEFIT ANALYSIS?

C/B ANALYSIS IS BASICALLY A COMPARISON BETWEEN COSTS AND BENEFITS OF AN ACTIVITY (POLICY/PROGRAM/PROJECT)

APPLICATION OF COST-BENEFIT ANALYSIS

- Feasibility Study
- Environmental Impact Assessment (EIA)
- Strategic Environmental Assesement

Types of Feasibility

- Technical Feasibility
- Financial Feasibility
- Economic Feasibility
- Social Feasibility
- Environmental Feasibility

FINANCIAL FEASIBILITY

COMPARING

FINANCIAL COSTS

(BUSINESS OR ACCOUNTANCY OR EXPLICIT COSTS)

WITH

FINANCIAL REVENUES

(BUSINESS RETURNS)

ECONOMIC FEASIBILITY

COMPARING

ECONOMIC COSTS

WITH

ECONOMIC BENEFITS

ECONOMIC BENEFIT CONSISTS OF

TANGIBLE & INTANGIBLE BENEFITS

AND

DIRECT & INDIRECT BENEFITS

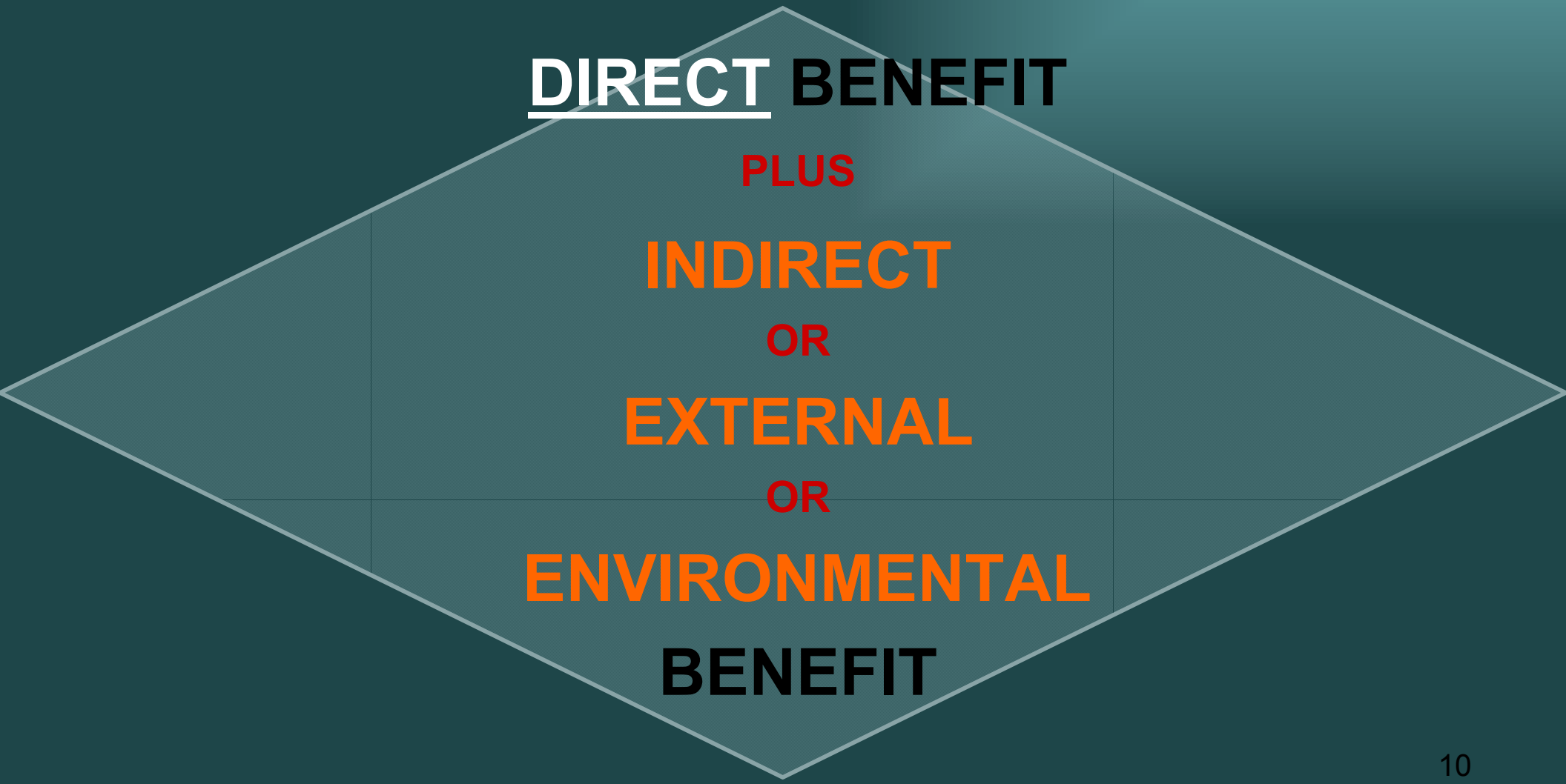
ECONOMIC COSTS

EXPLICIT COSTS

PLUS

- **IMPLICIT or OPPORTUNITY COST**
- **DIRECT and INDIRECT COSTS**

SOCIAL BENEFIT CONSITS OF



SOCIAL COSTS

NET SOCIAL BENEFIT = TOTAL SOCIAL BENEFIT - TOTAL SOCIAL COST

DIRECT ECONOMIC BENEFIT | EXTERNAL BENEFIT | TOTAL SOCIAL BENEFIT

TOTAL SOCIAL COST = DIRECT ECONOMIC COST + PREVENTION COST + EXTERNAL COST

NET PRESENT VALUE (NPV)

$$NPV = \sum_{t=1}^{n} \frac{(B_d + B_e)_t}{(1+r)^t} - \sum_{t=1}^{n} \frac{(C_d - C_p - C_e)_t}{(1+r)^t}$$

OR

$$NPV = \Sigma[\{(B_d + B_e)_t - (C_d + C_e + C_p)_t\} : (1+r)^t]$$

Action is feasible if NPV > 0

where:

NPV	= net present value	Cp	= prevention costs
Bd	= direct benefit	r	= opportunity rate of discount
Be	= external benefit	t	= years
Ce	= direct cost	i	= type of costs and benefits

Benefit - Cost Ratio (B/C)

$$\text{B / C ratio} = \frac{\sum_{t=1}^{n} \left[\frac{(B_{di} + B_{ei})_t}{(1+r)^t} \right]}{\sum_{t=1}^{n} \left[\frac{(C_{di} + C_{pi} + C_{ei})_t}{(1+r)^t} \right]}$$

OR

$$B/C = \{\Sigma(B_d + B_e)_t / (1+r)^t\} : \{\Sigma(C_d + C_e + C_p)_t\}/(1+r)^t$$

Action is feasible when B/C > 1

INTERNAL RATE OF RETURN (IRR)

IRR is r (rate of interest)
that make the
NPV = 0

a. NPV

$$NPV = \sum_{t-1}^{n} \frac{Bt - Ct}{(1+r)^t}$$

NPV ≥ 0 : Project is ***feasible***
NPV < 0 : Project is ***not feasible***

b. B/C :

$$Net\ B/C = \sum_{t-1}^{n} \frac{\frac{Bt - Ct}{(1+r)^t} Pos}{\frac{Bt - Ct}{(1+r)^t} neg}$$

$$Gross\ B/C = \sum_{t-1}^{n} \frac{\frac{Bt}{(1+r)^t}}{\frac{Bt}{(1+r)^t}}$$

Kriteria B/C ≥ 1 :
Project is ***feasible***

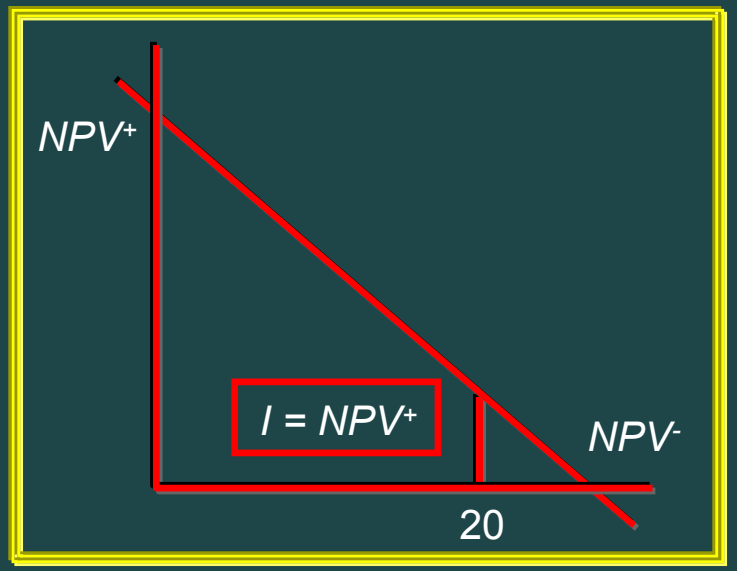
c. IRR

NPV = 0 -> IRR = DR

$$IRR = i^+ + \Delta(i^+ - i^-)\left(\left|\frac{NPV^+}{NPV^+ + NPV^-}\right|\right)$$

20 + 5 (0,5) = 20 + 2,5 = 22,5

IRR > DR : **feasible**



EXERCISES

- What did you do
- What did you get
- What are the impacts and
- What are the implications
- What
- Why
- How
- For whom