Session 3.2
Project and the Environment

Introductory Course on Economic Analysis of Investment Projects
## Externalities: Examples of Project Environmental Impact

<table>
<thead>
<tr>
<th>On-site Impacts</th>
<th>Off-site Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Crop production increments</td>
<td>Chemical pollution in rivers flowing through plantations</td>
</tr>
<tr>
<td>2 Increased forest area</td>
<td>Micro and meso climate change</td>
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<tr>
<td>3 Increased tourism</td>
<td>Downstream solid waste pollution</td>
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<tr>
<td>4 Reduced soil erosion</td>
<td>Reduced downstream siltation, more regular river flow and increased hydropower generation</td>
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<tr>
<td>5 Enhanced mangrove breeding grounds for fish</td>
<td>Increase in fish stocks in nearby coastal waters</td>
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Types of project

- ‘Environmental projects’ – wetlands, power rehabilitation
- Projects with significant by-product effects – logging, fishing, dams, power
- Projects with minor by-product effects – most projects have some effect
Bank Policy

- EIA mandatory for large projects
- Lists impacts
- Follows ‘polluter pays’ principle
- Requires mitigation be included in project costs
- Eg resettlement, air and water treatment, wildlife protection
- Problem is unanticipated or unmitigated effects eg climate change
Valuation Methodologies

- Market -based approaches (eg costs of damage or mitigation)

- Implicit markets (eg hedonic pricing, travel cost)

- Direct surveys (contingent valuation)
Cost-based

- Common to focus on foregone output eg loss of agricultural yields due to soil erosion, or output losses due to flooding

- If cost estimates are available they must be weighted by probability of damage occurring

- Eg risk of sea level rise due to global warming
Implicit markets

- Relatively common in developed countries

- Use of a model to explain property prices to infer cost of noise pollution or air pollution eg due to proximity to airport extension or new road

\[ P = f \left( H, X, E \right) \]

Where P is property price, H is house characteristics, X is area characteristics and E is environmental impact
Contingent valuation

- Survey approach
- Apply repeated bids to establish willingness to pay to preserve environmental feature - e.g., scenic view, open spaces, wildlife
- Same methodology can be applied as in water, including benefit transfer
- Difficulty in explaining idea of paying for environment
Discount rate

- Should normal rate apply?
- Rise in relative scarcity of environmental assets is equivalent to adjusted lower rate
- Stern Review on Climate Change used a discount rate of close to zero (based on possibility of world extinction)
- Other Environmental studies suggest rates of 1.0% - 3.0 % based on declining utility of income
Thank you