Ecosystem Services Identification, Valuation & Integration (ESIVI)

Strategic Sustainability and Climate Change Team, London

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Outline

- Background
- What is ESIVI?
- ESIVI Best Practice
- Applications & Developments
- Questions?
Background
Ecosystem services: A growing agenda

- Rio +20 ‘Green Economy’
- ICMM ‘Good practice guidance for mining and biodiversity’
- The Economics of Ecosystems and Biodiversity (TEEB)
- Intergovernmental Platform on Biodiversity and Ecosystem Systems (IPBES)
- Nagoya ‘Aichi Biodiversity Targets’
- International Finance Corporation requires client projects to “maintain the benefits from ecosystem services”
- EU target to halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020 and restore them in so far as feasible
- UN Decade on Biodiversity
- US, Brazil, and Australian legislation mandate biodiversity offsets
<table>
<thead>
<tr>
<th>IFC Performance Standard</th>
<th>Summary of requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PS1</strong>: Assessment and Management of Environmental and Social Risks and Impacts</td>
<td>Identify all reasonably expected risks and impacts related to <em>ecosystem services</em> and use a broader definition of a project’s area of influence, which now includes indirect project impact on <em>ecosystem services</em> upon which Affected Communities’ livelihoods are dependent.</td>
</tr>
<tr>
<td><strong>PS4</strong>: Community Health, Safety, and Security</td>
<td>Assess and manage health, safety, and security risks to communities resulting from direct project impact on provisioning and regulating <em>ecosystem services</em> such as the loss of buffer areas (e.g., wetlands, mangroves, or upland forests).</td>
</tr>
<tr>
<td><strong>PS5</strong>: Land Acquisition and Involuntary Resettlement</td>
<td>Assess impacts on and compensate for loss of provisioning <em>ecosystem services</em> resulting from land acquisition and involuntary resettlement.</td>
</tr>
<tr>
<td><strong>PS6</strong>: Biodiversity Conservation and Sustainable Management of Living Natural Resources</td>
<td>Carry out a systematic review (including participation of Affected Communities) of all <em>ecosystem services</em> a project will impact or is dependent upon to identify priority ecosystem services, and avoid, minimize, and mitigate impacts on priority <em>ecosystem services</em> for which a client has direct management control or significant influence.</td>
</tr>
<tr>
<td><strong>PS7</strong>: Indigenous Peoples</td>
<td>Assess provisioning and cultural <em>ecosystem services</em> when examining projects affecting Indigenous Peoples.</td>
</tr>
<tr>
<td><strong>PS8</strong>: Cultural Heritage</td>
<td>Minimize adverse impacts and implement restoration measures, in situ, that ensure maintenance of the value and functionality of the cultural heritage, including maintaining or restoring any <em>ecosystem processes</em> (consistent with requirements in Performance Standard 6 related to <em>ecosystem services</em> and conservation of biodiversity) needed to support it. Where restoration in situ is not possible, restore the functionality of the cultural heritage, in a different location, including the <em>ecosystem processes</em> needed to support it.</td>
</tr>
</tbody>
</table>
What is ESIVI?
What is ESIVI?

- ESIVI is designed to enable users to **integrate ecosystem services assessments into ESIA**s or produce **standalone assessments** using a rigorous and transparent framework.

- It can be used on any type of project anywhere in the world and can be undertaken at any point in the project’s lifecycle.

- The tool has been designed to be used by:
  - **Private companies** to meet environmental and social standards.
  - **NGOs and international organisations** to assess the full range of environmental and social impacts of projects.
  - **National or regional governments** to ensure that all of the benefits from ecosystem services are incorporated into the decision-making process.
The ESIVI approach

- Provides a structured framework using a mix of qualitative and quantitative inputs and scoring metrics to guide users through a 3 stage assessment

- Emphasises stakeholder participation to identify which ecosystem services provide important benefits and to whom

- Provides an integrated analysis based on input from multiple disciplines, including economists, ecologists, social scientists etc.

- Identifies linkages and trade-offs between different services to identify actions securing multiple benefits and cost effective solutions to lenders requirements
What does ESIVI cover?

- **Scoping**: To identify the priority ecosystem services a project or policy may impact or depend on.

- **Assessment**: To establish baseline provision of priority ecosystem services, quantify the project or policy’s impact or dependence on them, and identify those impacts which may require mitigation.

- **Mitigation**: To identify options to maintain or enhance the supply of priority ecosystem services and design actions which secure provision of multiple services cost-effectively.
Stage 1: Scoping

- Identify the **priority ecosystem services** that the project may **impact** or may be **dependent on**

- The ESIVI tool offers two approaches to scoping...
Option 1: Landcover approach

Users identify which landcover types are affected then ESIVI automatically identifies the ecosystem services provided.
### Option 2: Checklist approach

Users systematically review the full checklist of ecosystem services that could be affected by a project.

<table>
<thead>
<tr>
<th>Category of Ecosystem Service</th>
<th>Provisioning Services</th>
<th>Regulating Services</th>
<th>Cultural Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crops</td>
<td>Local climate regulation</td>
<td></td>
<td>Tourism &amp; recreation values</td>
</tr>
<tr>
<td>Livestock &amp; fodder</td>
<td>Global climate regulation</td>
<td></td>
<td>Cultural &amp; spiritual values</td>
</tr>
<tr>
<td>Capture fisheries</td>
<td>Water regulation</td>
<td></td>
<td>Scientific &amp; knowledge values</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>Air quality regulation</td>
<td></td>
<td>Wild species diversity</td>
</tr>
<tr>
<td>Wild foods</td>
<td>Erosion regulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timber</td>
<td>Water quality regulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>Pollination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biochemicals/medicine</td>
<td>Disease and pest control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water (supply)</td>
<td>Noise regulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fibre</td>
<td>Soil quality regulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Genetic resources</td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>
Scoping assessment questions

Users then answer a series of questions and ESIVI calculates an indicative impact significance score

Scoping is a broad level desktop exercise based on literature review, GIS mapping, online mapping tools, aerial photography and any available local information.
Scoping output

- At each stage a printable summary report enables users to demonstrate the reasoning and assessment for each decision in a rigorous and transparent manner.

- This output can then be incorporated into existing ESIA reports or used as a basis for a standalone ecosystem service assessment.

- Template reports and a user manual explain how to integrate the outputs.
Stage 2: Assessment

- Establish the baseline provision and quantify the project’s **impact** or **dependence** on priority ecosystem services in order to identify those impacts which may require mitigation.

- Results filter through at each stage.

<table>
<thead>
<tr>
<th>Land Cover</th>
<th>Ecosystem Service provided by relevant land cover type</th>
<th>Do impacts on this ESS need to be assessed?</th>
<th>What to do?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cropland (irrigated or non-irrigated), including ricefields</td>
<td>Crops</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Livestock &amp; fodder</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Energy</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

ESIVI tool - V.1.0
Data collection

- Establish baseline level of priority ecosystems services and their use by beneficiaries through online mapping tools, community workshops, stakeholder surveys, biodiversity surveys etc.

- Input data to ESIVI

- Evaluate changes in ecosystem services if the project goes ahead and the impact on beneficiaries ($ impact, % habitat lost, decline in fisheries by x tonnes per year, etc)

Assessment requires primary data collection and should inform data collection for ESIAs.

Monetary or non-monetary valuation may be required
Impact assessment questions

Users then answer a series of questions and ESIVI calculates an impact significance score.

Impact Significance

<table>
<thead>
<tr>
<th>Impact Significance</th>
<th>Score</th>
</tr>
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<tbody>
<tr>
<td>Negligible</td>
<td>0</td>
</tr>
<tr>
<td>Low / Minor</td>
<td>1-2</td>
</tr>
<tr>
<td>Medium / Moderate</td>
<td>3-5</td>
</tr>
<tr>
<td>High / Significant</td>
<td>6-8</td>
</tr>
<tr>
<td>Critical</td>
<td>&gt;8</td>
</tr>
</tbody>
</table>

This assessment should be completed at a collaborative workshop with experts from a range of disciplines.

Impact Significance Score

- Negligible: 0
- Low / Minor: 1-2
- Medium / Moderate: 3-5
- High / Significant: 6-8
- Critical: >8
Stage 3: Mitigation Assessment

- Identify appropriate mitigation measures to manage impacts on key ecosystem services using a 3 step hierarchy

- Examples of mitigation could include:
  - Adopting best available technology to reduce impacts on certain services
  - Creating Payments for Ecosystem Services (PES) schemes to secure services the Project is dependent upon

This assessment should be completed at the collaborative workshop with experts from a range of disciplines
ESIVI Best Practice
How should ESIVI be used?

Ideally ESIVI should involve 4 key stages:

- **Phase 1:**
  - Scoping
  - Broad impact assessment
  - Early mitigation options

- **Phase 2:**
  - Primary data collection
  - Detailed impact assessment
  - Mitigation of residual impacts

- **Phase 3:**
  - Review process
  - Revisions and further assessment

- **Phase 4:**
  - Report writing
  - Presentation of results
How should ESIVI be used?

- Detailed assessments won’t always be possible
- ESIVI is flexible and allows assessments to be carried out at any stage of a project using whatever data is available
- The ESIVI assessment can be as detailed or as broad as required yet still provide a transparent and robust assessment that satisfies requirements

Light touch assessment
Based on secondary data or data already collected for ESIA

Comprehensive assessment
Extensive stakeholder engagement and full economic valuation
Applications & Developments
ESIVI is applicable to national and international project development

Currently being piloted on:
- A mine expansion project in Mauritania
- A port, fertiliser plant, and freezone in Gabon
- Further projects in Mauritania
Benefits of ESIVI

- Allows assessments to be completed for any type of project using an innovative methodology that **meets best practice requirements**

- Provides **step-by-step guidance to the ecosystem approach** enabling users to fully understand the theory and its benefits, as well as how to assess them comprehensively

- Provides a **clear framework for reports** that can be integrated into existing ESIA reports or used as standalone documents

- Combines **objective** data and **subjective** stakeholder values and expert judgement

- Brings together team members from a variety of disciplines to **think collaboratively** about projects which stimulates discussion and ideas
Future developments

- **ESIVI valuation** – to integrate an ecosystem service valuation function

- **ESIVI mapping module** – to integrate a baseline ecosystem service mapping function

- **ESIVI for corporate evaluation** – to assess ecosystem service risks and opportunities for private companies
Feedback from FFI & Kings College London

- “The questions and evaluation provides greater analysis that other previous tools”
- “It will be useful in connecting the complex spatial models available with a project-led assessment framework”
- “It is important not to screen out potential ES before the impact assessment phase so I like that fact that you have an additional “checklist approach” step”
- “I like the concise, yet clear manner in which ES and valuation is introduced”
- “Having clear visuals helps significantly”
- “Very easy to understand and follow”
Questions?

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