



Ecosystem Services Identification, Valuation & Integration (ESIVI)

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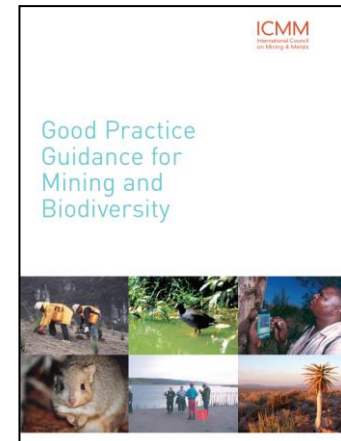
Outline

- ▣ 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



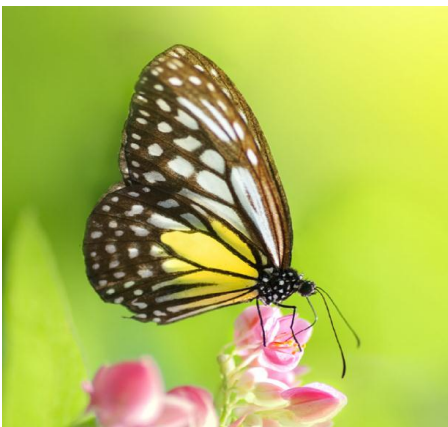
IFC Performance Standards

IFC Performance Standard	Summary of requirements
PS1: Assessment and Management of Environmental and Social Risks and Impacts	Identify all reasonably expected risks and impacts related to <i>ecosystem services</i> and use a broader definition of a project's area of influence, which now includes indirect project impact on <i>ecosystem services</i> upon which Affected Communities' livelihoods are dependent.
PS4: Community Health, Safety, and Security	Assess and manage health, safety, and security risks to communities resulting from direct project impact on provisioning and regulating <i>ecosystem services</i> such as the loss of buffer areas (e.g., wetlands, mangroves, or upland forests).
PS5: Land Acquisition and Involuntary Resettlement	Assess impacts on and compensate for loss of provisioning <i>ecosystem services</i> resulting from land acquisition and involuntary resettlement.
PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Carry out a systematic review (including participation of Affected Communities) of all <i>ecosystem services</i> a project will impact or is dependent upon to identify priority ecosystem services, and avoid, minimize, and mitigate impacts on priority <i>ecosystem services</i> for which a client has direct management control or significant influence.
PS7: Indigenous Peoples	Assess provisioning and cultural <i>ecosystem services</i> when examining projects affecting Indigenous Peoples.
PS8: Cultural Heritage	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 <i>ecosystem processes</i> (consistent with requirements in Performance Standard 6 related to <i>ecosystem services</i> 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 <i>ecosystem processes</i> needed to support it.

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 ESIV 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

ESIVI tool

Delivered as part of the URS Sustainability Challenge

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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

IDENTIFYING LAND COVERS (ECOSYSTEMS) POTENTIALLY IMPACTED BY THE PROJECT

Back to Project Info Clear All Check All Proceed to Part 1 Scoping after selecting land covers

Urban and built-up areas

☐ Man made infrastructure including urban fabric industrial units, roads, rail, ports, airports, mineral extraction, dump and construction sites ?

☐ Green urban areas and sport and leisure facilities ?

Agricultural land

☒ Cropland (irrigated or non-irrigated), including ricefields ?

☒ Orchards, groves, vineyards, nurseries and ornamental horticultural areas ?

☐ Pastures ?

Forests / woodland

☐ Broad-leaved forest ?

☐ Coniferous forest ?

☐ Mixed forest ?

Marshes, bogs and fens ?

☐ Coastal saltmarshes and mangroves ?

Help

Cropland (irrigated or non-irrigated), including ricefields

Annual crops associated with permanent crops: Non-permanent crops (arable lands or pasture) associated with permanent crops on the same parcel.

Complex cultivation patterns: Juxtaposition of small parcels of diverse annual crops, pasture and/or permanent crops.

Non-irrigated arable land: Cereals, legumes, fodder crops, root crops and fallow land. Includes flower and tree nurseries, vegetables in greenhouses, aromatic, medicinal and culinary plants.

Permanently irrigated land: Crops irrigated permanently and periodically, using a permanent infrastructure (irrigation channels, drainage network). Most of these crops could not be cultivated without an artificial water supply. Does not include sporadically irrigated land.

Ricefields: Land developed for rice cultivation. Flat surfaces with irrigation channels. Surfaces regularly flooded.

Agriculture and natural vegetation: Land principally occupied by agriculture, with significant areas of natural vegetation. Areas principally occupied by agriculture, interspersed with significant natural areas.

Close

Option 2: Checklist approach

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

Category of Ecosystem Service		
Provisioning Services	Regulating Services	Cultural Services
Crops	Local climate regulation	Tourism & recreation values
Livestock & fodder	Global climate regulation	Cultural & spiritual values
Capture fisheries	Water regulation	Scientific & knowledge values
Aquaculture	Air quality regulation	Wild species diversity
Wild foods	Erosion regulation	
Timber	Water quality regulation	
Energy	Pollination	
Biochemicals/medicine	Disease and pest control	
Water (supply)	Noise regulation	
Fibre	Soil quality regulation	
Genetic resources		

Scoping assessment questions

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

Back to Land Cover selection
Proceed to Part 2 Impacts
Print report

ESIVI tool - V.1.0

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Land Cover	Ecosystem Service provided by relevant land cover type	Who are the beneficiaries of this ESS? (Select as many as apply)	Could the project reduce the benefits that any beneficiaries derive from this ESS?	Does the project depend on this ecosystem service for successful performance?	Does the client have direct management control or significant influence over this ESS?	Is this a Type 1 or a Type 2 ESS?	Indicative significance this ESS to the project	Based on the answers to the previous questions, is this a priority ESS that should be included in the TOR?	Comments/Justification
Cropland (irrigated or non-irrigated), including ricefields	Crops	Local, National	Potentially	Yes	Yes	Type 2	5	Yes	This service is...
	Livestock & fodder	None, Local	Yes	Yes	Potentially	Type 1&2	9	Yes	
	Energy	None	No	No	No		0	No	
	Biochemicals/medicine			Potentially					
	Fibre								

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

Impact Significance	Score
- Service not present in area and unlikely to be affected - Does not have to be assessed further	0
- Project may have some insignificant impact/dependence on the service - Does not have to be assessed further	1-4
- Project may have significant impact/dependence on the service - Should be assessed further	5-8
- Project likely to have significant impact/dependence on the service - Must be assessed further	9-10

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



[Proceed to Part 2](#)
Impacts

[Print report](#)

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Legend:

Provisioning services

Regulating services

Cultural services

Part 1 Scoping: Assessment

Land Cover	Ecosystem Service: provided by relevant land cover type	Is this ESS present in the project area?	Is the project likely to have an impact on the ESS?	Who are the beneficiaries of this ESS? (Select as many as apply)	Could the project reduce the benefits that any beneficiaries derive from this ESS?	Does the project depend on this ecosystem service for successful performance?	Does the client have direct management control or significant influence over this ESS?	Is this a Type 1 or a Type 2 ESS?	Indicative significance this ESS to the project	Based on the answers to the previous questions, is this a priority ESS that should be included in the TOR?	Comments/Justification
Ecosystem service checklist for all land cover types	Crops	No	No						0	No	
	Livestock & fodder	Yes	Yes	Local, Regional	No	No	No	Type 1	4	No	
	Capture fisheries	Yes	Yes	Local	Potentially	No	Yes	Type 1	7	Yes	

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

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Scoping

Proceed to Part 3
Mitigation Assessment

Print report

ESIVI tool - V.1.0

Legend:

Part 2 Impacts: Assessment

Land Cover	Ecosystem Service provided by relevant land cover type	Do impacts on this ESS need to be assessed?	Wh of t
Cropland (irrigated or non-irrigated), including ricefields	Crops	Yes	
	Livestock & fodder	Yes	
	Energy	No	

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 ESIV
- ❑ 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 ESIA.

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

Back to Part 1
Scoping
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Mitigation Assessment
Print report

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Land Cover	Ecosystem Service provided by relevant land cover type	What are the likely impacts on beneficiaries of this ESS? Please include any general comments, assumptions made, additional considerations etc.	Are the impacts on this ESS likely to be a major contributor to the well-being of any beneficiaries?	Is this ESS replaceable?	There are some ecosystem services (ESS) which, when lost or degraded, can be provided through natural provision elsewhere or through man-made interventions. However, there are also some ESS which are irreplaceable and cannot be provided through either method once they have been lost or degraded. For example, construction of a port may restrict access to a beach that is used for recreation. If these cultural services could be provided to a similar level by an alternative beach in the area, then the ESS could be considered replaceable. Alternatively, a project may impact the flood regulation service provided in an area, such as by clearing mangroves which provide a protective buffer against flooding. This service could potentially be provided by constructing man-made	Indicative significance of the impact on this ESS?
Cropland (irrigated or non-irrigated), including ricefields	Crops	INPUT DATA HERE	Yes	Yes		High
	Livestock & fodder		No	No		Minor
	Energy		Potentially	No		Moderate
	Biochemicals/medicine					
	Fibre					

Impact Significance	Score
Negligible	0
Low / Minor	1-2
Medium / Moderate	3-5
High / Significant	6-8
Critical	>8

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

Stage 3: Mitigation Assessment

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Impacts](#)

[Print report](#)

ESIVI tool - V.1.0

Legend:

Provisioning services

Regulating services

Cultural services

Part 3 Mitigation: Assessment									
Land Cover	Ecosystem Service provided by relevant land cover type	Impact significance	Is any mitigation required?	Step 1: Can the impacts be avoided?	Comment/description	Step 2: Can the impacts be minimised?	Comment/description	Residual impact significance Please choose	Step 3: How can any residual impacts be compensated or offset?
Cropland (irrigated or non-irrigated), including ricefields	Crops	High	Yes	Yes	DESCRIBE	Yes	DESCRIBE	Moderate	
	Livestock & fodder	Minor	No						
	Energy	Moderate	Yes						
	Biochemicals/medicine	Negligible	No						
	Fibre	Negligible	No						

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

- ❑ Examples of mitigation could include:

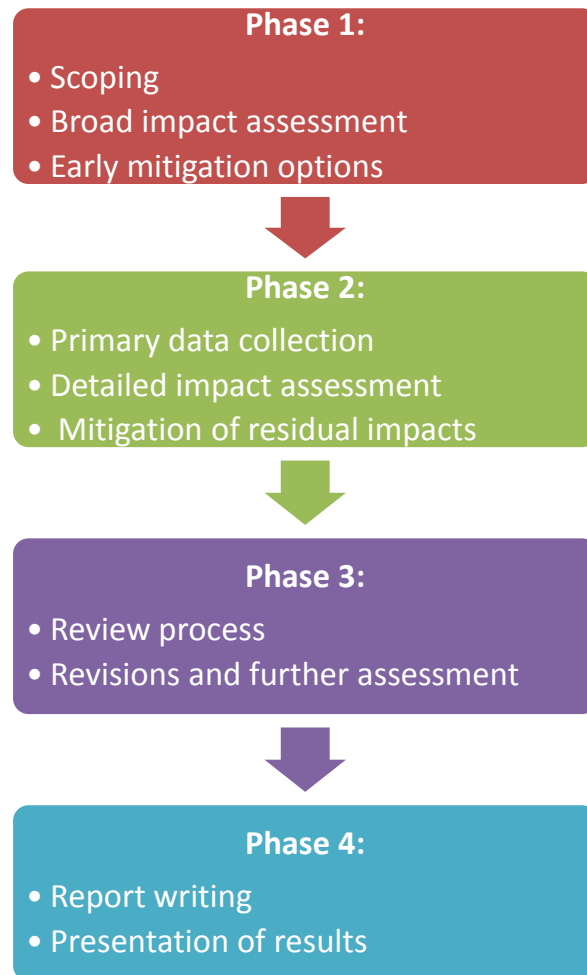
- Adopting best available technology to reduce impacts on certain services
- Creating Payments for Ecosystem Services (PES) schemes to secure services the Project is dependent upon

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:



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

Application

- ▣ 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



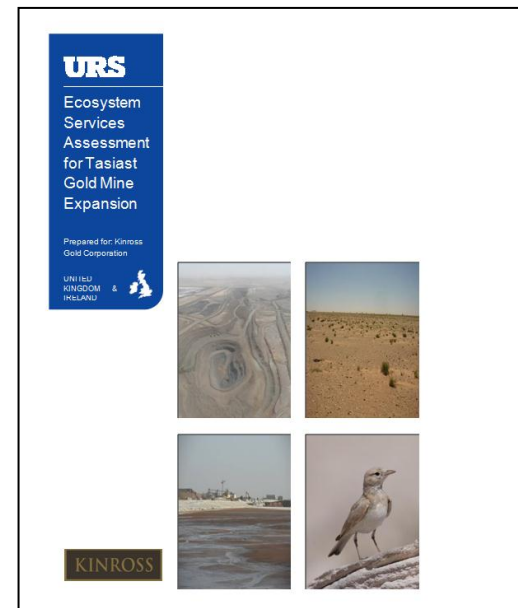
Benefits of ESIVI

- ✓ 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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