



Bharathidasan University

Programme: MSc Environmental Science and Sustainable Management

Course Title: ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Course Code: 21PGCC04

Unit- I Evolution of Environmental Assessment

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How the EIA evolved.....1970s-1980s

1976 - three sites identified.

1979 - preferred site on coral reef next to Shiraho Village.

1980 - Anti-airport Shiraho villagers formed local opposition group, with later support from international and Japanese environmental groups.





How the EIA evolved.....1970s-1980s

1981 - 1st environmental impact statement (EIS) by private consultants.

1983 - 2nd EIS by private consultants.

1986 - 3rd EIS by Okinawa Prefectural Government.

1988 - Runway length reduced from 2,500 to 2,000 m and 4th EIS undertaken.

1989 - Site shifted to Karadake (north of island). New assessment started but never finished.





How the EIA evolved - 1990 onwards.....

1996 - Environment Agency (now Ministry of Environment) announced proposal for preservation of coral reefs in the Shiraho area through national marine park designation.

1993 - Site of new airport shifted to Miyara (inland).

1998- 5th EIS completed in 1998. Process stalled by opposition from local farmers. WWF sponsored study reported on the potential impacts on the reef from red soil run-off.



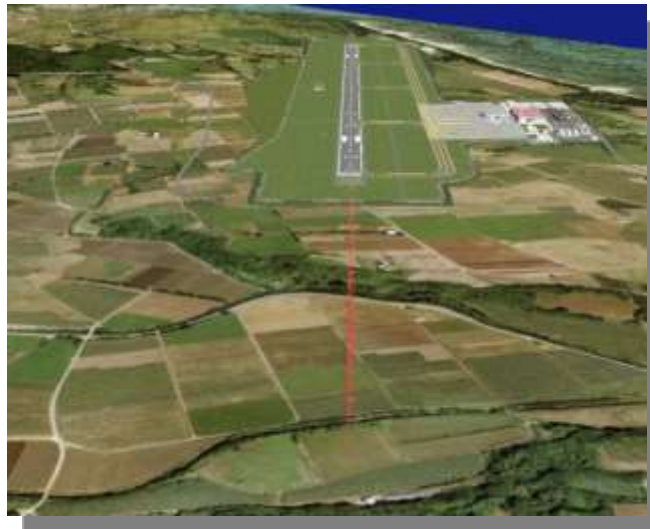


How the EIA evolved - 1990 onwards.....

2000 - Application to start construction.

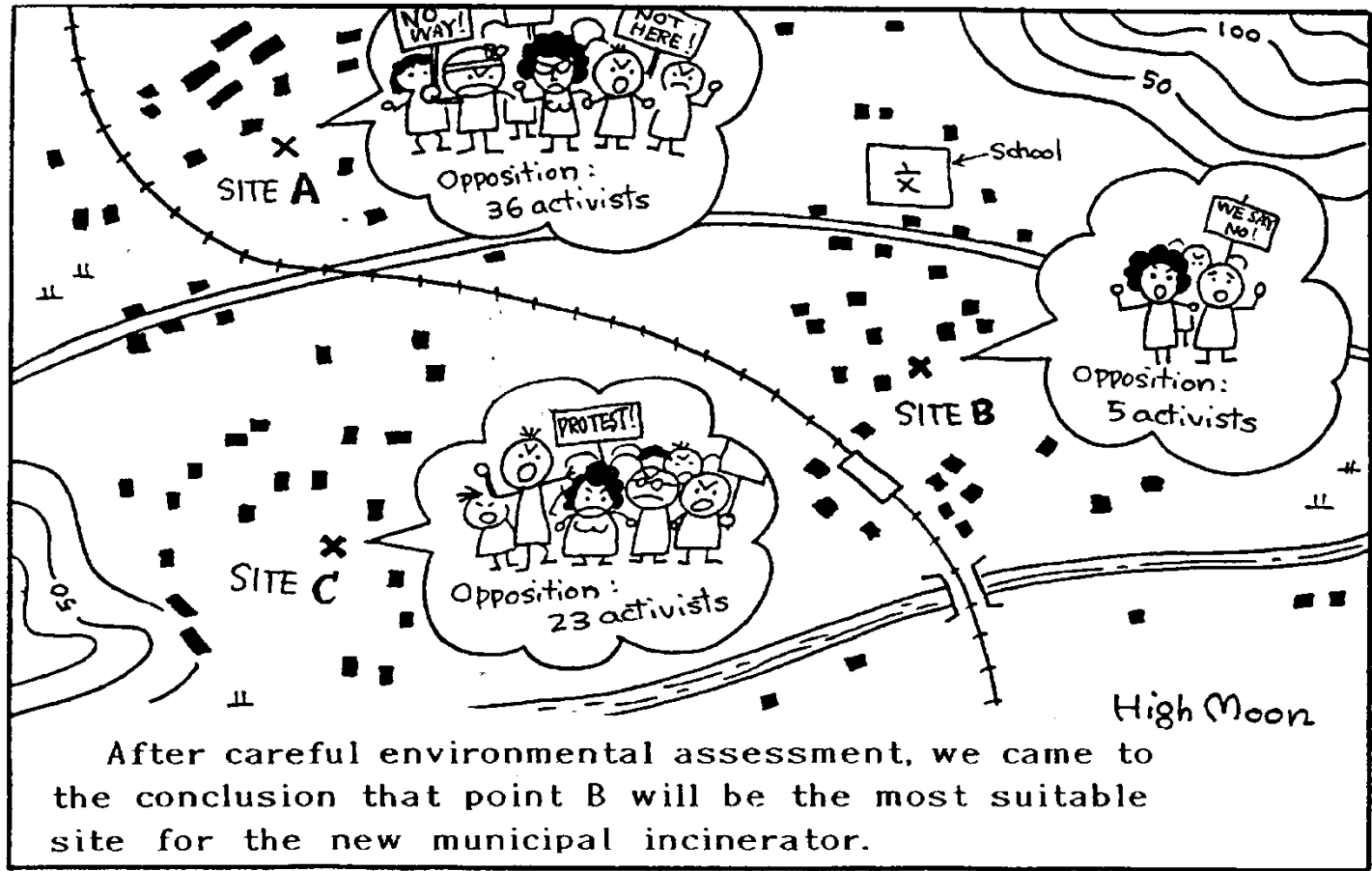
2001 - Special committee recommends relocating terminal buildings to eastern side of airport.

2005 - Permission to construct the airport given by national government.





Environmental Assessment





The case study shows conflict between:

- those favouring development and material progress (Ishigaki island dwellers).
- those favouring harmonious relationship with nature and preservation of a way of life (Shiraho villagers).
- NIMBYists (local farmers).
- Post-materialists (Japanese and international conservation groups).

New Ishigaki Island Airport represents a microcosm of the conflicting interests surrounding almost all development decisions.....



SEA and project level EIA play key role in enabling interest groups make long-term informed decisions.



Start with the basics

Is this a good way to understand EIA and SEA?

ENVIRONMENTAL ASSESSMENT + **STRATEGIC**

Or is this better?

SEA = GOOD STRATEGY

EIA = GOOD DESIGN





EIA and SEA share same origin

US Tradition of Administrative
Reform and Natural Resource
Management
National Environmental Protection
Act 1969

Experience with Natural Resource
Economics and Cost Benefit Analysis

CBA - Places a monetary
value upon non-economic
variables such as health
impacts of air pollution

Emergence of a system of
Global Environmental Governance
1972 Stockholm Environment
Conference

Recognition of need for
rational planning as a tool to
reconcile conflicts between
development and
environmental protection



NEPA (1969) Influences

- US resource management tradition recognized the environment as the backbone of the economy and source of livelihoods.
- NEPA promoted efforts to prevent environmental damage through a **systematic interdisciplinary approach** to ensure appropriate consideration of unquantified environmental values.
- Clauses relevant to SEA contained in Section 102, with requirement for a detailed statement to accompany ***“proposals for legislation and other major federal actions significantly affecting the environment.”***



Course Module on SEA

See the work in progress at http://unudev.org/wp/?page_id=92



Strategic Environmental Assessment

Course Module

Welcome

BACKGROUND

STRATEGIC ACTION

1. Introduction
2. Strategic actions
3. Understanding the strategic action
4. Timing of the SEA
5. Planning systems
6. Who should be involved in SEA?
7. Engaging the public
8. Institutional context for effective SEA
9. Summary

SEA PROCESS

> BASELINE

> ASSESSMENT

> IMPLEMENTATION

References

Definitions

Search

7. Engaging the public

You will (hopefully) be familiar with Arnstein's (1969) "ladder of engagement":

Arnstein's "Ladder of Engagement" for Public Participation




Wilcox (2004) & Arnstein (1969)



New module on EIA

See http://unudev.org/wp2/?page_id=145



Environmental Impact Assessment

Course Module

Background

1. Introduction
2. Purpose and aims of EIA
 3. Nature and Scope of environmental issues and impacts
 4. Principles of EIA administration and practice
 5. Key elements of the EIA process
 6. Costs and benefits of EIA

Law, Policy and Institutional Arrangements

Public involvement

Screening

Scoping

Impact analysis

Mitigation and Impact Management

EIA Reporting

Review of EIA Quality

Decision-making

Implementation and Follow-up

2. Purpose and aims of EIA

Simply defined, EIA is a systematic process to identify, predict and evaluate the environmental effects of proposed actions and projects. This process is applied prior to major decisions and commitments being made. A broad definition of environment is adopted. Whenever necessary, social, cultural and health effects are considered as an integral part of EIA. Particular attention is given in EIA practice to preventing, mitigating and offsetting the significant adverse effects of proposed undertakings.

The purpose of EIA is to:

- ♦ provide information for decision-making on the environmental consequences of proposed actions; and
- ♦ promote environmentally sound and sustainable development through the identification of appropriate enhancement and mitigation measures.

Sustainable development is a key concept that has gained increasing international acceptance during the last two decades. A milestone in this process was the 'Brundtland' report, which defined sustainable development as 'development that meets the needs of today's generation without compromising those of future generations'. Five years later, the UN Conference on Environment and Development (UNCED), the Earth Summit, established a number of international agreements, declarations and 104 EIA Training Resource Manual u Second edition 2002 Training session outline commitments (see Box 1). Agenda 21, the global action plan for sustainable development, emphasises the importance of integrated environment and development decision-making and promotes the use of EIA and other policy instruments for this purpose.

Box 1: Four cornerstones of the Earth Summit	
The Rio Declaration on Environment and Development	a set of principles which provide guidance on achieving sustainable development.
Framework Convention on Climate Change	an international treaty to stabilise greenhouse gas concentrations in the atmosphere.
Convention on Biological Diversity	an international convention with three objectives: the conservation of biodiversity, the sustainable use of its components, and the equitable sharing of benefits from genetic resources.

Wikis (online encyclopedia)
See <http://sea-wiki.unu.edu>



Main Page

News and Events

- 20 - 23 June 2008 - OECD Workshop on Safety, Health and Sustainable Development
- 8 June 2008 - The SEA Wiki is up and running!
- 22 - 25 May 2006 - IIAIAK Stavanger

Welcome to the SEA Wiki

The SEA Wiki has been developed by the United Nations University and Oxford Brookes University, with support from the Global Virtual University, to provide an online platform for the international community to engage in knowledge building on Strategic Environmental Assessment (SEA).

What is SEA?

Strategic Environmental Assessment (SEA) is essentially environmental assessment as it applies to the development of policies, plans and programmes. Different from Environmental Impact Assessment, SEA allows the integration of sustainability objectives at the earliest stage of the decision-making process. It is a rapidly evolving field and the methodology is being applied not worldwide among different levels of government and organisations.

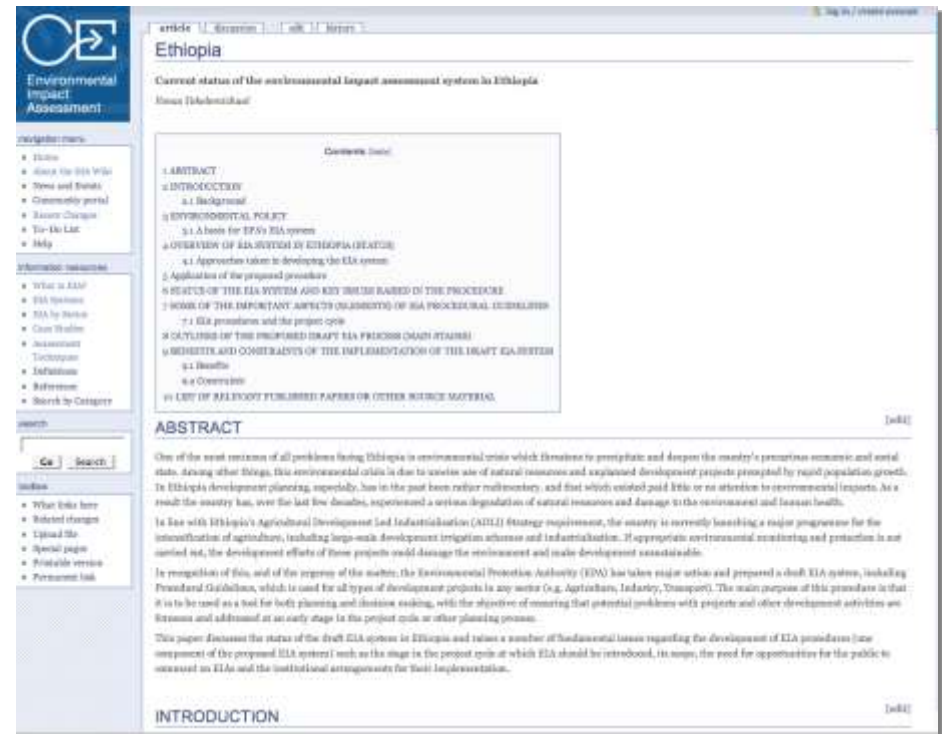
SEA e-Course Module

The SEA e-Course Module is an open educational resource being developed in collaboration between United Nations University and Oxford Brookes University for use in their respective educational and capacity building programmes. The e-Course Module is the supporting educational resource to the SEA Wiki, and provides an introduction to SEA theory and practice and a more in-depth analysis of SEA methodology.

This Month's Feature Article

Case Study - SEA for Poverty Reduction in Ghana

In 2002 Ghana published its country's Poverty Reduction Strategy. It provides the framework for the government's economic policy and for all development activities in Ghana. Little attention was given to environmental impacts of the various policies. Obviously, this may have hampered growth. However, the



Ethiopia

Current status of the environmental impact assessment system in Ethiopia

Issue (Substantial)

Contents (view)

- 1 ABSTRACT
- 2 INTRODUCTION
 - 2.1 Background
- 3 ENVIRONMENTAL POLICY
 - 3.1 A basis for EIA's EIA system
- 4 OVERVIEW OF EIA SYSTEM IN ETHIOPIA (EIAE)
- 4.1 Approaches taken in developing the EIA system
- 5 Application of the proposed procedure
- 6 STATUS OF THE EIA SYSTEM AND KEY ISSUES RAISED BY THE PROCEDURE
- 7 SCOPE OF THE IMPACTS OF (ELEMENTS OF) EIA PROCEDURAL ESTABLISHED
 - 7.1 EIA procedure and the project cycle
- 8 OUTLINES OF THE PROPOSED DRAFT EIA PROCEDURE (DRAFT EIAE)
- 9 BENEFITS AND CONSTRAINTS OF THE IMPLEMENTATION OF THE DRAFT EIAE
- 9.1 Benefits
- 9.2 Constraints
- 10 LIST OF RELEVANT PUBLISHED PAPERS OR OTHER SOURCE MATERIAL

ABSTRACT

One of the most serious of all problems facing Ethiopia is environmental crisis which threatens to precipitate and deepen the country's precarious economic and social state. Among other things, this environmental crisis is due to excessive use of natural resources and unregulated development projects prompted by rapid population growth. In Ethiopia development planning, especially, has in the past been rather rudimentary, and that which existed paid little or no attention to environmental impacts. As a result the country has, over the last few decades, experienced a serious degradation of natural resources and damage to the environment and human health.

In line with Ethiopia's Agricultural Development Led Industrialization (ADI) Strategy implementation, the country is currently witnessing a major programme for the intensification of agriculture, including large-scale development irrigation schemes and industrialization. If appropriate environmental monitoring and protection is not carried out, the development efforts of these projects could damage the environment and make development unsustainable.

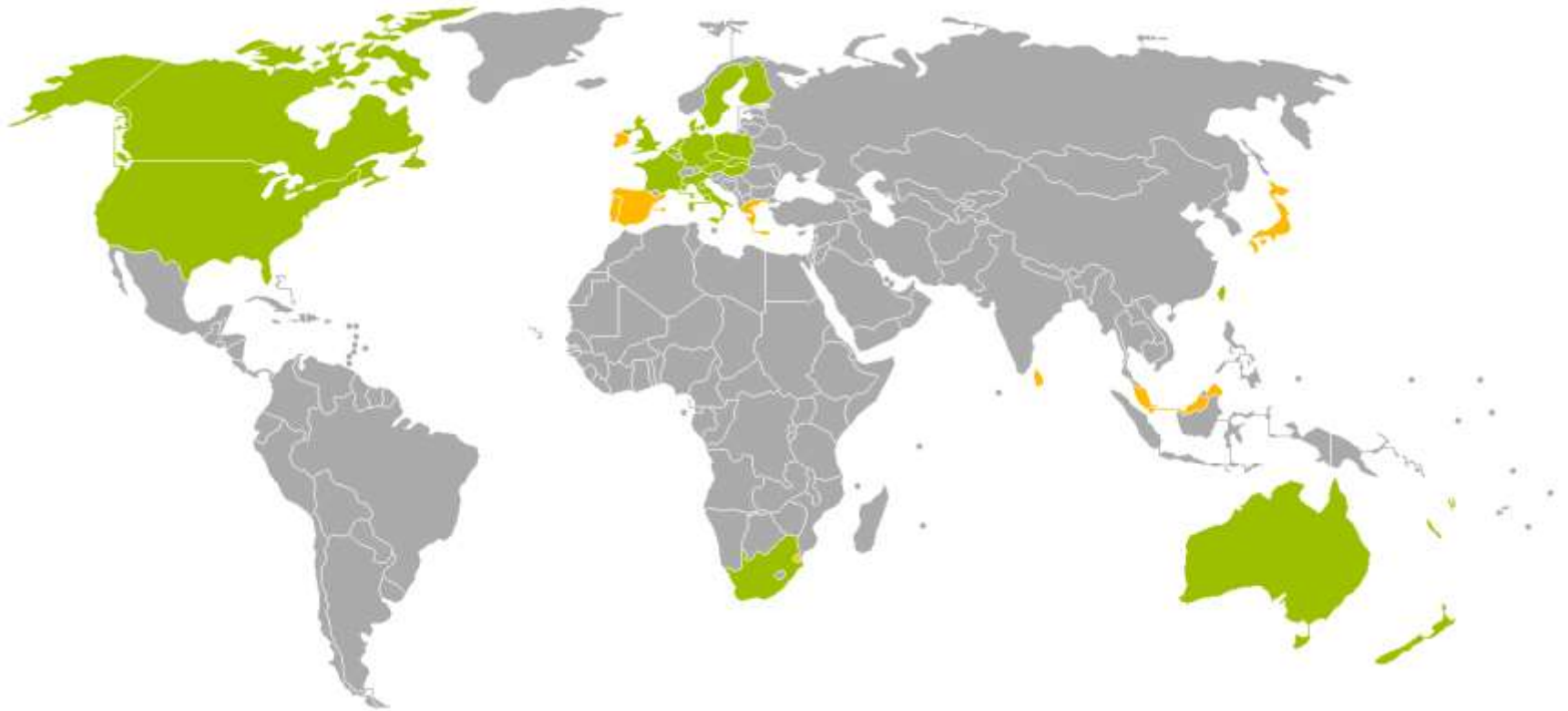
In recognition of this, and of the urgency of the matter, the Environmental Protection Authority (EPA) has taken major action and prepared a draft EIA system, including Procedural Guidelines, which is used for all types of development projects in any sector (e.g. Agriculture, Industry, Transport). The main purpose of this procedure is that it is to be used as a tool for both planning and decision making, with the objective of ensuring that potential problems with projects and other development activities are foreseen and addressed at an early stage in the project cycle or other planning process.

This paper discusses the status of the draft EIA system in Ethiopia and raises a number of fundamental issues regarding the development of EIA procedures (as an component of the proposed EIA system) such as the stage in the project cycle at which EIA should be introduced, its scope, the need for alternatives for the public to comment on EIA and the institutional arrangements for their implementation.

INTRODUCTION



SEA around the World



 Existing SEA Procedures

 Incomplete SEA Procedures



EU Directive 2001/42/EC

*“To provide a high level of protection to the environment and to contribute to the **integration** of environmental considerations into the preparation and adoption of plans and programmes **with a view to promoting sustainable development.....**”*



UNECE SEA Protocol of 2003 seeks to:

Ensure that environmental, including health considerations are thoroughly taken into account in the development of plans and programmes....

Also establishes clear and transparent procedures for SEA, and provides for public participation...



What is SEA?

- Assessment of environmental effects of policies, plans and programmes
- Environmental issues included at **earliest stage** in planning process (allows consideration of alternatives often ignored in the project level EIAs)
- Facilitates **long-term planning** and anticipation of environmental problems
- Includes assessment of **cumulative**, indirect, synergistic, delayed, regional, trans-boundary and global impacts
- **Reduces time** and effort required in project level EIA by identifying issues and initiating baseline studies

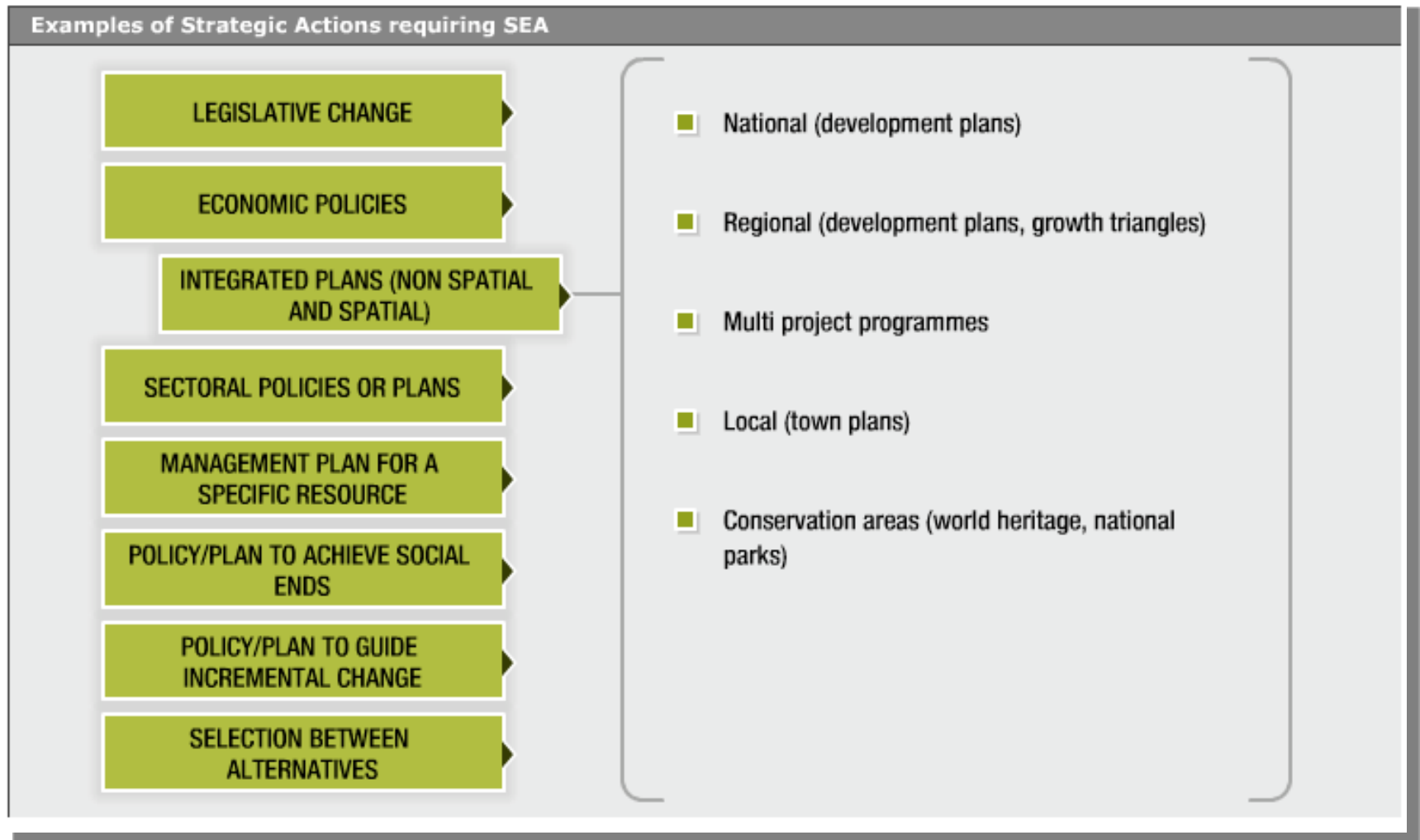


According to Partidario, SEA is....

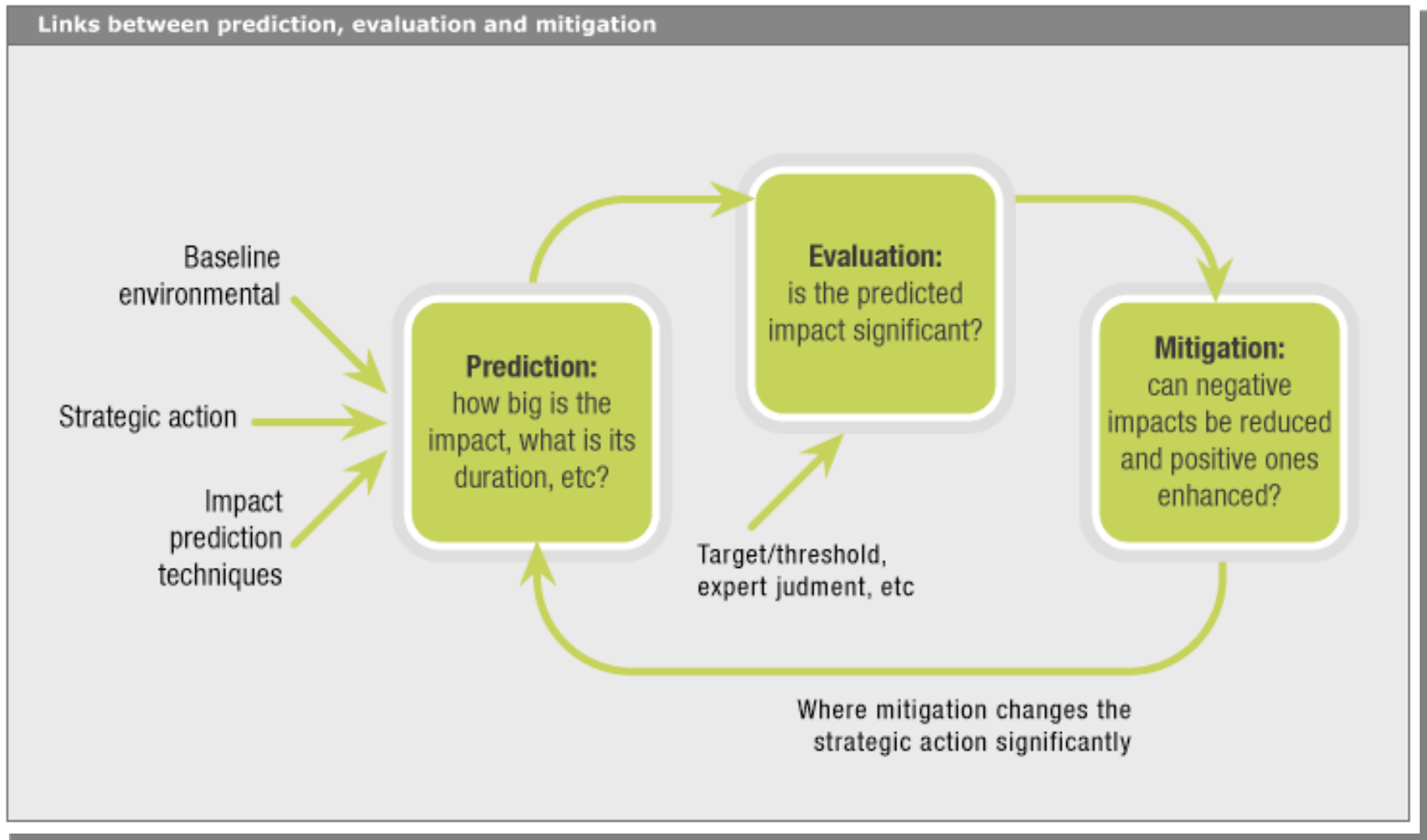
- An instrument (process) that assists and facilitates decision-making.
- An instrument that acts at **strategic** levels of decision-making.
- Flexible, diversified, taylor-made to each decision process.
- Participated.



Examples of Strategic Actions



The SEA Process - An Overview





Limitations of SEA

- **Data collection is complex:** SEAs cover large areas - sometimes several countries and large number of alternatives.
- **Uncertainty** regarding future socio-economic conditions and technologies.
- Strategic action may have **no formal authorisation stage**. SEA is inherently a political process. E.g. who decides whether a country needs nuclear energy and how?
- SEA as a concept is **not yet politically accepted**.



How SEA and EIA Interact?

National level

- decision(s) on *technologies for final waste treatment*, e.g. reuse, dumping or incineration and total treatment capacities
- SEA carried out to identify available options and assess their impacts

Regional level

- decision(s) on where treatment *sites* will be located
- SEA assesses locational options and their environmental consequence

Project level

- decisions on *design and mitigation* measures for each of the selected locations
- project EIAs are tiered to earlier assessments and decisions as such, they are specific, limited and to-the-point



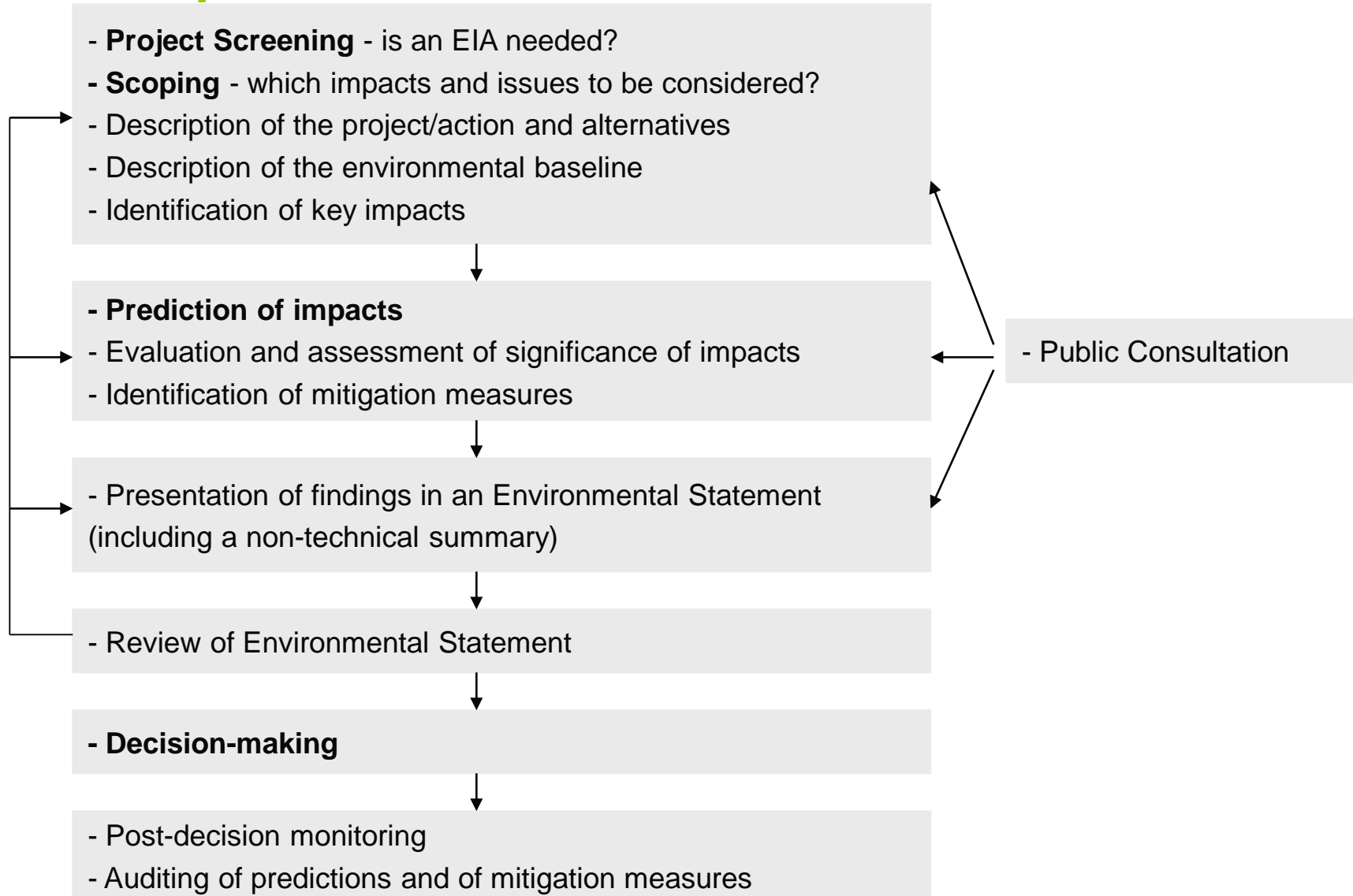


What is EIA?

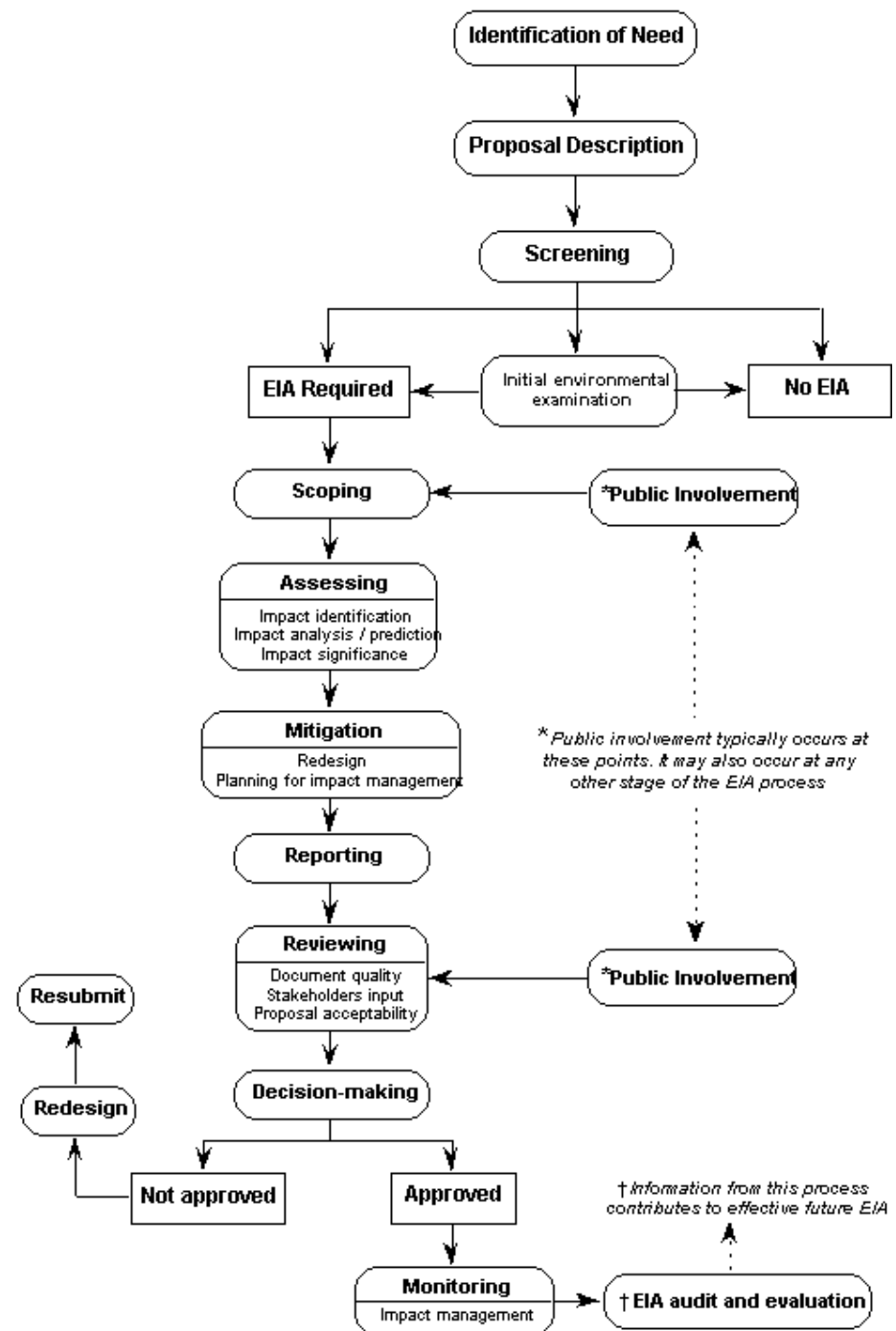
- **Systematic examination** of the significant environmental impacts of projects.
- **Process/preventative measure** applied at the planning stage to ensure that development proposals are environmentally sound and sustainable.
- Tool to provide decision-makers and the public with **environmental information.**



Steps in the EIA Process



Step by Step Flowchart





How to assess environmental impacts?

- **Type and nature** - from biophysical to socio-economic
- **Significance** - sometimes small impacts can be highly significant - e.g. disturbance of nesting of pair of endangered birds (e.g. Aichi Expo 2005)
- **Extent** - local to global
- **Timing** - immediate or some time later (e.g. exposure to carcinogenic chemicals can be responsible for cancers 30 years later)
- **Duration** - short term (e.g. construction noise) to permanent (e.g. relocation of a village)
- **Uncertainty** - depends on the likelihood and consequences of the impact occurring
- **Reversibility** - some impacts are reversible (e.g. rehabilitation following decommissioning), others may be irreversible (e.g., CO₂ emissions from vehicles)



Assessing Significance

	National	Regional	Local	Uncertain
Severity of Impact	Severe Impact e.g. Loss of a Nationally important Site of Special Scientific Interest <i>Very severe</i>		e.g. Loss of a local Nature Conservation area	Severe Risk
		<i>Severe</i>		Severe to Significant Risk
	Minor Impact e.g., Indirect impact on national SSSI		<i>Significant</i>	Uncertain Risk
			<i>Minor</i>	
			<i>Negligible</i>	
Uncertain Impact	Severe Risk	Severe to Significant Risk	Minor to Significant Risk	Uncertain Risk
Benefits	Major	Significant	Minor	Uncertain



Some failings of the EIA Process

- Full range of alternatives (including no development) not always considered (but see case from Japan on Moodle).
- Difficult to develop effective mitigation measures.
- Cumulative impacts often ignored or unquantified.
- Development agencies sometimes confused about the purpose of EIA (it is just bureaucratic red-tape in project development?).
- Detailed environmental statement sometimes seen as an end in itself. Tendency to produce litigation proof documents.
- Tendency to consult with public only after the decision has effectively been made. Public participation is reactive not interactive.



Some benefits from EIA

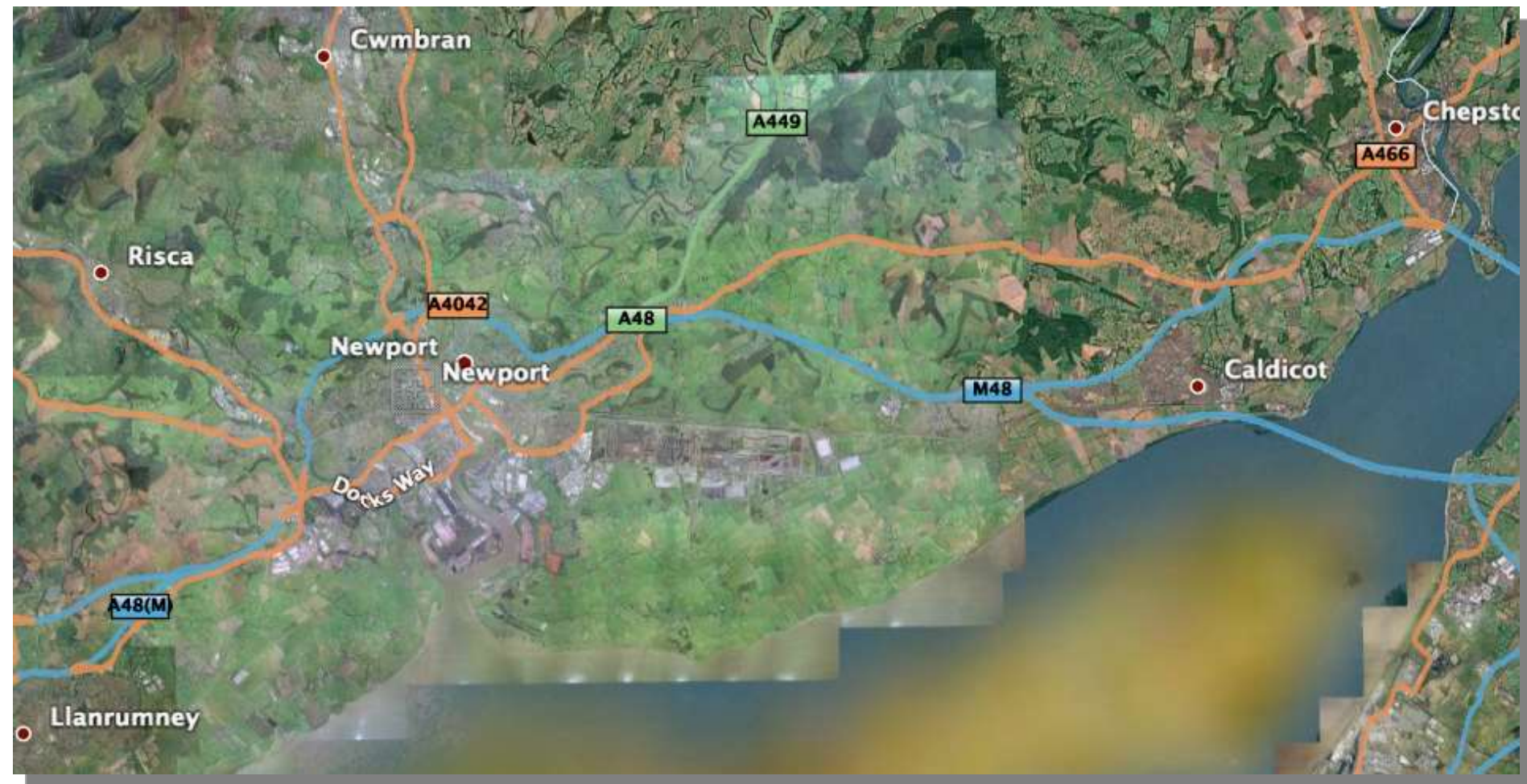
- EIA can be used to modify and improve project design.
- Can ensure that project related resources are used effectively/efficiently
- EIA ensures incorporation of social and health aspects (e.g. worker migration, housing, education impacts, etc.)
- Helps with identification of measures for monitoring and managing impacts (including mitigation).



Lets look at the experience of the M4 Relief Road around Newport (Wales)

Plan unveiled in December 2004, estimated cost of 350 million UK Sterling (US\$ 660 million).

Planned to open in 2012.





Background to the Project



- 1989 - South Wales Area Traffic Study (SWATs) commissioned (functions as an SEA), examining the existing and future performance of the highway network.
- 1991 - Secretary of State announced a number of new road projects, including the M4 Relief Road.
- Engineering consultants contracted to identify the preferred route for the Relief Road. Looked at options to the north and south of Newport.
- 1995 - Secretary of State announced the preferred route, passing to the south of Newport.
- 1999 - Common Appraisal Framework study published (an SEA).
- 2004 - Final route determined (after detailed assessment).



Relationship between the SEA and EIA

- The SWATs report effectively committed the Government to the Relief Road.
- A new bridge had been constructed across the Severn Estuary effectively predetermining the need for a new Relief Road.
- Existing M4 could not be widened due to tunnel works on one part.
- EIA looked at over 40 alternative routes, before narrowing to 5.





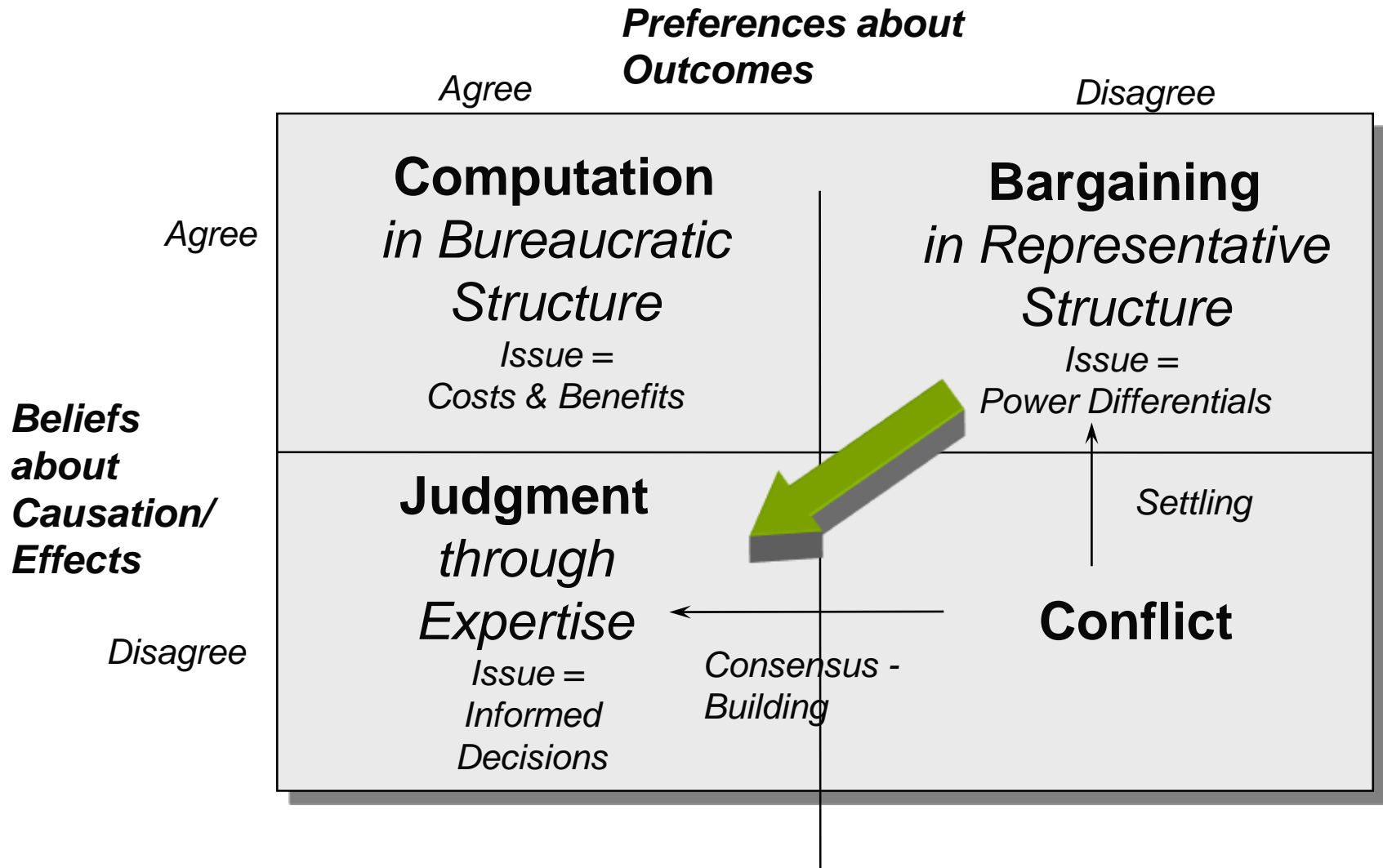
Relationship between the SEA and EIA

- Considerable opposition from local communities and environmental groups.
- Potential impacts on several Sites of Special Scientific Interest (SSSI) (wetlands) and an area rich in archaeological sites.
- SEA (multi-model study) was conducted after the first EIA.
- There was no public participation in the SEA.
- SEA concluded that steps to reduce the demand for car journeys plus improved public transport could be a successful alternative to major road-building. It also recommended constructing a toll road.





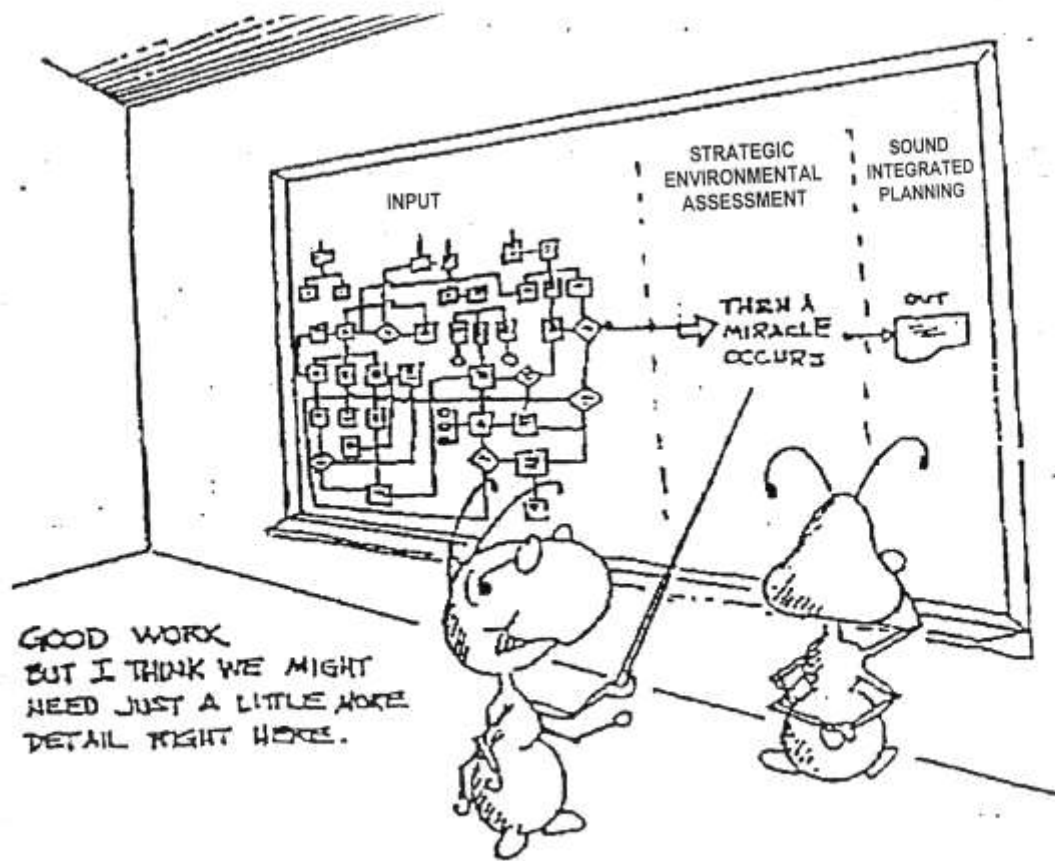
Some Reflections





Environmental Assessment

There is still a lot of work to be done on SEA.
A Miracle.....in the making.....





Again, Partidario reminds us that SEA, in its wider sense, is one possible instrument to assist this integration of sustainable development considerations at strategic levels of decision-making. To achieve that purpose it must however:

- look beyond the narrow meaning of environment and keep the focus on sustainability;
- ensure a long-term perspective in a real strategic context;
- clearly assume its socio-political role in the decision-making context.

Environmental Impact Assessment (EIA) in India

The foundation of environmental impact assessment (EIA) in India was laid in 1976-77 when the Planning Commission asked the then Department of Science and Technology (DST) to examine the river-valley projects from environmental angle. This was subsequently extended to cover those projects, which required approval of the Public Investment Board. However, these were administrative decisions, and lacked the legislative support. To fill this gap, the Government of India enacted the Environment (Protection) Act (EPA) on 23rd May 1986.