

# Appendix 1: Workshop on Biodiversity and Impact Assessment in Small Island States

**Facilitators: Dr Jo Treweek (Technical Programme Manager for a ‘Capacity Building for Biodiversity and Impact Assessment’ project), Dr Bill Phillips (Director of MainStream Environmental Consulting and the former Deputy Secretary General of the Ramsar Convention on Wetlands, 1997-2000) and Jeremy Barker**




It is impossible to include in these Proceedings the full benefits of the Workshop. However, both to act as an aide-memoire for those present and to make available a little of the valuable information to those who could not be, a small proportion of the presentations are included here. These are just in the form of the slides, rather than as all the texts and the discussions, but we hope that they give some flavour.

The background to the Workshop is included in Appendix 2, and the Conclusions and Recommendations from the workshop are included in the Introductory section of these proceedings.




# Introduction to Workshop




**Biodiversity and Impact Assessment in Small Island States**

6<sup>th</sup> - 7<sup>th</sup> October 2006  
Jersey

Facilitators  
Jo Trewick  
Bill Phillips  
Jeremy Barker



Capacity Building in Biodiversity and Impact Assessment



- ❖ Introduction to tools and techniques for getting biodiversity into impact assessment
- ❖ Economic evaluation tools for assessing impacts on biodiversity
- ❖ Approaches to mitigation of biodiversity related impacts
- ❖ The concept of biodiversity offsets and case studies demonstrating applications of offsets

## CBBIA-IAIA: Promoting biodiversity-inclusive impact assessment



Promoting biodiversity-inclusive impact assessment



To develop and promote Impact Assessment (EIA and SEA) as an effective instrument for addressing biodiversity considerations in decision making and the execution of projects, programmes, plans and policies.



- Provide practical, demand-driven support for development of capacity
- Share information and experiences, working with practitioners, policy-makers, biodiversity-related conventions and other stakeholders to build expertise and promote good practice
- Support capacity-building through knowledge-transfer, institution-building and networking
- Support the work of the biodiversity-related Conventions
- Promote, and contribute to, the further development of guidelines for incorporating biodiversity related issues into IA.



- Conferences, events, training and workshops
- Working with institutions, organisations and individuals in selected regions and countries to enhance integration of biodiversity with IA laws, procedures and practices
- Small grants for review and enabling activities
- Database of contacts and mechanism for ongoing exchange of information and ideas
- Further development of guidelines on the integration of biodiversity considerations in EIA and SEA within the framework of the Convention on Biological Diversity, the Ramsar Convention and the CMS



- A network of trained professionals
- Capacity-building activities eg workshops and training, based on needs assessment and review of current practice in participating regions and countries
- Guidance on biodiversity-inclusive EIA and SEA
- Tested training materials
- Case study material to support development of CBD and other guidance on EIA and SEA



- Focal Regions:
- Southern Africa
  - South/South East Asia
  - Central/ South America
  - Small Island States
1. Needs/ Situation Assessment,
  2. Materials for regional capacity building and 'road-testing'
  3. Meetings and workshops
  4. Future funds



## CBBIA-IAIA Small Grants



- Support review and enabling activities primarily in countries outside main regions
- 2 rounds, 12 Projects completed
- Results of first round presented at IAIA '05 and IAIA '06



## CBBIA-IAIA Bursaries



Help suitably qualified individuals participate in IAIA conferences and events, including regional workshops and activities as well as annual conferences.

More than 100 people from 30 countries have benefited so far



## CBBIA-IAIA Partnerships



Working with:

- regional partners to implement workplans
- governments, organisations, and individuals to build capacity
- professionals to build expertise and knowledge
- Governments to strengthen laws and institutions
- Biodiversity-related Conventions (CBD, Ramsar, CMS) to promote biodiversity-inclusive impact assessment
- Individuals and organisations at grass roots level who want to develop practical advice
- Students who want to learn more about biodiversity and impact assessment

CBBIA worked with the IAIA Biodiversity and Ecology Section to produce:

IAIA Principles and Practices Series:  
Biodiversity in Impact Assessment

Biodiversity and Impact Assessment: IAIA  
Key citations

Available from:

[www.iaia.org](http://www.iaia.org)

## CBBIA: Developing Guiding Principles

### **Precautionary principle**

presumption in favour of biodiversity protection where knowledge is lacking to ensure effective mitigation or where it is impossible to confirm 'no significant impact'.

[www.pprinciple.net/](http://www.pprinciple.net/) [www.iaia.org](http://www.iaia.org)

### **'No net loss' principle**

requires status quo to be maintained or enhanced in terms of quantitative and qualitative aspects of biodiversity in line with international agreements and obligations.

**'Ecosystem approach'**, advocated by CBD and Ramsar Convention to ensure sustainable use. Biodiversity depends on healthily functioning ecosystems and processes that have to be assessed and managed in an integrated way.

CBBIA provided case studies and experiences to support development of voluntary guidance on biodiversity-inclusive impact assessment, recently endorsed by the CBD. These highlighted challenges and opportunities associated with IA at both project and strategic levels

the CBD voluntary guidelines are available in 6 languages from:

<http://www.biodiv.org/doc/meeting.asp?lg=0&mtg=cop-08> (document number 44).

### **How do we overcome problems of under-valuation regarding biodiversity?**

- Although biodiversity yields many economically important goods and services, these values tend to be under-emphasised or ignored in decision-making
- It is difficult for EIA results to be fully incorporated into traditional economic measures of profitability
- Negative biodiversity impacts are not systematically reflected in project and programme appraisal and assessment measures
- There is seen to be little economic benefit to conserving biodiversity and few economic costs to biodiversity degradation and loss

CBBIA participants have been exploring and developing techniques for economic valuation of biodiversity and for enhancing awareness of biodiversity values (and the costs of biodiversity damage and loss)



# Biodiversity and Impact Assessment in Small Islands



**Biodiversity and Impact Assessment in Small Island States**

6<sup>th</sup> and 7<sup>th</sup> October 2006


*"The most important lesson of the last ten years is that the objectives of the Convention on Biological Diversity will be impossible to meet until consideration of biodiversity is fully integrated into other sectors. The need to mainstream the conservation and sustainable use of biological resources across all sectors of the national economy, the society and the policy-making framework is a complex challenge at the heart of the Convention."* (Hague Ministerial Declaration from COP VI to WSSD, 2002)



Less than 10% of the world's area is 'protected'

Most biodiversity struggles to co-exist with human development. This frog is only found on Cape Town's city race course


"Impact Assessment is an important mainstreaming tool, ensuring that biodiversity values are built into decision-making, from the strategic to the local level"



**Small islands are:**


- HIGH IMPORTANCE
- HIGH RISK
- HIGH THREAT

→ Environments



**Small islands tend to have:**

- rich biodiversity with very high levels of endemism.
- low assimilative and carrying capacity, leading to problems with water production and storage and waste management.
- A relatively large coastal zone in relation to land mass resulting in high vulnerability to erosion.
- High vulnerability to loss of land associated with sea level rise
- Low resistance to outside influences, allowing rapid spread of invasive alien species and consequent endangering of endemic species.
- High incidence of natural disasters including earthquakes, volcanic eruptions, cyclones, hurricanes, floods, tidal waves..
- High threats from economic development, and mass tourism in particular.



**Evaluating the environmental challenges and implications for the sustainable future of Small Island Developing States.**

July 31, 2004 Prepared by:  
Fadil Imo,  
President,  
St. Kitts National Youth Parliament Association

"I propose that SIDS apply their legislative power and control to demand that Environmental Impact Assessments (EIAs) be a compulsory component of all developmental projects and programs.

Simply put, EIAs are tools that assess potential and perceived environmental atrocities that may result from various projects such as the construction of buildings, seawalls, and drainage systems.

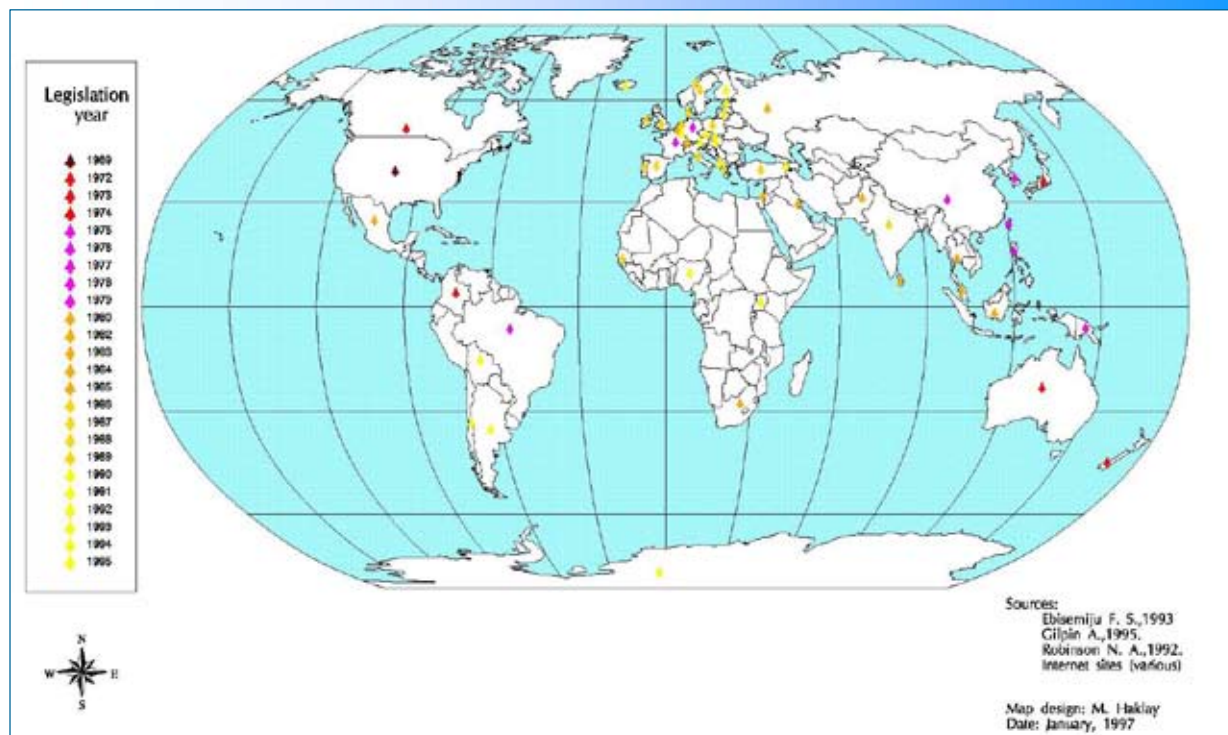
Two benefits of such a tool are that one, EIAs will provide governments and citizens of SIDS with the necessary information to weigh environmental costs against developmental goals which in turn will assist in better decision making and two, it allows for the development of proactive environmental protection schemes while projects are in the planning stages. Consequently, SIDS will have nothing to lose by analyzing the results of an EIA."

**From an international perspective..**

- Biodiversity has buy-in as the ecological decision-making concept (ecology = understanding biodiversity)
- Global Biodiversity Conventions see Impact Assessment as a key tool
- EIA has wide but limited application
- SEA increasingly seen to be essential as a tool for mainstreaming biodiversity into development planning

Seek to obtain the best possible biodiversity outcomes from land use change

## EIA is widely applied: Countries by EIA Legislation Year



- ❖ EIA provisions now exist in the framework environmental legislation of 55 developing countries.
- ❖ At least 22 currently have specific laws, decrees or regulations, which contain criteria or procedures applicable to EIA.
- ❖ Environmental Assessment (EA) applies to all World Bank lending operations through its environmental and social 'safeguard policies'. (Operational Policy OP4.01/ Bank Procedure BP4.01 on Environmental Assessment)



Is Impact Assessment the best tool for biodiversity?....



Do EIA reports make a difference?

### Impact Assessment Trends

- EIA is a mandatory legal requirement in many countries.
- Understanding of the EIA process is generally good, but implementation is poor with respect to biodiversity.
- Lack of awareness of biodiversity importance among decision makers
- Insufficient information/baseline understanding to predict impacts reliably
- Lack of taxonomic expertise
- Poor involvement of affected people and other key stakeholders
- Little effort to evaluate significance or interpret results
- Little consideration of ecosystem scale, indirect or cumulative impacts
- Little consideration of uncertainty, risk, gaps in information
- Ever widening gap between demand and supply of ecosystem goods and services

### Capacity



Limited institutional capacities of authorities responsible for EIAs commonly results in inadequate implementation of the regulations.

As a result there is inadequate control over development, and little monitoring of project impacts. Public participation is also minimal, despite this being a requirement of existing legislation.



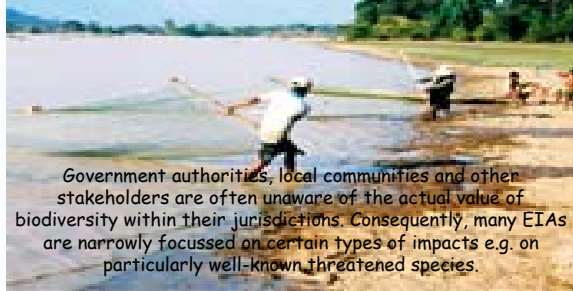


Needs in Nepal:



**Awareness of biodiversity importance and values**

The Millennium Assessment highlighted the vital role of biodiversity in its contribution to important ecosystem services and the benefits that people obtain from ecosystems).



Government authorities, local communities and other stakeholders are often unaware of the actual value of biodiversity within their jurisdictions. Consequently, many EIAs are narrowly focussed on certain types of impacts e.g. on particularly well-known threatened species.

(Millennium Ecosystem Assessment 2005. *Ecosystems and human well-being: Biodiversity synthesis*. World Resources Institute, Washington, D.C.)

**Information**

Lack of reliable information on biodiversity makes it difficult to identify particularly valuable biodiversity components and ecosystem services that need to be considered in EIAs. Even if such values and services are known there is often inadequate information available to assess their status (i.e. establish baseline conditions) and reliably predict and quantify the likely impacts of proposed developments on them.



[www.qbif.org](http://www.qbif.org)

**Listings and designation procedures lag behind rates of loss**

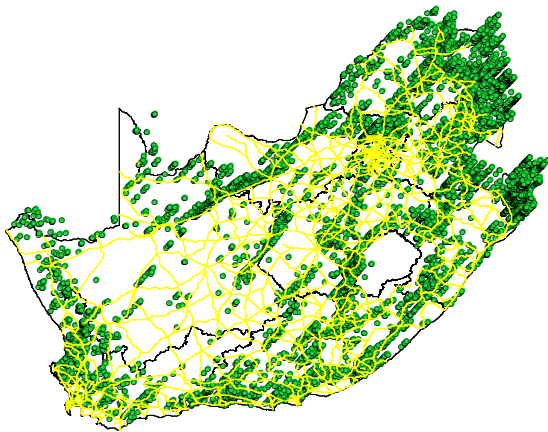


**Transparency and participation**



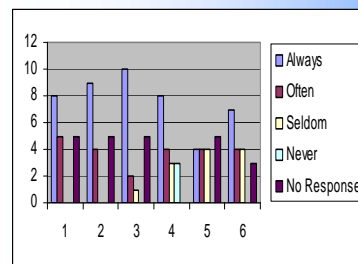
Illegal and unregulated activities can represent the most serious threats



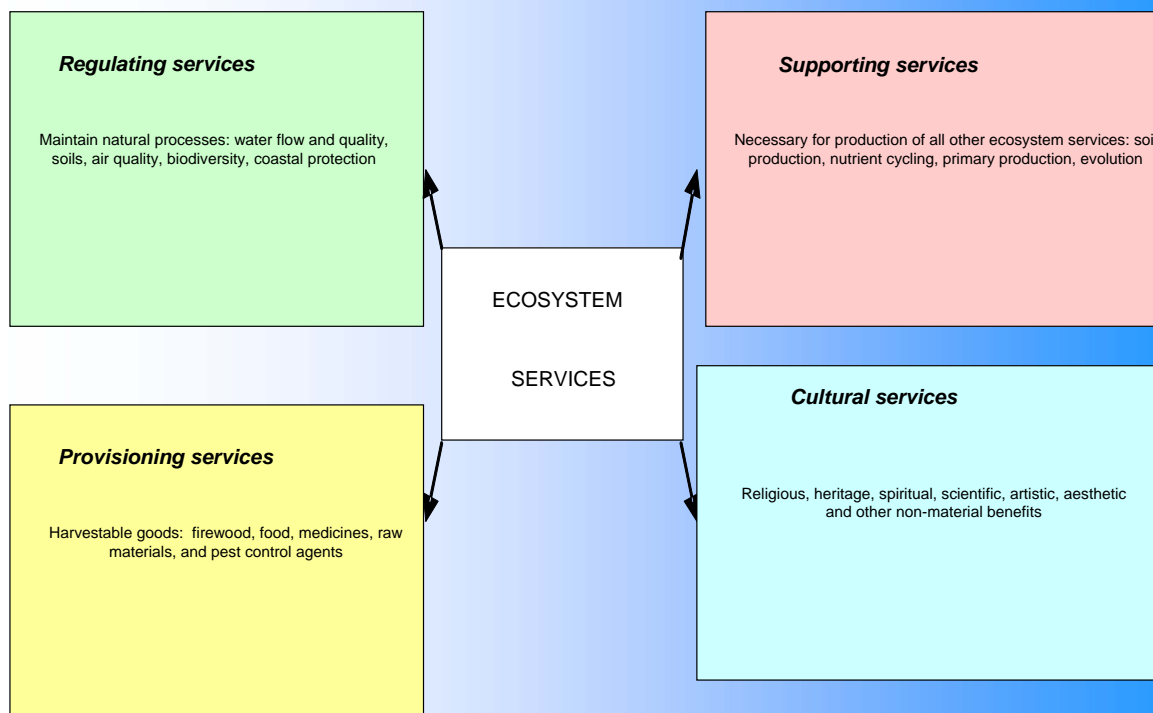


Scarab distribution data

### Nepal - biodiversity impacts considered in decision-making



1. Impacts on Red List or Red Data Book species
2. Impacts on protected species
3. Impacts on protected areas
4. Impacts on threatened or sensitive ecosystems/ environments
5. Impacts of invasive species
6. Issues raised by key stakeholders about important ecosystem services that could be affected



## Key Trends in SEA Development

(Source: Dalal-Clayton and Sadler, 2005)

- SEA: assessing the environmental and sustainability effects of policies, plans and programmes.
- SEA is better developed at the level of plans and programmes than for policy and legislation.
- SEA development in developing countries is being catalyzed through the activities of international assistance and lending agencies, particularly the World Bank.
- Results of recent work of the Organization of the Economic Co-operation and Development's Development Assistance Committee (OECD/ DAC) Task Team on SEA now available.
- Many countries now have SEA arrangements in place but only a few implement them and very few have in-depth experience.

Many processes that reduce genetic diversity - e.g. loss or isolation of habitats - operate at the ecosystem, landscape or global scale: SEA is one way to capture these processes as well as more local ones.



Greenbelt at West Oxford, © Getmapping

IA is not always applied when it should be at project level. It is too late to develop viable alternatives or to confirm implications for biodiversity



## Insight's conclusions



- Biodiversity presents a significant risk and opportunity to business in several sectors.
- A new "social contract" is emerging: access to land and sea conditional on best biodiversity practice.
- Best practice will come to mean "no net loss", as a minimum.
- There is a business case for companies to:
  - specifically offset the unavoidable harm they cause to biodiversity for new projects in areas of high biodiversity value
  - contribute to conservation activities to demonstrate a positive contribution

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## C.....VAL CORP &plc

### Environmental Policy:

- Core values include preserving the marine environment and ... the pristine condition of the waters upon which our vessels sail
- Commitment to pollution prevention, regulatory compliance and continuous improvement of environmental management

CR reporting focuses on regulatory compliance and 'end of pipe' solutions

## Ecosystem change in Southern Africa

- About 60% of ecosystem services degraded or used unsustainably.
- Increased risk of unpredictable (non-linear) and irreversible changes to ecosystems
- Harmful effects and costs borne disproportionately by the poor, contributing to growing inequities and disparities across groups and causing conflict.
- Condition and management of ecosystem services is a dominant factor influencing prospects for reducing poverty.




# The Ramsar Convention on Wetlands and Impact Assessment

Ramsar & impact assessment 1

## The Ramsar Convention and impact assessment

Dr Nick Davidson  
Deputy Secretary General, Ramsar Convention




Nick Davidson

Ramsar & impact assessment 2

**Presentation structure:**

- What is the Ramsar Convention?
- A short history of Ramsar and impact assessment
- Ramsar and CBD links
- How well is IA being applied to wetlands?
- Future collaboration and work



Nick Davidson

Ramsar & impact assessment 3

### What is the Convention on Wetlands?

- Oldest of the global environmental conventions
- the only global convention focussing attention on an ecosystem (wetlands)
- covers very wide range of wetlands - from coral reefs to mountains

**Why the "Ramsar" Convention?**

- Ramsar, Iran - where Convention agreed 2 February 1971 by 18 countries
- XX so **not** an acronym (**RAMSAR**) XX
- Celebrated annually on *World Wetlands Day* - 2 February



Nick Davidson

Ramsar & impact assessment 4

### Ramsar's Mission

**"The conservation and wise use of wetlands through local, regional and national actions and international cooperation as a contribution towards achieving sustainable development throughout the world."**

(Strategic Plan 2003-2008)




Nick Davidson


Ramsar & impact assessment 5

### What is the "wise use" of wetlands?

- "... "Wise use of wetlands is the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development."



(Ramsar COP9, 2005)  
*Resolution IX.1 Annex A*



Nick Davidson

Ramsar & impact assessment 6

### Ramsar covers:

- **Natural and human-made wetlands**
- **inland/freshwater:**
  - marshes, rivers, lakes, reservoirs etc.
- **coastal/marine**
  - Mangroves, lagoons, estuaries, coral reefs, seagrass beds etc.
- **above ground and underground**
  - karst and caves
- **but not deep oceans**



Nick Davidson

Ramsar & impact assessment 7

### Ramsar Contracting Parties



Contracting Parties commit to delivering the Convention through 3 "pillars":

- **Wise use of all wetlands**
- **Wetlands of International Importance** - designation and management
- **International cooperation**



Nick Davidson

Ramsar & impact assessment 8

### The Ramsar Convention today

- **152 Contracting Parties**
  - others in process of joining (accession)
  - from Africa, central Asia, Caribbean, Oceania
- **Over 1600 Wetlands of International Importance - "Ramsar sites"**
  - totaling >120 million hectares
  - size: from <1 ha to >6 million ha



Nick Davidson

## Ramsar links with other organisations

### Cooperation with:

- NGOs and expert networks
- regional environmental organisations
- UN agencies
- other environmental conventions
  - Joint Work Plan with CBD
  - joint activities developing with UNCCD, CMS, UNFCCC, UNESCO, MAB etc.

Nick Davidson

## Some key features of the Ramsar Convention

- Not under the UN system - governed by its Parties
- recognises wetlands (goods and services) as vital for human wellbeing (food and water security) and biodiversity conservation
- supports practical wetland sustainable utilization by countries
- open, collaborative and flexible mechanisms
  - both ecosystems and species
  - both sites and broad-based sustainable use
- supports implementation - not a "compliance-based" convention
- provides practical guidance on many topics - prepared by the STRP & its collaborators

Nick Davidson

## The Ramsar "tool-kit" - wise use handbooks



- 14 Handbooks - published 2004
- bring together:
  - Guidelines: COP7 & earlier COPs
  - relevant COP Resolutions and Recommendations
  - case studies
- New 3<sup>rd</sup> edition in preparation
  - include COP9 guidance
  - Update and replace some Handbooks

Nick Davidson

## A short history of Ramsar and impact assessment

- Key basis - Article 3 of Convention text

### Article 3.1:

"Contracting Parties [countries] shall formulate and implement their planning so as to promote the conservation of wetlands, including those on the List [i.e. Ramsar sites], and as far as possible the wise use of wetlands in their territory."

### Article 3.2:

"CP shall arrange to be informed at the earliest possible time if the ecological character of any Ramsar site has changed, is changing or is likely to change as the result of technological developments, pollution or other human intervention."

Nick Davidson

## A short history of Ramsar and impact assessment

- Implicit in Art. 3.2 is to use IA to predict likely change, and to respond to its findings to deliver Article 3.1 commitments
- This link only made explicit by Parties at COP8 (2002)



Nick Davidson

## A short history of Ramsar and impact assessment

- Role of EIA recognised as early as COP1 (1981) - Recommendation 1.6
- Many EIA decisions since:
  - 1987 Recommendation 3.3
  - 1990 Recommendation 4.10
  - 1993 Resolution 5.6
  - 1999 Resolution VII.16
  - 2002 Resolution VIII.9

Nick Davidson

## Ramsar's Strategic Plan 1997-2002

### Adopted 1996:

- stressed importance of IA
- requested expansion of wise use guidance - information on environmental assessment guidelines and good practice
- take particular account of EIA and SEA when assessing impacts
- reaffirmed IA as a key Convention tool
- recognised importance of including IA as cross-cutting issue in CBD/Ramsar Joint Work Plan (JWP)

2nd Strategic Plan (2003-2008) continues IA importance

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## Ramsar and CBD collaboration

- since 1996 (CBD COP3) Ramsar identified as lead implementation partner of CBD on wetlands
- delivered through Joint Work Plans
  - now implementing 3rd JWP (2002-2006)
  - covers thematic ecosystem themes and cross-cutting issues incl. IA
- Ramsar Scientific & Technical Review Panel (STRP) and COP8 (2002) recognised the CBD COP6 IA guidelines as fully applicable to wetlands
  - adopted and use urged - with annotations for the Ramsar context
- IAIA is the key expert link between Ramsar and CBD work

Nick Davidson



## Ramsar and IAIA

- IAIA invited to contribute expertise to STRP's work since 1999 & 2006-2008 work plan
- formalised through 2001 MoC between IAIA and Ramsar Bureau
- COP8 & COP9 (2005) formally appointed IAIA as STRP observer organisation

Nick Davidson

## 1999 expectations of IA implementation

Resolution VII.16: *The Ramsar Convention and impact assessment: strategic, environmental and social*

- Parties to strengthen efforts to make sure potentially damaging developments to wetlands are subject to rigorous IA procedures
- Parties to ensure IA process is transparent and participatory - including local stakeholders

Nick Davidson

## How well are Ramsar Parties applying IA?

COP8 National implementation Reports (130 countries)

Globally:

- 75 countries (63%) - EIA required for any action which can potentially affect any wetland
- 33 countries (25%) - EIA required for some wetlands (e.g. Ramsar sites) only
- in total 91% - some wetland EIA activity required

Nick Davidson

## How well are Ramsar Parties applying IA?

Regional differences:

- **Asia:** no EIAs for wetlands in 52% of countries
- **Neotropics:** 65% have legislation requiring EIA for all wetlands, but
  - only 40% have actually carried out EIAs for threats to Ramsar sites
- **Mediterranean Basin countries:** only 29% have undertaken EIAs for all cases for Ramsar sites
  - although 69% require it
- **Africa:** 82% countries EIAs required - but little information on extent of application

Nick Davidson

## How well are Ramsar Parties applying IA?

### • Europe

- Only 48% countries require EIA for all cases of risk of change of ecological character of Ramsar sites

Ramsar Europe Regional Coordinator, noting no progress in the previous 3 years:

*"It is difficult to understand why every Ramsar site where proposed developments are likely to affect its ecological character still does not benefit from an EIA."*

*In some cases, a lack of political will to implement existing legislation is detectable."*

Nick Davidson

## How well are Ramsar Parties applying IA?

Conclusions?

- Legislative requirements widely in place
- But*
- not being widely or consistently applied
- Countries need support and urging to do more EIA
  - benefit to both wetlands and IA practitioners!

Nick Davidson

## Latest decisions: Resolution VIII.9 (COP8, 2002)

Ramsar Parties to:

- make use of the CBD guidelines
- indicate their precise needs for further information, guidance and advice in IA relevant for wetlands
- provide relevant material
  - lessons learned, case studies, guidelines, advice sources etc.
- establish contact with relevant national focal points in IAIA networks
  - to identify sources of expertise and advice to assist in wetland IA

Nick Davidson

## Resolution VIII.9

Further guidance work - STRP to:

- report a synthesis of lessons learned from case studies
- identify current wetland-related guidelines, and investigate ways of filling gaps
- review existing IA references in Ramsar material, and correct any inconsistencies in approach
- prepare advice on SEA in context of other Ramsar guidelines

Nick Davidson



### Ramsar Wise Use Handbook 11 "Impact Assessment"

- ✓ Introduction to Impact assessment and Ramsar
- ✓ CBD 2002 guidelines for incorporating biodiversity into impact assessment
- ✓ Strategic Environmental Assessment
  - General approaches
- ✓ In English, French and Spanish
  - ✓ available mid-2004



Nick Davidson

### CBBIA project

- ✓ Will support enhanced capacity in countries to deliver Ramsar and CBD expectations for implementation
  - ✓ Through IAIA lead role supporting Ramsar on impact assessment
- ✓ will also develop some of the additional guidance and case studies/lessons learned requested by Ramsar COP8
- ✓ Ramsar Handbook 11 provides a resource material for project implementation

Nick Davidson

### Latest developments - 2005-2006

- Ramsar COP9 (Nov 2005) adopted further guidance on inventory & assessment, incl.
- **IF-WIAM**: integrated framework for wetland inventory, assessment & monitoring
  - Explains inter-relationship between different types and purposes of assessments
- Supported by Information Paper describing types of assessment
- Wetland Rapid Assessment Guidelines
  - Jointly with CBD
  - Published March 2006 as *CBD Technical Series 22 & Ramsar Technical Report 1*

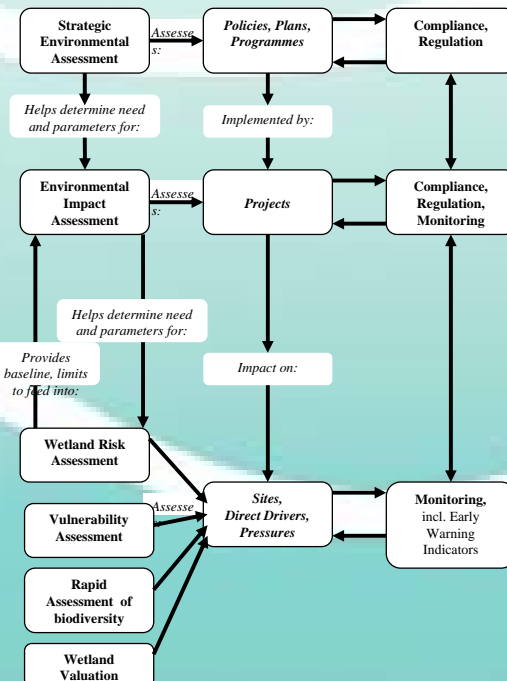
Nick Davidson

### Latest developments - IF-WIAM

- There is a wide range of different types and methods of wetland assessment relevant to different aspects of Convention implementation, with each suited to, and designed for, different purposes and situations. These include:
  - i) Environmental Impact Assessment (EIA)
  - ii) Strategic Environmental Assessment (SEA)
  - iii) Risk Assessment (RA)
  - iv) Vulnerability Assessment (VA)
  - v) Change (status and trends) assessment
  - vi) Species-specific assessment
  - vii) Indicator assessment
  - viii) Resource (ecosystem benefits/services) assessment
  - ix) Assessment of values of wetland benefits/services
  - x) Environmental water requirement (environmental flows) assessment

Nick Davidson

## IF-WIAM - how different assessments fit together



Nick Davidson

### Latest developments - 2006-2008

STRP finalising more assessment guidance:

- Vulnerability assessment
- Economic valuation of wetland services
- Environmental water requirements (environmental flows) assessment methods

Nick Davidson

### Latest developments - 2005-2006

- CBD COP8 (March 2006) adopted expanded EIA & SEA guidance
  - Replaces the earlier EIA guidelines
  - Ramsar STRP will be asked to review the new guidelines for their relevance to wetlands
  - Take to Ramsar COP10 (2008) for endorsement

Nick Davidson



# Environmental Impact Assessment process: general stages

## EIA Process: general stages

EIA is an on-going process of review, negotiation and incremental decision-making, culminating in the essentially political action of making a final decision about whether or not the proposal is to proceed and under what conditions.

- The EIA process has procedural stages which vary from country to country depending on legislation in place
- Different methods exist for undertaking each step

## Integrating biodiversity in EIA:

### Analysis of change in biodiversity characteristics, richness and role

Pre project  Post project

**Composition of ecosystem** (biological diversity and richness)

**Structure** (spatio-temporal distribution of biodiversity resources)

**Functional aspects** (pollinator, top predator, food chain component..)

**Uses and values**

**Future consequence** (what happens if.....)



## Expected outputs of good EIA practice

### Positive planning 'hierarchy' for biodiversity:

- \* Enhance biodiversity
- \* Avoid impacts on biodiversity (no net loss of genetic variability, range, abundance).
- \* Minimise unavoidable impacts on biodiversity (no irreversible damage to ecosystem characteristics and functions).
- \* Ensure sustainable use of biological resources.

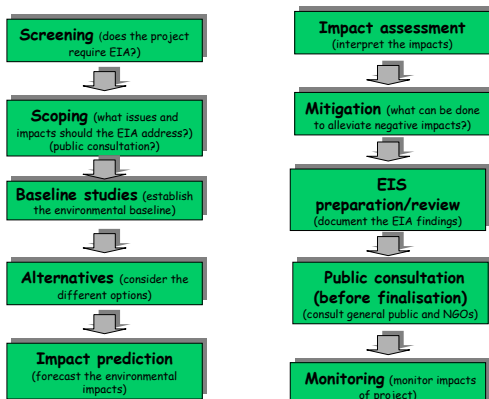
## 2 approaches to biodiversity/ EIA:

Science based...

Value-driven or objective-led..

- Understand the ecological dimension of the receiving environment (distributions, structure and function)
- Superimpose activities and predict a response within zone of influence
- Decide whether this is within limits of baseline variation
- Design mitigation to avoid/fix impacts
- Evaluate the ecological outcome with/without mitigation
- Finally consider whether anyone cares

- Understand distributions and needs of people and communities
- Identify and participate with people who need or use biodiversity/ ecosystem services
- Structure EIA around key values and services, possibly using objectives and indicators
- Consider main driving forces and whether key values can be sustained
- Design mitigation to maintain, restore or replace these values (offsets)

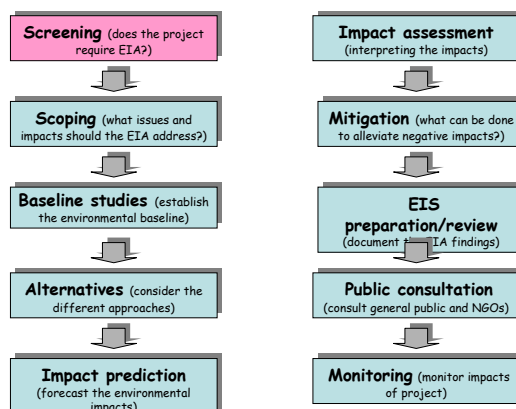


## Getting Biodiversity into IA

- **Screening:** Are there important ecological/biodiversity-triggers for IA?
- **Scoping:** Which ecological aspects should be addressed and how? (consider spatial and temporal coincidence of proposal activities and the features/resources affected)
- **Refine TORs** on the basis of biodiversity values: consider importance of features and resources and people who might be affected.. Consider criteria which will be used in decision-making.

## Getting Biodiversity into IA

- **Impact Assessment:** Obtain data to quantify effects (consider: type, location, timing, frequency of activities and their ecological effects in terms of magnitude, range, duration).
- **Impact significance:** Are the predicted effects ecologically significant? Consider proportion of resource affected and reversibility. Will integrity or status be adversely affected?
- **Impact Mitigation:** Measures to avoid, reduce or remedy adverse impacts. What kind of biodiversity mitigation is possible or acceptable?
- **Monitoring and follow-up:** information, auditing of implementation, feed back





## Screening: is EIA required?

Different Approaches:

- ~ **positive and negative lists** (e.g. Philippines)
- ~ use of **thresholds**, definition of **environmentally sensitive** or **'critical' areas** (eg Malaysia)
- ~ **combinations** of the above (e.g. EU)

### Screening using listings:

**Category 1** – project not expected to result in any significant adverse impact on biodiversity resources (**No EIA required**)

**Category 2** – projects likely to cause significant adverse impacts unless appropriate mitigation taken (**EIA required**)

**Category 3** – projects likely to cause a range of significant adverse impacts with unknown magnitude demanding **detailed study/ EIA**

## Screening - using thresholds or criteria

Thresholds may be based on:

- ~ **characteristics of the development** (size, use of natural resources, processes, area of land required, risk of accidents)
- ~ **location of development** (existing land use, absorption capacity of natural environment, proximity to designated areas)
- ~ **characteristics of the potential impact** (eg level of emissions, likely extent - geographical area and size of affected population-)

### Screening thresholds: Malaysia

• *Environmental quality (prescribed activities) (environmental impact assessment) Order 1987* sets out 18 categories of projects with associated thresholds, including:

- For forestry projects:
  - conversion of hill forest land to other land use covering an area of 50 ha or more
  - Logging/ conversion of forest land to other use within the catchment area of reservoirs for municipal water supply, irrigation or hydro power generation or in areas adjacent to state and national parks and national marine parks
  - logging covering an area of 500 ha or more
  - Conversion of mangrove swamps for industrial, housing or agricultural use covering an area of 50 ha or more
  - clearing of mangrove swamps on islands adjacent to national marine parks

### Screening: thresholds EU

Description of development	Applicable thresholds and criteria
Intensive fish farming	The installation resulting from the development is designed to produce more than 10 tonnes of dead weight fish per year
Installations for hydroelectric energy production	The installation is designed to produce more than 0.5 megawatts
Motorway service areas	The area of development exceeds 0.5 hectare

From the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (S.I. No. 293)

### Screening - combination of methods

The UK uses a combination of **thresholds; positive and negative lists, case by case consideration**:

~ EIA is **mandatory** for **Schedule 1 \*** projects (**positive list**), eg installations for storage of petroleum, petrochemical or chemical products with a capacity of 200,000 tonnes or more

~ Certain projects are exempt from EIA (emergency works, national security) (**negative list**)

~ Other projects reviewed **case by case** and need for EIA depends on project size and environmental sensitivity (**thresholds**)

\* The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (S.I. No. 293)

- \* Consider information about the proposal and its potential impacts
- \* Review confidence in information and impacts
- \* Review characteristics of the environment and biodiversity at all relevant scales
- \* **Planning, environmental management and decision-making framework**
- \* **Degree of public interest**

"Triggers" for biodiversity inclusive impact assessment

Potential impacts on:

- \* PAs and other designated areas
- \* Areas supporting protected or listed species
- \* Areas supporting 'important' biodiversity
- \* Areas that provide important ecosystem services (flood defence, soil protection, groundwater re-charge, etc)

### Scoping: Establishing Terms of Reference

*Scoping should be carried out as a collaborative exercise involving the developer, the competent authority, relevant agencies and, ideally, the public*

#### Key agencies

- \* National government ministries (Mining, Agriculture, Health & Welfare, Water Resource, Forest & Environment, Industry etc.)
- \* Local government bodies
- \* Private sector organisation
- \* NGOs public
- \* **EIA experts**
- \* Local people

For biodiversity inclusive EIA, scoping should involve biodiversity experts and people dependent on biodiversity resources in the study area

A more pragmatic approach involves development of country guidance and translating the scoping outputs into ToRs.

## Scoping involves:

- Review of activities (extent, timing, duration etc)
- Review of biodiversity distributions, structure, function
- Review of baseline condition and likely responses and changes with & without project (preliminary impact assessment)
- Design of surveys or information gathering to 'capture' all relevant effects
- Explanation of proposed process and methods

### Key functional attributes and processes:

- \* **Nutrient cycles** (can effect system productivity and species composition)
- \* **Energy flow** (affects ability of systems to 'support' component species)
- \* **Productivity** (affects ecosystem function and species composition)
- \* **Eutrophication** (a form of increased productivity with implications for species composition)
- \* **Succession** (knowledge of patterns of succession is important for predicting community change over time)
- \* **Colonization** (can be a key in maintaining populations)
- \* **Dispersal** (can be key in maintaining populations and is also important with respect to ability to recover following impact)
- \* **Competition** (altered competition has implications for species composition and patterns of succession)
- \* **Assimilative capacity** (can affect ability of a system to absorb or recover from pollution)
- \* **Population processes** (breeding, migration)

(Source: Treweek, 1999)

### To focus the assessment using VECs, eg for species:

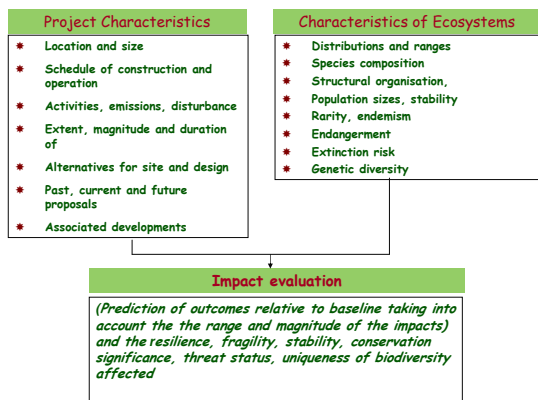
- \* Charismatic and emblematic species
- \* Economic importance
- \* Protected status
- \* Rarity
- \* Endangerment/conservation status
- \* Susceptibility and/or responsiveness to defined impacts (indicators)
- \* Umbrella species
- \* Important ecological role (e.g. position in food chain, keystone species)
- \* Availability of consistent survey methods
- \* Expediency/tractability for survey

### At some point it is necessary to define the 'baseline' against which future impacts can be assessed

- \* The baseline study should anticipate the future state of the environment assuming the project is not undertaken - the 'no action alternative'
- \* Baseline studies should be undertaken for each alternative (site) so that the implications of each alternative can be assessed
- \* New field based data are necessary (e.g. biodiversity survey) if information is not available, or is old and not relevant to the assessment

Although, many EIAs fail to consider alternatives, alternatives are really at the 'heart' of the EIA. Many EIA professionals consider them as essential 'raw material' of good EIA.

### Impact Assessment



### Biophysical changes

- \* Habitat loss or destruction (e.g.vegetation clearing)
- \* Altered abiotic/site factors (e.g. soil removal and compaction)
- \* Mortality of individuals (e.g. through collision)
- \* Loss of individuals through emigration (e.g. following destruction of habitat)
- \* Habitat fragmentation (e.g. barrier effect of road and pipeline)
- \* Disturbance (physiological and behavioural)

contd. ...

### Ecological impacts

- \* Mortality of individuals due to better access
- \* Reduced population (due to reduced habitat, size and quality)
- \* Altered population dynamics (due to altered resource availability)
- \* Increased competition (due to shrinking resources)
- \* Altered species composition and habitat changes (due to fragmentation)
- \* Reduced gene flow (due to restricted migration)
- \* Habitat isolation causing reduced breeding success
- \* Altered prey-predator relationships

### Cumulative impacts (time-and space-crowded effects)

- \* Habitat 'nibbling' (progressive loss and fragmentation throughout an area)
- \* Reduced habitat diversity, e.g. at the landscape level (associated with reduced biological diversity at other levels in organizational hierarchy)
- \* Habitat fragmentation over time, resulting in progressive isolation and reduced gene flow
- \* Reduced genetic diversity can result in loss of resilience to environmental change and increased risk of extinction
- \* Irreversible loss of biological diversity (e.g. through destruction of unique population units)

contd. ...

**Impact assessment:**

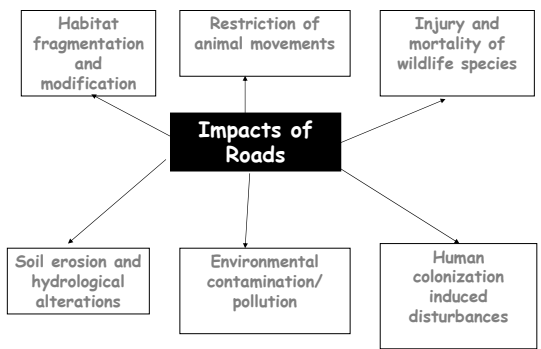
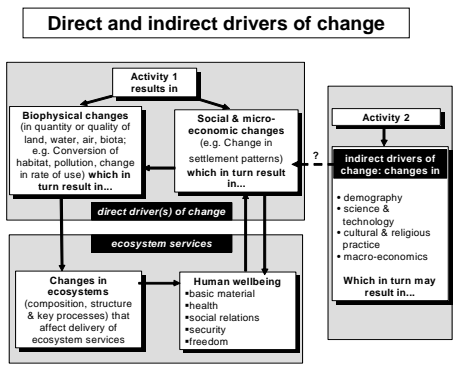
*involves evaluation of magnitude, extent and significance of environmental impacts*

- \* Significance can be determined through professional judgement, reference to regulations and criteria evolved
- \* The conclusions of the impact assessment can ultimately be used by decision-makers when determining the fate of the project application

Impacts can vary in nature, magnitude, extent, timing, duration and reversibility

**Questions to ask when evaluating impact significance**

- \* What impact will the project have on the genetic composition of each species?
- \* Do major systemic or population changes appear to be taking place?
- \* How will the proposal affect ecosystem processes? Is this proposal likely to make the ecosystem more vulnerable or susceptible to change?
- \* Does the proposal set a precedent for conversion to a more intensive level of use of the area?
- \* Is the biological resource in question at the limit of its range?
- \* Does the species demonstrate adaptability.
- \* What level of confidence or uncertainty can be assigned to interpretations of the effects?



Habitat Fragmentation and alteration, eg introduction of barriers



Restriction of animal movements

Injury and mortality of wildlife species



Soil erosion & hydrological change



pollution



Induced disturbance



**Examples of potential impacts of road on wildlife**

Project characteristics/ activity	Direct impacts	Indirect impacts	Cumulative/ synergistic impacts
Clearing of vegetation	Loss or degradation of habitat	Reduction in habitat use	Decline in wildlife population and diversity
Increase in traffic volume	Increased road kills	Decline in populations	Change to trophic dynamics and species composition
Road alignment through wildlife habitat	Increased access to pristine wildlife habitat areas	Unplanned development Poaching	Decline in habitat quality Species decline
Land acquisition for road	Displacement of people	Colonization pressure in unsettled areas	Deterioration of previously undisturbed natural areas



## Animal mortality on roads in protected areas of India and Nepal (1997-1998)

Number of individuals killed per year	Wildlife habitats and the nature of roads on which mortality is reported					
	Tadoba Tiger Reserve	Sariska Tiger Reserve	Gir National and Park Sanctuary	Corbett Tiger Reserve	Pench Tiger Reserve	Royal Bardia National Park Nepal
	FR	SH	SH	SH	NH	NH
Chital		2	1			3
Sambar	3				1	
Nilgai		2	1			
Wild boar						
Lion			2			
Leopard			1	4		
Tiger		2		5	2	
Langur	17			37	1	
Civet	3				1	
Porcupine			1			
Barking deer						2
Mongoose	4				1	
Hyaena	2	1				
Jungle cat		1				1
Total road kills	29	8	6	46	6	6
Source	Dubey, 1997 <i>pers. comm.</i>	Johnsingh <i>et al.</i> 1998	Singh & Kamboj 1996	Uttar-anchal Forest Dept.	Areendran & Pasha 1999 <i>pers. comm.</i>	Karki & Shreshtha 1998 <i>pers. comm.</i>

### EIA is a part of the development control process and not research!

#### Basic characteristics of a good EIA:

- \* Balance - Complete, unbiased and practical
- \* Relevance- Development, location
- \* Significance - Focussed, Ignoring trifles and side issues
- \* Thoroughness- Quality of contents
- \* Clarity- To public and decision makers

#### Steps in reviewing an EIA report

- \* Set the scale of the review
- \* Select reviewer(s)
- \* Use public input
- \* Identify review criteria
- \* Carry out the review
- \* Determine remedial options
- \* Publish the review report

#### Range of review methods

- \* General checklists
- \* Project specific checklists
- \* Ad hoc processes
- \* Expert opinion, accredited reviewers
- \* Public review
- \* Panels of inquiry, independent commissions
- \* Legal approaches

### Main elements of an EA report

#### Executive summary

#### Main report

- \* Aims and objectives of the proposal
- \* Analysis of site selection and alternative sites
- \* Description of expected environmental conditions (biophysical and socio economic)
- \* Description of impacts Relationship to current land use policies
- \* Significance of impacts
- \* Evaluation of alternatives
- \* Impact management, mitigation plan
- \* Monitoring plans, contingency plan
- \* Terms of reference
- \* Appendices (glossary, explanation of acronyms, ToRs and a list of persons consultants for the study and documentation.

# Valuing biodiversity for impact assessment



Valuing biodiversity for impact assessment

## How do we overcome problems of biodiversity under-valuation?

- Although biodiversity yields economically important goods and services, these values tend to be under-emphasised or ignored in decision-making
- It is difficult to incorporate EIA results into traditional economic measures of profitability
- Negative biodiversity impacts are not systematically reflected in project and programme appraisal and assessment measures
- There is seen to be little economic benefit to conserving biodiversity and few economic costs to biodiversity degradation and loss

## THE BOTTOM LINE

Tourism in the small-island Caribbean accounts for a third of all trade, a fourth of foreign exchange earnings, and a fifth of all jobs

## BUT...

- multinational air, cruise and hotel interests often benefit over local communities
- Tourism's import discontinuities mean that short-run economic benefits often disguise cumulative longer run costs
- limited infrastructure and capacity can mean that ability to regulate impacts is restricted

Some typical environmental, economic and socio-cultural problems:

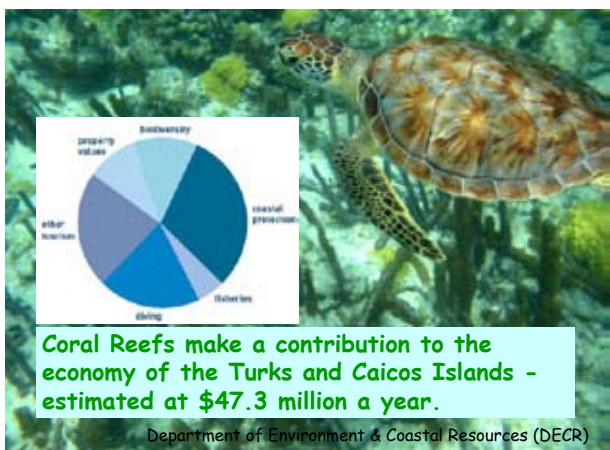
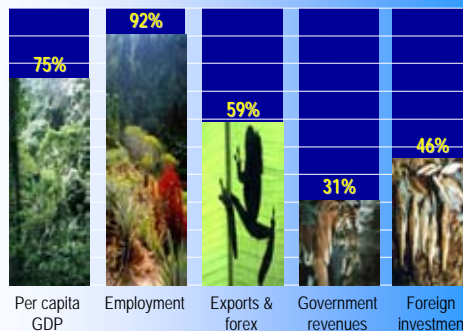
- infrastructural (water, electricity, etc.) capacity problems and disruptions (Jackson 1986),
- displacement of traditional economic activities (Johnson and Thomas 1996), import of labour when growth exceeds local labor supply (Kakazu 1994),
- real estate inflation,
- congestion and noise (Wall 1982),
- the increase in man-made attractions to replace lost natural amenities (Butler 1980),
- escalating crime, prostitution,
- steady erosion of cultural traditions, and
- the appearance of inauthentic cultural attractions (de Albuquerque and McElroy, 1995c; Pattullo, 1996).



Large-scale transformational infrastructure and resort complexes concentrated along delicate coastlines result in:

- beach loss and lagoon pollution from sand mining, nearshore dredging, and hotel sewage dumping
- deforestation, introduction of IASs
- reef damage from diving, yacht and cruiseship anchoring and marina development
- filling-in of wetlands and mangrove destruction from resort construction

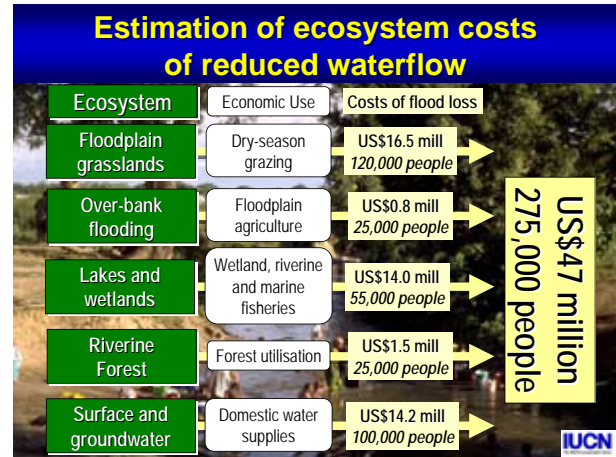
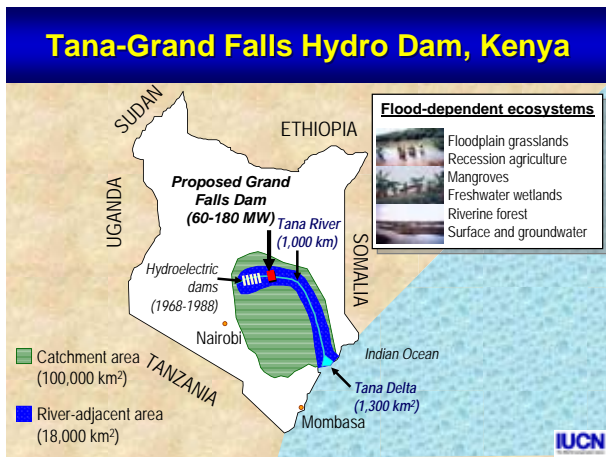
## Estimation of value of Lao PDR biodiversity to national economy



Coral Reefs make a contribution to the economy of the Turks and Caicos Islands - estimated at \$47.3 million a year.

Department of Environment & Coastal Resources (DECR)

IUCN



Value of wetland waste water treatment based on estimates of replacement costs for other technical options

- **Replacement cost:** upgrading coverage of piped sewerage supply, improving slum sanitation facilities, instituting industrial treatment processes *\$1 million*
- **Mitigative expenditures:** increased treatment costs for city water intake *\$1.75 million*
- **Less costs of managing wetland** for waste treatment *\$235,000*



You are about to board an aircraft, and you notice a man on a ladder busily popping rivets out of the wing. You approach him and ask what he's doing.

"I'm taking these rivets out of the wing," he replies.

"Why?"

"Growthmania Airlines, who own the plane, sell them for US\$1.00 each and I get US\$0.50 from them for each one I pop."


"Are you crazy? The wing will be weakened and sooner or later it'll fall off!"

"Don't worry, I've popped out a lot of rivets, and nothing has happened yet."



# Approaches to mitigation of biodiversity-related impacts

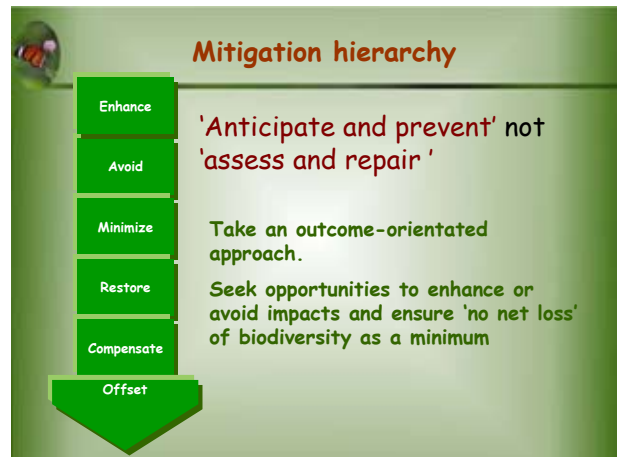
## Approaches to mitigation of biodiversity related impacts



UKOTCF Biodiversity That Matters Jersey 2006 Material produced by Asha Rajyanshi and Jo Treweek through CBBIA


Mitigation of impacts on biodiversity includes any action(s) taken to avoid, reduce or eliminate adverse effects, whether by controlling the sources of impacts, or the exposure of biological receptors to them

- ## Mitigation options
- Alternative ways of meeting the need
  - Changes in planning and design
  - Improving monitoring and management
  - Monetary compensation

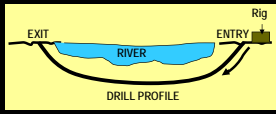


- ## Avoidance
- Pursue a different option
  - Site based on least damage criteria
  - Avoid disturbance of important/sensitive areas (e.g. protected habitat)
  - Time activities to avoid critical periods (eg avoid nesting, breeding period)


## Eg alternative technological options



Recognizing the ecological benefits of Horizontal Direction Drilling technology over Open Cut method for laying pipeline across a river



(Source: WII and Bharat Petroleum Corporation Ltd)



## Timing of project activities




Location of Hazira-Bijapur-Jagdishpur gas pipeline, M.P., India

Avoid nesting, breeding period of Great Indian Bustard

## Reduction, moderation, minimization

- Substitution of techniques
- Promoting bio-friendly technologies
- Regulated access during construction or operation to control disturbance



Design of tiles to allow swift and sparrows to build nests

*contd. ...*

### Construction of fences and subways for small animal movement

(Source: The Netherlands Commission for EIA)

### Landscape planning

Raise clumps of trees in the flight path of birds to make them fly higher.

(Source: The Netherlands EIA Commission)

### Nature engineering solutions for road related impacts

### Right of Way management in transportation corridors

Perspective view of proposed eco-friendly over bridge on existing railway line and highway through Rajaji National Park

(Source: A.P. Singh)

### Alternatives at the planning stage may be useful in offsetting biodiversity losses

### Repair/ reinstate/ restore:

Restoration of mine overburden dumps using geo-textile

(Source: Coalli Mines, M/s Sesa Gao)

### Repair/ reinstate/ restore

Use of coco filters for arresting silt

(Source: SVFU, Bangalore)

### Habitat compensation

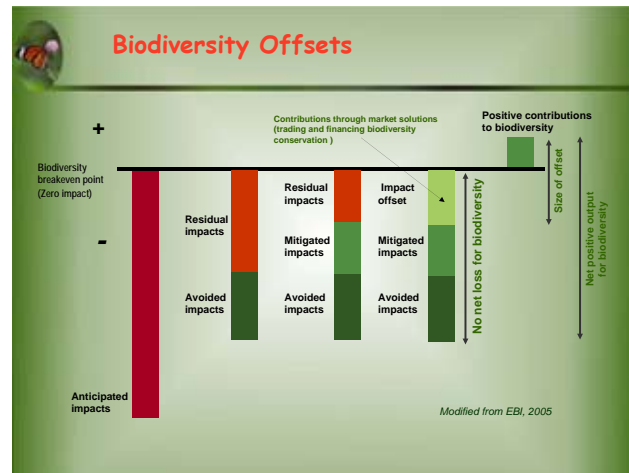
Creation of wetland habitat in a mine void

Creative management of alternative sites

(Source: M/s Narmada Cement Ltd.)

## Enhancement

- Enhance existing degraded habitats and create additional habitats to partially offset the loss of those removed by a project
- Create new habitat on alternative sites (re-vegetation of vacant lands, landfills, exposed rocks)
- Enhance habitat use and value (e.g. artificial nests for improving habitat use)



## Types of Offset activities

- Enhancing PA protection or management eg by replanting degraded areas/ strengthening management capacity.
- Safeguarding unprotected areas: entering into agreements with local communities or creating new PAs.
- Addressing underlying causes of biodiversity loss: working with communities to address livelihood needs to support alternative livelihood to stop unsustainable activities.
- Establishing corridors/ migration paths eg securing conservation management of land between PAs.
- Establishing buffer zones
- Entering into land management agreements with private land owners.

## Benefits of biodiversity offsets

**For governments**

- Better balancing of costs and benefits of conservation and economic developments
- Opportunities for national governments to fulfil commitments under Millennium development goals and Convention on Biodiversity

**For developers**

- License to operate, new market opportunities and competitive advantages

**For conservation communities**

- A mechanism to reconcile conservation into development planning and biodiversity into the investment plans
- More incentives to promote in situ conservation initiatives and better conservation outcomes
- Focussing on high biodiversity value habitat and conservation priorities instead of highly compromised sites

## Ground rules for developing biodiversity offsets

- Offsets are no substitute for "no go" areas
- Offsets are not a project negotiation tool
- Offsets follow the principle of 'like for like or better'
- Biodiversity offsets should follow the mitigation hierarchy



## Country specific regulatory mechanism

**USA**

- Wetland Banking in the US under the Clean Water Act 1972 and the US Army Corps of Engineers.
- Conservation Banking in the US under the Endangered Species Act and Guidance on Establishment, Use and Operations of Conservation Banks.

Developer must first avoid and then ensure restoration of prior wetlands, enhancement of low quality wetlands and creation of new wetlands.

Each hectare of wetland damaged or destroyed must be replaced

*California was the first state to authorize the use of conservation banking and has established 50 conservation bank since 1995*

## European Union

Habitats and Birds Directives and implementing regulations in the EU under Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora and Council Directive 79/409/EEC.

The Environmental Liability Directive makes specific reference to biodiversity and operates on the 'polluter pays principle' requiring companies to undertake compensation for environmental damage or imminent environmental damage.

No set criteria, but offsets must ensure that the overall coherence of the Natura 2000 network is protected.





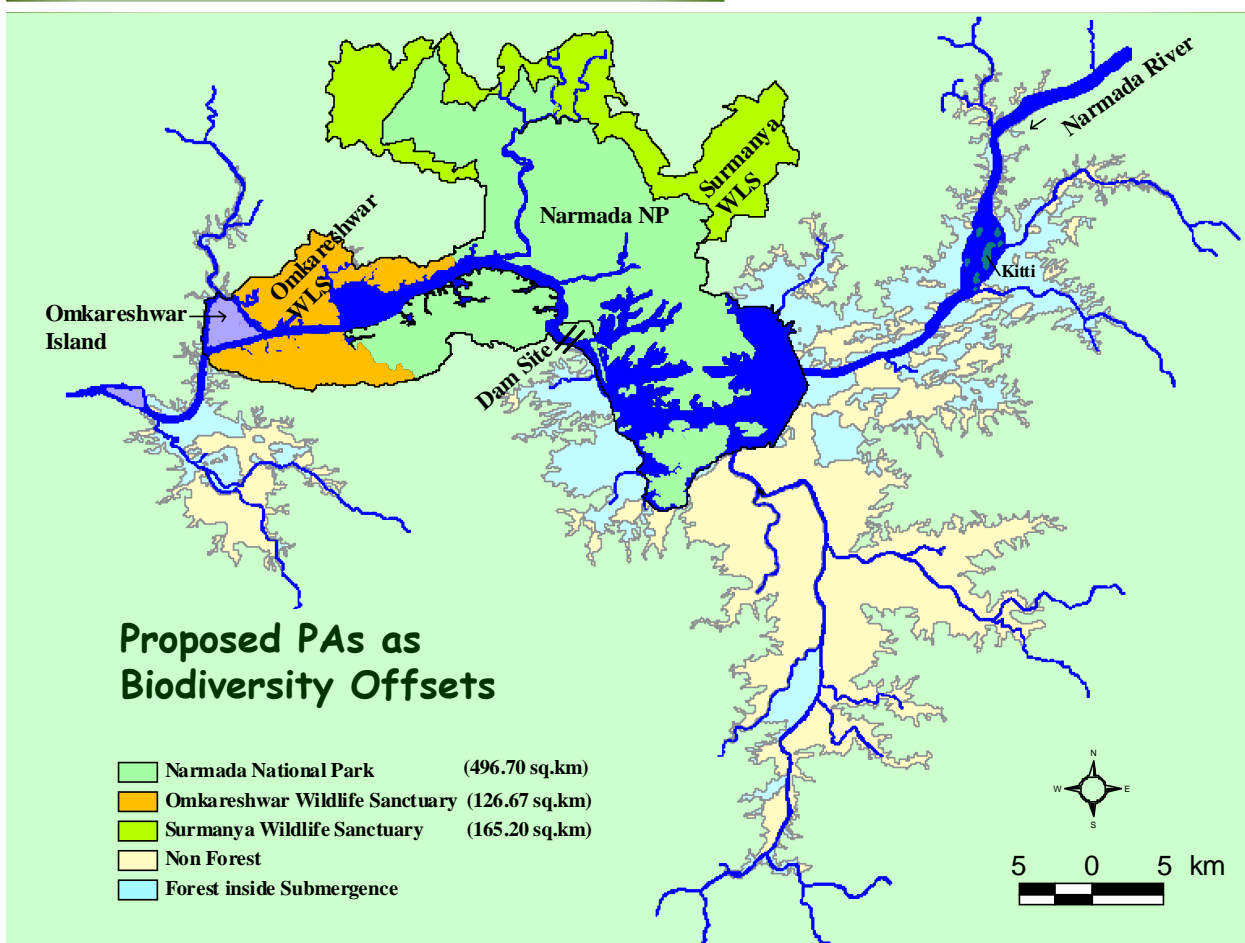
**Brazil**

Tradable Forest Conservation Obligations under the Forest Regulation and National System of Conservation Units under Lei No 4771 of 1965; Lei No 14.247 of 22/7/2002, Lei No 9.985 of 18/7/2000, Decree to No. 4.340 of 22/8/2002.

Regulation require rural property to maintain a forest reserve of at least 20%.



Where a development has a significant environmental impact, it must compensate for this by supporting a unit within a National System of Conservation Units (SNUC).

The sum paid depends on the degree of environmental impact of the project. It must be at least 0.5% the total investment costs and in rainforest areas may be above 6%.



**Features of new PA**

- ◆ All vegetation communities in submergence zone are represented
- ◆ All large mammal spp present in the project area have been recorded
- ◆ Incorporates the only residual portion of free river between Narmadasagar and Omkareshwar projects

# Environmental Impact assessment in the Marshall Islands

## EIA in Marshall Islands



## Marshall Islands

- Micronesia
- 29 low lying atolls
- 60,000 people



## RMIEPA 2003

- Strong, clear legislation for EIA and Coastal Zone Management Plans
- No experience or knowledge of EIA
- No scientific capacity to carry out EIA in-country
- Cultural/ social barriers to imposing regulations

## Approach

Capacity-building at all levels:

- Institutional
- Organisational
- Professional/ individual
- Community

## Institutional Capacity

- GIS Information System
- Coastal Zone Management Plans for 4 most developed atolls
- Develop and describe explicit EIA process and promulgate regulations

## Organisational Capacity

- EPA- experience of development and facilitation of the process- seeing the process from START to FINISH
- “Centre of Excellence” for GIS
- Private sector- worked very closely with local development proponents in partnership.

## Professional Capacity

- 2 staff and manager in EPA
- Learn by experience- by DOING on the job not by TRAINING off the job.

## Community Capacity

- Implement prescribed public information process and public hearings

## DRYDOCK!!!

- 2 months after Caleb’s arrival
- No tested process in place
- Drydock all set to go.... (\$\$\$ changed hands)

So...

Process was started- proponents required to do EIA.... Public meetings held...

## What happened?

- Public engaged powerfully- high degree of interest and care
- EIA was carried out and heavily criticised – initial project was rejected
- Social implications- employment, prostitution
- Environmental implications- lead paint, waste disposal, pollution and impact on lagoon water quality and biodiversity, aesthetic issues
- Basically- strong public discussion of issues related to these kinds of development for the first time...

## Other results of EIA

- Handling differently small developments and large developments
- Have moved 2 coral heads with endemic species
- Have established process now and changed community expectations of EPA (ie have mitigated social barriers to EPA)

## Capacity-Building

- Long-term live-in expertise
- Brings knowledge and experience
- Get to know culture and environment
- Can gain trust and develop relationships
- Is outside the social/ familial barriers
- BUT- must be the right person!
  
- The problem with training...