

# Tools for Environmental and Social Assessments of Bioenergy

Paris, July 8 2009

Jörn Scharlemann (UNEP-WCMC) & Christine Dragisic (Conservation International)

with invaluable input from

Charles Besancon, Leon Benun, John Buchanan, Horst Fehrenbach, Uwe Fritsche,  
Sebastian Haye, Klaus Hennenberg, Brian Gurr, David Knox, Conrad E Savy, Bambi  
Semroc, Kirsten Wiegmann

# Concepts

# High Conservation Value Areas

Originally developed with FSC for use in forest management certification; currently being expanded to all habitats

Incorporated into emerging private sector safeguards and sustainability guidelines (companies, roundtables)

## Intrinsic/ecological

**HCV1:** Areas containing globally, regionally or nationally significant concentrations of biodiversity values

**HCV2:** Globally, regionally or nationally significant large landscape-level areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance

**HCV3:** Areas that are in or contain rare, threatened or endangered ecosystems

## Socio-cultural

**HCV4:** Areas that provide basic ecosystem services in critical situations

**HCV5:** Areas fundamental to meeting basic needs of local communities

**HCV6:** Areas critical to local communities' traditional cultural identity

# High Conservation Value Areas

## Pros

- Includes both social and environmental issues – comprehensive
- Well-developed biodiversity criteria
- Wide acceptance among industry groups
- Some mapping done

## Cons

- No universal rigorous definition
- National interpretations make cross-border comparisons difficult (for companies sourcing from multiple countries and multiple commodities)
- Much of the world not yet mapped
- Definition process can be time consuming and costly; requires expertise
- No legal protection, uncertain permanence

# AZEs, IBAs, KBAs

**Alliance for Zero Extinction sites:** safeguard key sites where species are in imminent danger of disappearing, incl. mammals, birds, amphibians, conifers, some reptiles and other plants

**Important Bird Areas:** key sites for bird conservation – small enough to be conserved in their entirety and often already part of a protected-area network

**Key Biodiversity Area:** consistent methodology for identifying and mapping biologically critical sites at the scale of practical management units — protected areas, concessions, and properties — which can inform protected area targets and identify gaps.

## Intrinsic/ecological

## Socio-cultural

**AZE:** 1. Endangerment: at least one EN or CR species; 2. Irreplaceability: sole area where an EN or CR species occurs, or overwhelmingly significant known population (resident or temporary); 3. Discreteness: The area must have a definable boundary

Ecosystem services valuation under development

**IBAs:** 1. Significant numbers of 1+ globally threatened species; 2. Part of a set of sites for range- or biome-restricted species; 3. Exceptionally large numbers of migratory or congregatory species

**KBAs:** 1. 1+ globally threatened species; 2. 1+ restricted-range endemic species; 3. Significant temporary concentrations of a species; 4. Globally significant examples of unique habitat types and species assemblages

# AZEs, IBAs, KBAs

## Pros

- Widely accepted: AZE has nearly 100 leading environmental organizations as partners;
- Broad coverage: IBAs mapped for nearly every country (10,000+); 595+ AZE sites covering most taxonomic groups and much of the globe;
- Criteria are internationally agreed, fairly standardized, quantitative and scientifically defensible
- Legally recognized in some regions, e.g. IBAs in EU
- Regular updates and expansion based on field data
- Baseline for further assessments (incl. ecosystem services)

## Cons

- Biodiversity only

## Comments

- Close correspondence to HCV 1
- Also related: Important Plant Areas, Important Sites for Freshwater Diversity

# National Priority Areas for Biodiversity Conservation (Brazil)

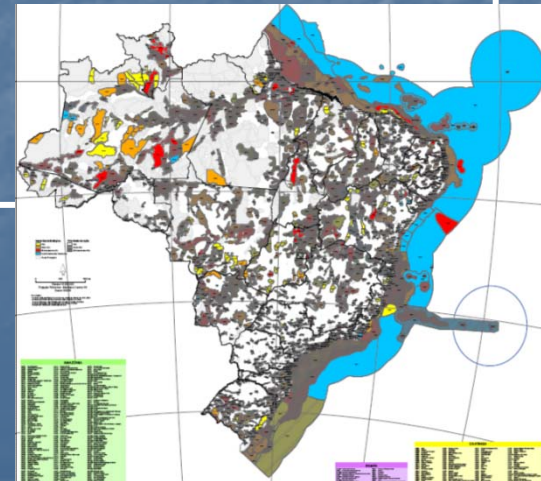
- Priority Areas defined through participatory process with wide civil society and government participation
- Organized by biome
- Includes Biological Importance and Priority for Action
- Based on best available information on biodiversity and anthropogenic pressure, and on the experience of participating researchers

## Intrinsic/ecological

- Biological Importance: based on Systematic Conservation Planning
  - 1) Representativeness
  - 2) Persistence
  - 3) Vulnerability

## Socio-cultural

- Priority for Action: based on
  - 1) Anthropogenic pressure
  - 2) Importance for traditional and indigenous communities



# National Priority Areas for Biodiversity Conservation (Brazil)

## Pros

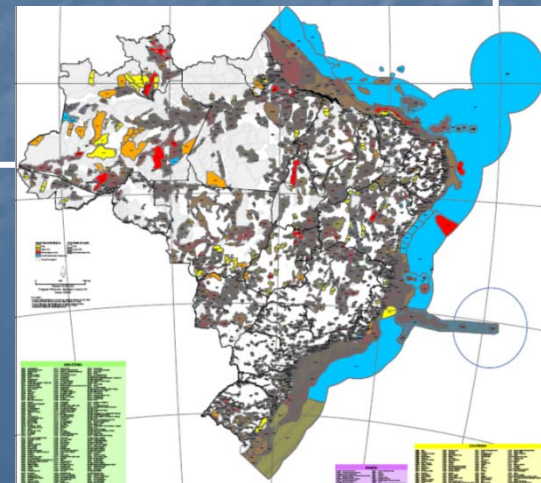
- Developed through a highly participatory process with transparent methodology
- Strong national ownership (government, civil society); legally recognized
- Incorporated into national planning processes
- Includes marine areas

## Cons

- Biodiversity only
- Based in part on expert opinion
- National in nature – cross-border comparisons difficult

## Comments

- Updated periodically (10 years maximum)
- Basis for protected area planning
- Other examples: South Africa, Australia, USA, northern Sumatra



# Tools

# HCV Toolkits

- Global Toolkit provides guidance on how to take the generic HCV definitions and develop specific, detailed and clear National Interpretations for a particular country or region.
- Also provides guidance to forest managers on how to work with the generic definition when no national definition is yet available
- Developed by ProForest for the WWF-Ikea Co-operation on Forest Projects
- National interpretations of HCVF Toolkit (17 available) provide a practical methodology to be used on a routine basis to identify HCVFs
- Also provide guidance on what types of management and monitoring are necessary if such a forest has been identified

## **Intrinsic/ecological**

- HCV 1-3 (per earlier slide)

## **Socio-cultural**

- HCV 4-6 (per earlier slide)

# HCV Toolkits

## Pros

- Rigorous methodology
- Includes social and environmental
- Use required in many corporate guidelines
- Support network exists

## Cons

- National interpretations available for 15 countries with regional interpretations
- Defining criteria can be time consuming
- Toolkits focus on forests; other ecosystems may require additional adaptations

## Comments

- <http://hcvnetwork.org/resources>

# Integrated Biodiversity Assessment Tool (IBAT)

- Draws on World Database on Protected Areas, World Biodiversity Database, and IUCN Red List
- Site-specific – allows users to access best available data on endangered or threatened species, and nearby protected areas, facilitating siting and management decisions
- Initial portal developed for private sector; government and multilateral portals next
- Currently free (though underlying data development has costs)
- BirdLife, CI, UNEP-WCMC, IUCN (Observer), 15+ Corporate Partners (IBAT + Proteus)

## Intrinsic/ecological

## Socio-cultural

### Protected Areas (WDPA)

Legally protected sites, National protected areas (IUCN I-VI), International protected areas (UNESCO World Heritage & MAB, Ramsar)

### Biodiversity (WBDB, IUCN Red List)

Key Biodiversity Areas (including AZEs and IBAs), Globally threatened and restricted range species; significant concentrations; representative habitat types and species assemblages

N/A

# Integrated Biodiversity Assessment Tool (IBAT)

## Pros

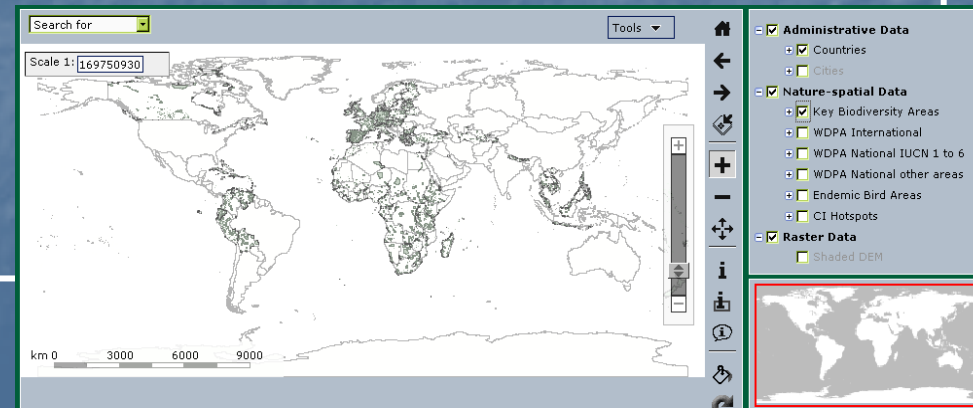
- Currently free and confidential; hundreds of individual users already registered
- Developed in partnership with leading corporations; meets needs
- Data recognized by multilaterals; IBAT being incorporated in roundtable guidelines and multilateral decision support tools
- Draws on best available data, continuously updated
- Nationally mapped by national NGOs

## Cons

- Biodiversity only
- Should be complemented by groundtruthing, etc

## Comments

- [www.ibatforbusiness.org](http://www.ibatforbusiness.org)
- Used by many as first screening, before HCV analysis done (lower cost for initial decision-making), or as part of HCV1 analysis



# Industry Biodiversity Assessment and Planning (IBAP)

- Assists companies in incorporating biodiversity in their risk analysis, decision-making and planning processes for new development projects
- Applied from the earliest stages of project development, inform and enhance ESIA and inform environmental management plan
- Desktop biodiversity and socio-economic assessment; preliminary field assessments—biodiversity and socioeconomic; recommendations for pre-project biodiversity action

## **Intrinsic/ecological**

**Desktop:** Current known biodiversity significance of the region and

**Field Assessment:** First cut assessments of the biological value of a selected area; Fills data gaps surrounding key species, habitats and ecosystems

**Pre-Project Action Plan:** Additional surveys, conservation actions, etc.

## **Socio-cultural**

**Desktop:** Existing or potential future socio-economic pressures on biodiversity

**Field Assessment:** Targeted local community engagement; socio-economic related biodiversity pressures and conservation opportunities

**Pre-Project Action Plan:** Continued community engagement, livelihood options, etc.

# Industry Biodiversity Assessment and Planning (IBAP)

## Pros

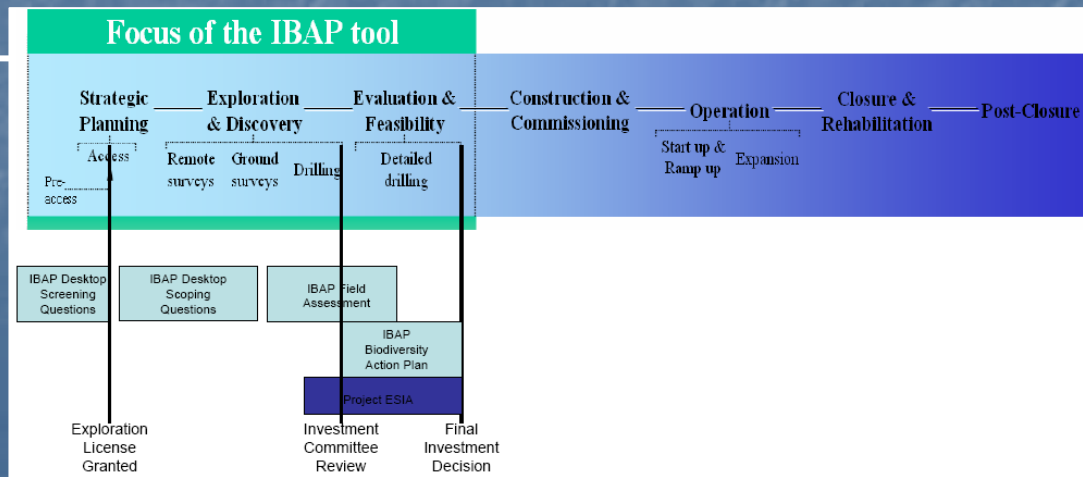
- Project Specific
- Early analysis targets decision-making and plans; helps risk assessment
- Addresses socioeconomic drivers of biodiversity loss

## Cons

- Under development
- Not designed for large-scale planning
- Socioeconomic aspects focused on environmental impacts

## Comments

- Complementary to IBAT and HCV – groundtruthing



# ARtificial Intelligence for Ecosystem Services (ARIES)

- Web-based technology to assist rapid ecosystem service assessment and valuation at multiple scales, from regional to global scales of assessments
- Helps discover, understand, and quantify environmental assets and what factors influence their values
- Will allow users to quantify and map a) provision of ecosystem services; b) the beneficiaries of such services; c) the sinks of ecosystem services (where services are obstructed/lost); d) the precise flow trajectories of services from sources to beneficiaries.
- Transparent, interactive interface that can accommodate a range of different use scenarios, including spatial assessments and economic valuations of ecosystem services, optimization of payment schemes for ecosystem services, and spatial policy planning

## **Intrinsic/ecological**

- Carbon regulation (sequestration and storage)
- Sediment regulation
- Nutrient regulation
- Interface with biodiversity module
- Etc.

## **Socio-cultural**

- Food provision and culture (salmon)
- Water supply & regulation
- Aesthetic: views & proximity
- Etc.

**The ARIES Project**

ARtificial Intelligence for Ecosystem Services

# ARtificial Intelligence for Ecosystem Services (ARIES)

## Pros

- Beneficiary- and flow-centered framework for ecosystem services, considering the ecosystem service provision, use, and flow (other ecosystem services assessment tool focus exclusively on provision)
- Uncertainties made explicit
- Will be free to non-profit users (NGOs, governments, etc)

## Cons

- Under development, full version expected Spring 2010

## Comments

- <http://ecoinformatics.uvm.edu/aries>
- Partnership includes Gund Institute for Ecological Economics, Ecoinformatics Collaboratory, Conservation International, Earth Economics; funded by the National Science Foundation
- Other similar tools: Natural Capital Project (Stanford/TNC/WWF) and others

# Summary

- Multitude of concepts and tools currently available
- Developed by many interested actors
- No single concept or tool provides all answers
- Continued assessment of concepts and tools

# **Criteria and Standards**

# Commodity Roundtables

Roundtable on Sustainable Biofuels

Roundtable on Sustainable Palm Oil

Round Table on Responsible Soy

## Intrinsic/ecological

**RSB:** Prohibits the conversion of HCVAs, native ecosystems, ecological corridors and conservation areas; requires ecosystem services and functions to be preserved; includes IBAT for preliminary screening; requires protection of ecological corridors and buffer zones on and around production site; promotes the use of degraded or idle lands and native species, and encourages a regional approach to landscape planning; requires significant GHG reduction

**RTRS:** Prohibits clearing of native habitat after 5/09 unless HCVAs and land rights are assessed; explores PES options; requires efforts to reduce GHGs; requires maintenance of natural vegetation along water courses

**RSPO:** Prohibits the conversion of primary forest and HCVAs after 30/11/0; status of rare, threatened or endangered species and high conservation value habitats taken into account in management

## Socio-cultural

**RSB:** Addresses land rights, labor rights, child labor, safety, food security, consultation...

**RTRS:** Addresses land rights, child labor, labor rights, worker safety, wages, stakeholder consultation and communication...

**RSPO:** Addresses land rights, safety, compensation, wages, labor rights, child labor, discrimination, harassment, local development...

# Commodity Roundtables

## Comments

- RSB (<http://energycenter.epfl.ch/biofuels>);
- RTRS (<http://www.responsiblesoy.org>);
- RSPO (<http://www.rspo.org>);
- Review based on the latest versions of Principles & Criteria (final only for RSPO)
- Other relevant issues such as soil, water, and air quality and agricultural practices are also included
- Other relevant roundtables (Better Sugar Initiative) and commodity standards, eg Brazil/Sweden certified sustainable ethanol, are also being developed. FSC is also applicable.

# Multilateral Scorecards

**IADB Biofuels Sustainability Scorecard:** Pre-project screening, early stage – each response categorized on a scale from “Satisfactory” to “Unsatisfactory”

**World Bank Biofuels Scorecard:** Both project screening and management, with some binary (go/no-go) answers and some scored answers

## Intrinsic/ecological

**IADB:** Assesses previous land use, biodiversity assessment, GHG savings, water use

**World Bank:** Requires manageable impacts on site- and landscape/watershed-scale terrestrial and freshwater biodiversity; carbon-negative project; no impact on protected areas; scores use of marginal lands high; addresses water, erosion, emissions

## Socio-cultural

**RSB:** Includes labor rights, poverty reduction, land ownership

**World Bank:** Addresses food security, land tenure, labor rights and availability, safety

## Comments

- IADB: <http://www.iadb.org/biofuelsscorecard>
- Both scorecards are in addition to the institution’s safeguard policies
- IADB scorecard is currently being revised – IBAT will be included in guidance for biodiversity
- Draft version of World bank scorecard reviewed

# EU Legislation

- **Renewable energy sources directive (EU-RES-D)**: Sets sustainability standards for biofuels that will meet mandate of 10% transport fuels from renewable sources by 2020
- **UK Renewable Transport Fuel Obligation (RTFO)**: Meta-standard includes reporting obligations, but currently no binding component

## Intrinsic/ecological

- **RES-D**: Prohibits the production of biomass from land with high biodiversity value (primary forest and wooded land, highly biodiverse grassland, areas designated for nature protection, areas for the protection of rare, threatened or endangered ecosystems or species; reduced use of carbon rich areas; gives bonus for production on severely degraded or contaminated lands; includes increasing GHG reduction of 35%+ (with iLUC deferred)
- **RTFO**: Prohibit conversion of high biodiversity areas (gazetted areas, HCVA, UNESCO World Heritage Sites, IUCN-listed PAs, RAMSAR) after 30/11/05; recommends preservation of ecological corridors, 10% set

## Socio-cultural

- **RES-D**: Requires reports on the social sustainability of biofuels and the relevant international conventions signed by principal supplier countries

## Comments

- Many other related laws, regulations, – fuel quality directive, Cramer criteria, agricultural standards, etc
- RES-D: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF>
- RTFO: <http://www.dft.gov.uk/pgr/roads/environment/rtfo/>



# US Legislation

- **Energy Independence and Security Act (2007)**: Established 36 billion gallon targets; directed EPA to set guidelines and assess impacts
- **Renewable Fuels Standard (EPA) Proposed**: 36 billion gallons of renewable fuels by 2022; sets GHG reduction requirements; includes rules on land types for feedstocks
- **Waxman-Markey Bill plus Peterson Amendment Proposed**: Temporarily (5+ years) sets aside iLUC questions; establishes domestic ag practices eligible for carbon offsets; gives more control to Depts of Ag and Energy

## Intrinsic/ecological

- **RFS**: GHG reduction requirements of 20-60% including iLUC; limits feedstocks to those grown on land cleared or cultivated prior to EISA (2005), either actively managed or fallow, and non-forested. Assesses potential impacts on soil, water
- **Waxman-Markey**: Creates 5+ year review period for iLUC to develop better methodologies and gives USDA power to approve; establishes ag and forestry practices eligible for carbon offsets

## Socio-cultural

- **RFS**: Some assessment of impacts on human health, agricultural livelihoods, prices

## Comments

- <http://www.epa.gov/OMS/renewablefuels/>
- EPA (RFS) invites comment on what alternative methodologies and data are available, if any, to better link the impacts of biofuels to land use change, biodiversity, etc
- EPA will do a separate assessment of environmental and resource conservation in EISA, including impacts on water quality and availability, soil conservation, and biodiversity
- Senate would need to pass similar legislation, compromise, and the President sign before it becomes law

