TESSA: A toolkit for rapid assessment of ecosystem services

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UNEP WCMC

30 years from now?

Background to the project

- Much ecosystem services work - either global or regional often producing sophisticated maps that may or may not relate well to the situation on the ground.
- This toolkit focuses on the site-scale to respond to the need to bring this type of work down to the operational scale (e.g. a mountain, a reserve) using information gathered locally.

Background to the project

"To develop and deploy a rapid assessment tool to understand how far conserving sites for their biodiversity importance also helps to conserve different ecosystem services, relative to a converted state".

Background to the project

Aims and principles:

•Help non-experts with limited capacity to measure several ecosystem services rapidly, cheaply but robustly

•Estimate difference between current state and plausible alternative(s)

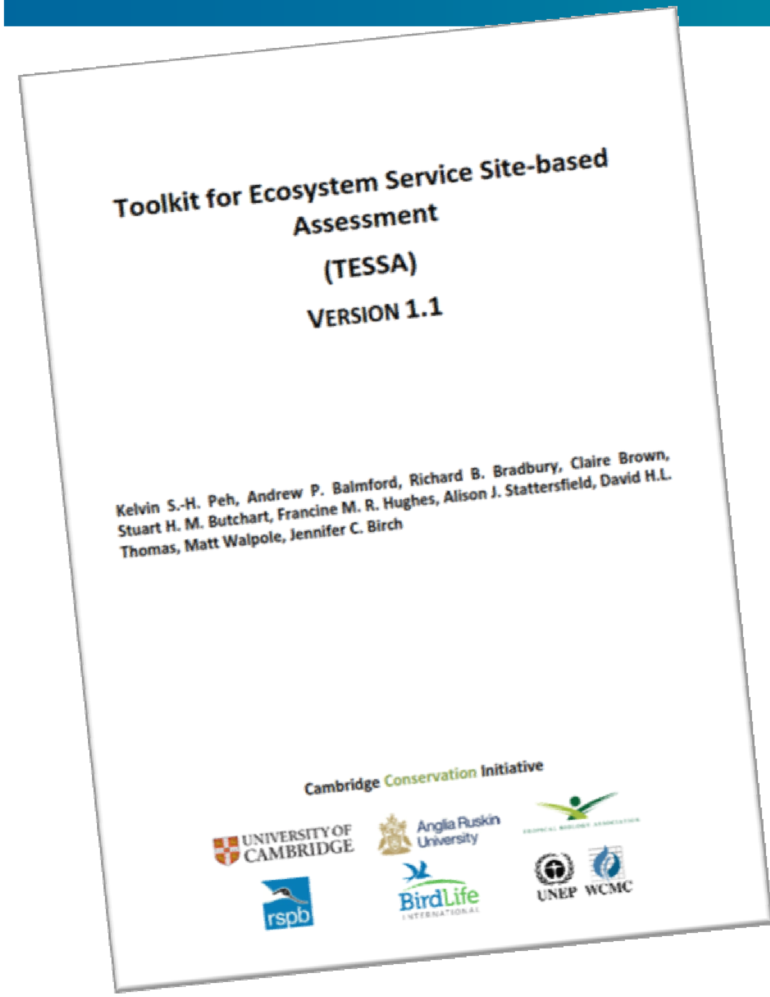
•Involve stakeholders and beneficiaries

•Provide scientifically robust data for decision-making and monitoring

A collaborative process

- 3 workshops in Cambridge with 50+ experts engaged
- 30 external reviewers of first draft
- >10 pilot sites (globally distributed)
- Regular steering committee meetings
- Support to others (BirdLife Partners, training…)

TESSA: An Introduction


Toolkit for Ecosystem Service Site-based Assessment

(TESSA)

VERSION 1.1

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Cambridge Conservation Initiative

TESSA guides non-specialists through a selection of accessible, low-cost methods, to identify the ecosystem services that are important at a site, and evaluate the benefits that people get now, compared with those expected under alternative land-uses

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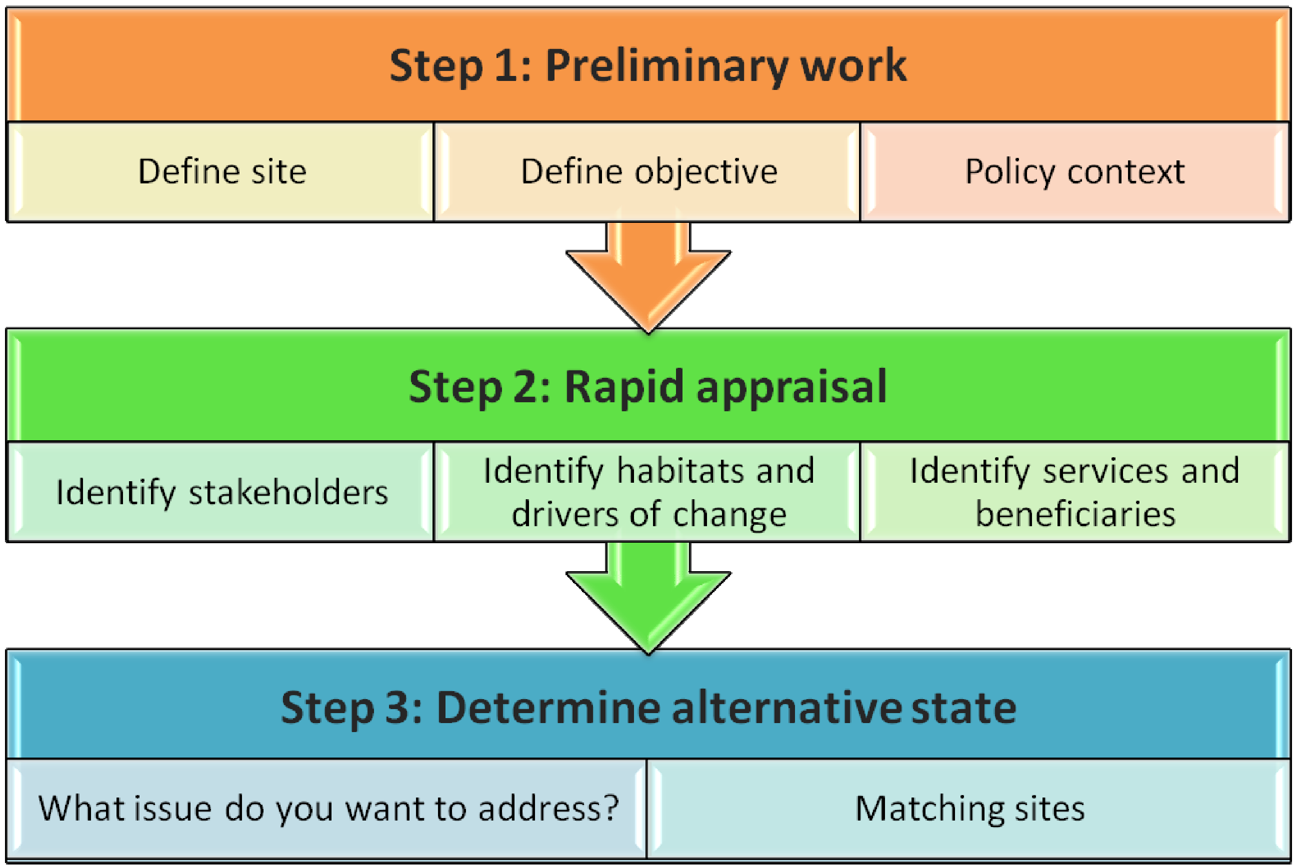
CambridgeConservationInitiative

Design


Step 1: Preliminary work
Define site
Define objective
Policy context
Step 2: Rapid appraisal
Identify stakeholders
Identify habitats and drivers of change
Identify services and beneficiaries
Step 3: Determine alternative state
What issue do you want to address?
Matching sites

Design

Step 4: Methods selection

Select relevant services to assess	How to assess alternative state	Select method for each service

Step 5: Collect data

Collect/collate data for current state	Collect/collate data for alternative state

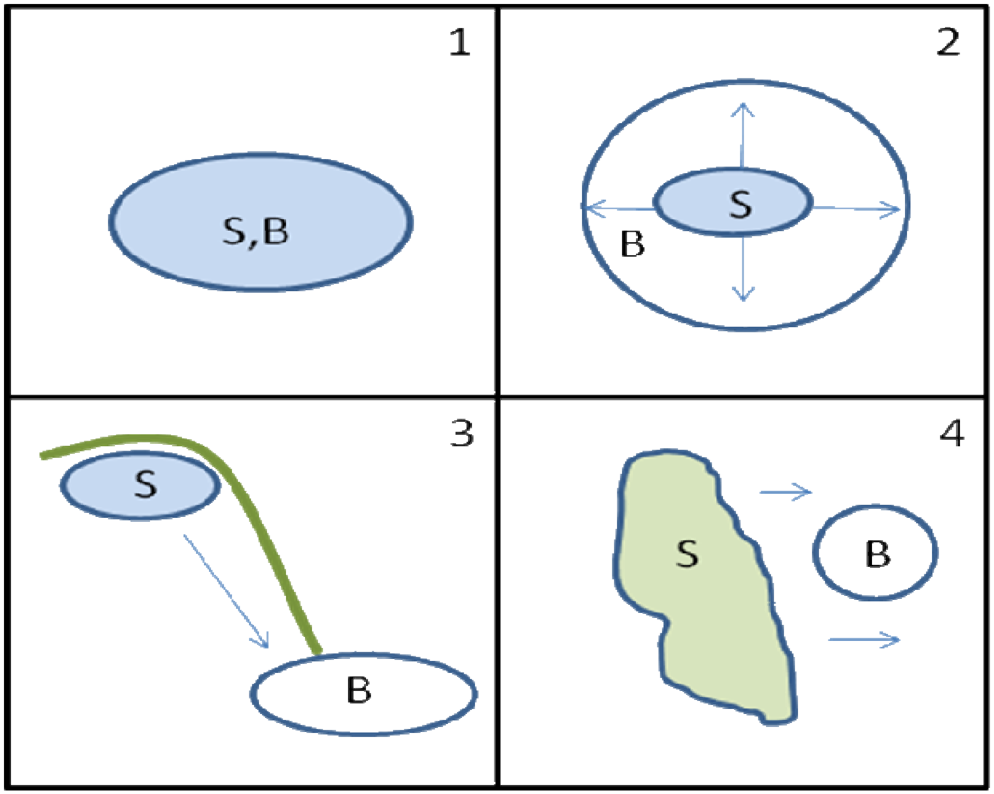
Step 6: Analysis and communicate results

Compare current and alternative states	Communicate messages

Design

- Designed as a decision key
- A series of steps or questions
- Specific guidance on methods for assessing services
- Methods range from
  - collecting new data from local field surveys or stakeholder workshops
  - to using existing datasets or published studies to extract site-relevant information
- **In every case, the methods and guidance will be adapted to suit the local context**

Distribution of benefits



S=Service

B=Benefits

Fisher et al. 2009

Scope

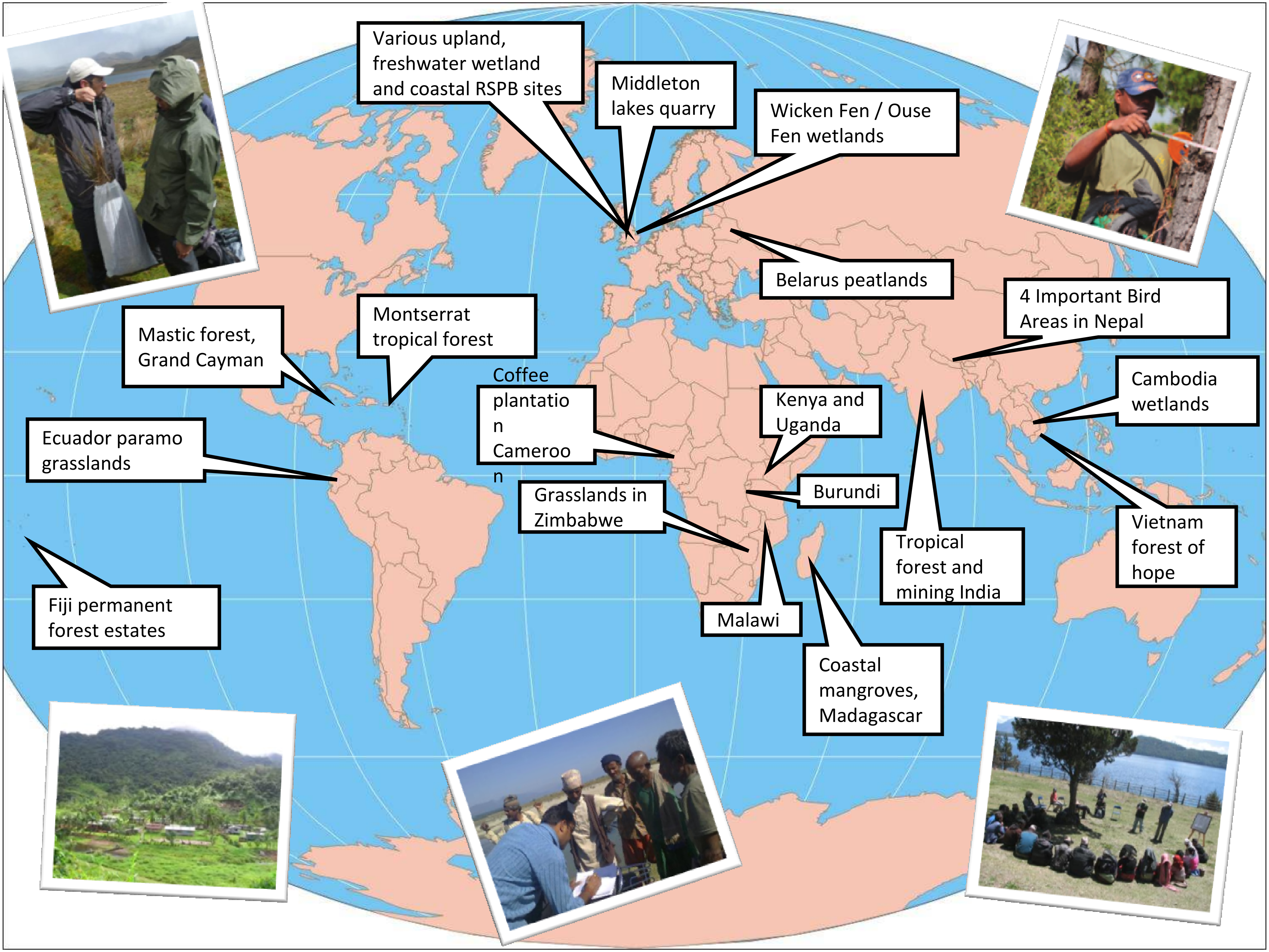

Global climate regulation

Harvested wild goods


Water-related services


Nature-based recreation


Cultivated goods



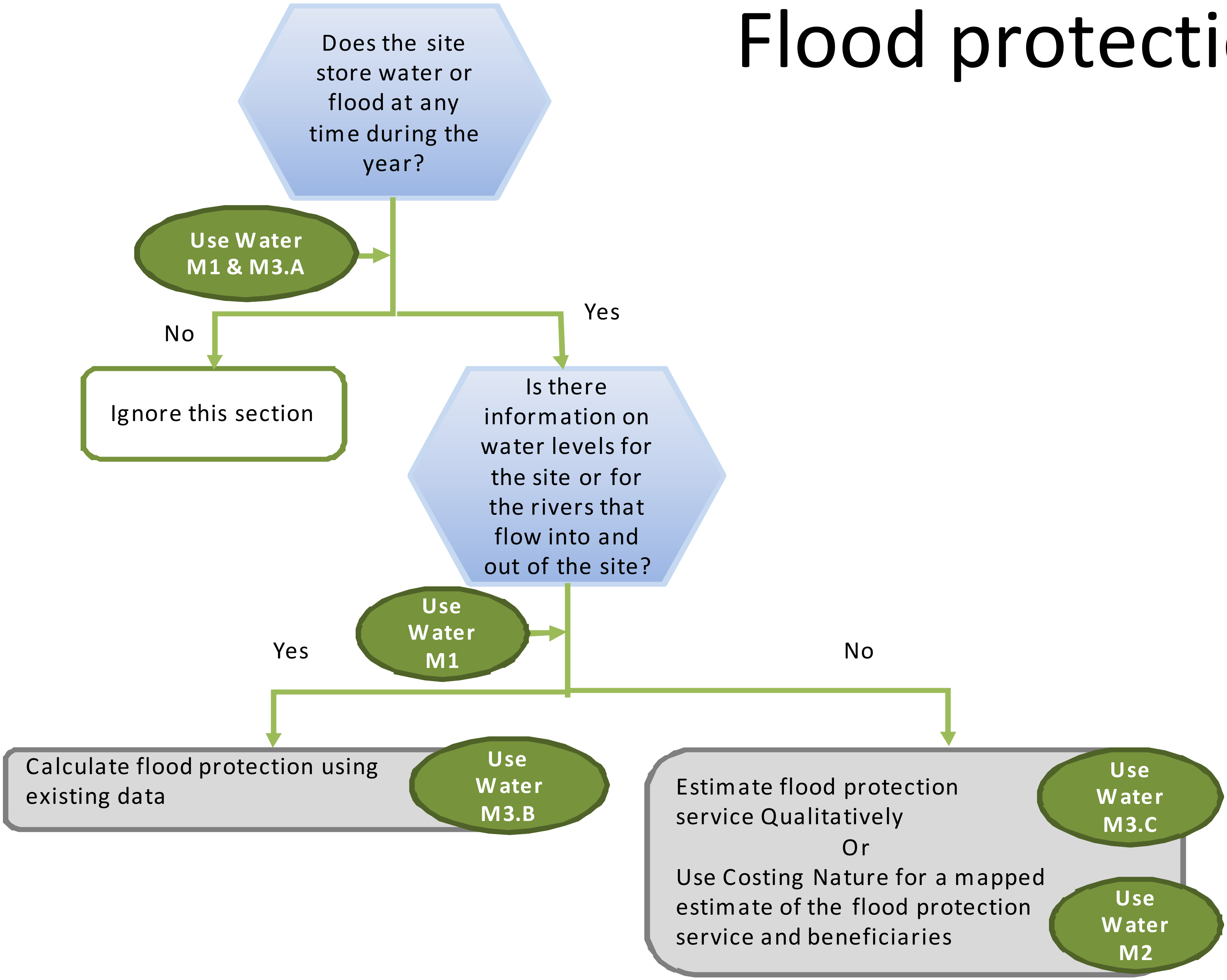
Various upland, freshwater wetland and coastal RSPB sites
Middleton lakes quarry
Wicken Fen / Ouse Fen wetlands
Belarus peatlands
4 Important Bird Areas in Nepal
Mastic forest, Grand Cayman
Montserrat tropical forest
Coffee plantation Cameroon
Kenya and Uganda
Cambodia wetlands
Ecuador paramo grasslands
Burundi
Grasslands in Zimbabwe
Tropical forest and mining India
Vietnam forest of hope
Fiji permanent forest estates
Malawi
Coastal mangroves, Madagascar

Water services

Water services

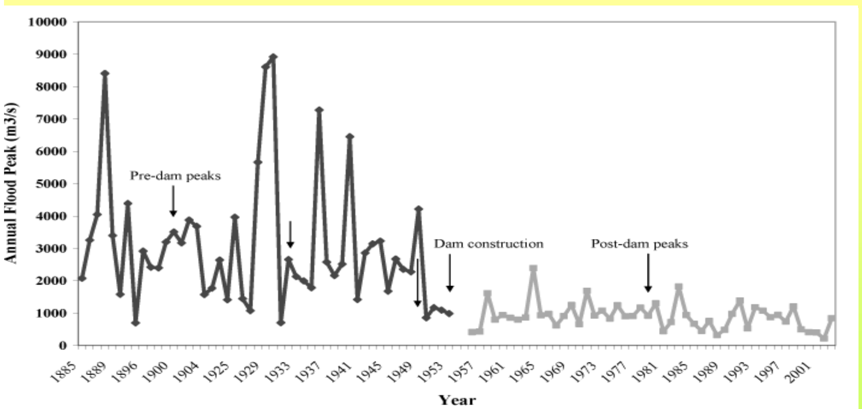
- Flood protection
- Water quality
- Water quantity provision

Flood protection



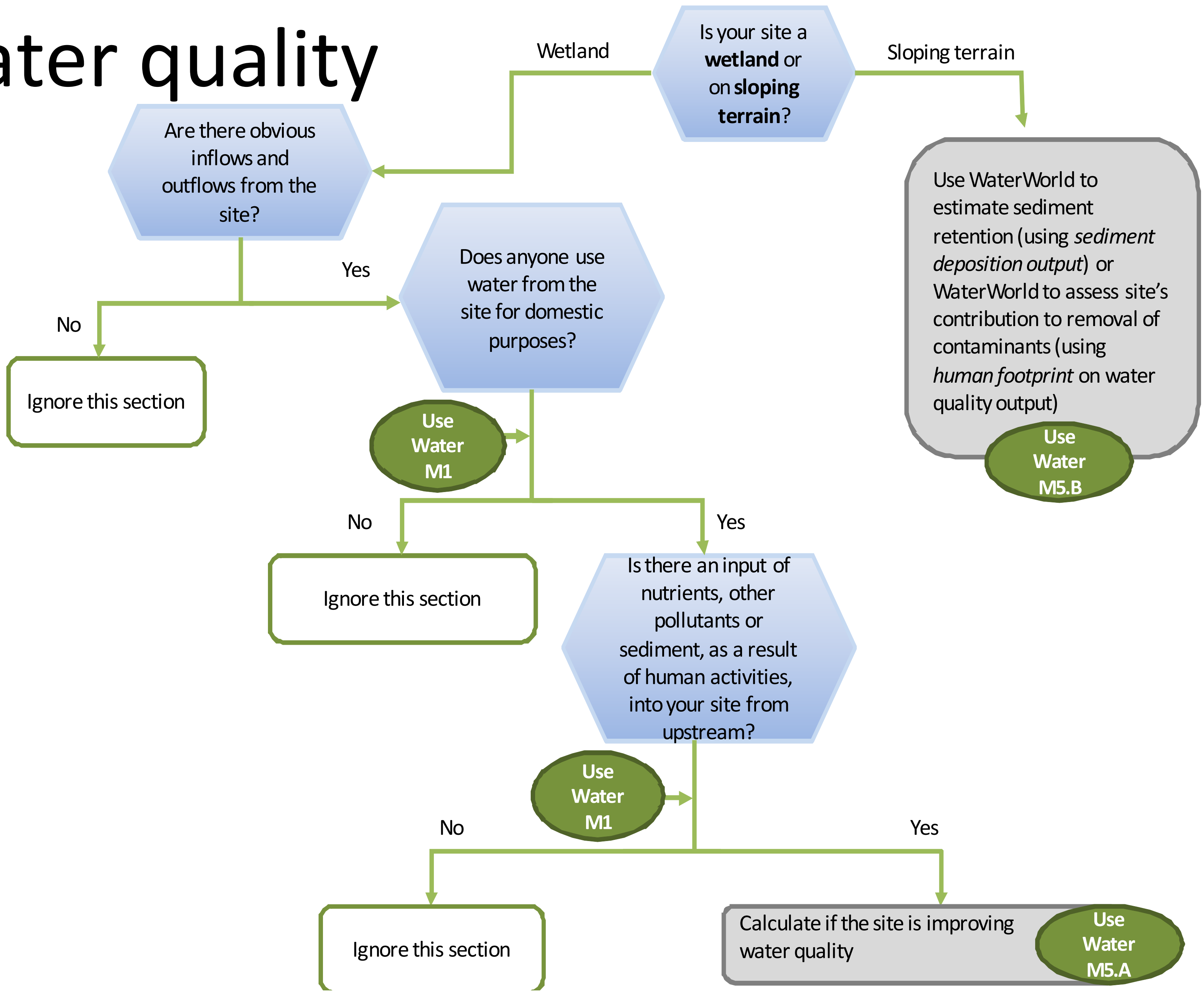
Approaches

- Obtain information on flooding, water use and water quality from stakeholder meetings
- Use hydrological data e.g. water level data, maps, reports, hydrographs



Reduced flows following dam construction on the Savannah River, US in 1954
(from Richter and Thomas, 2007)

Water quality

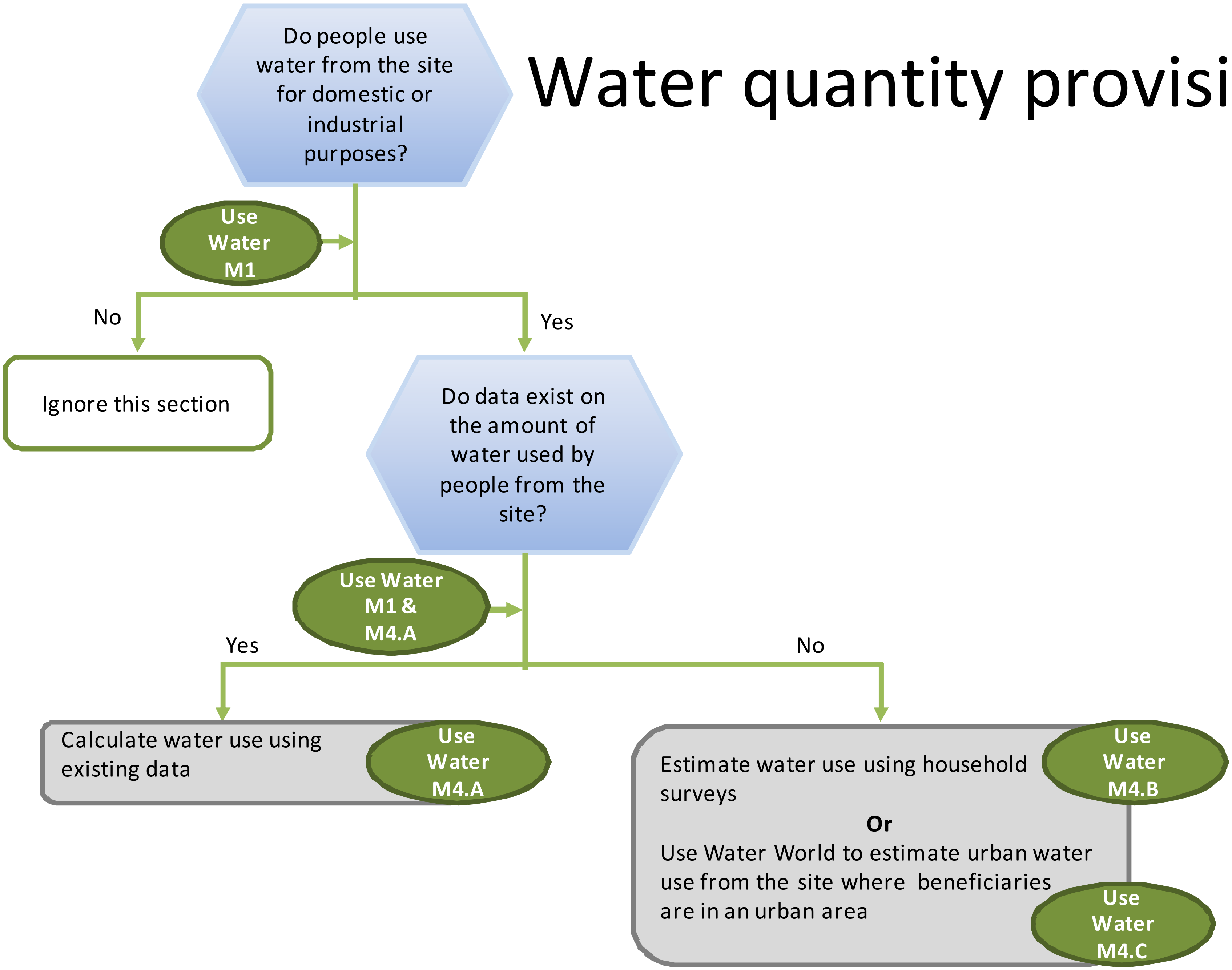


Approaches

- For wetlands: water testing (over time) or existing data

- For hillslopes: use ‘WaterWorld’ (more on this tool later)

Water quantity provision



Approaches

- Use existing data (often available where water is piped)
- Interview water users (more rural locations)
- Modelling system ‘WaterWorld’

One of the key issues relating to water provision is not ‘how much’ but ‘when’ e.g. regulation. ***Too much or Too little***


Global climate regulation

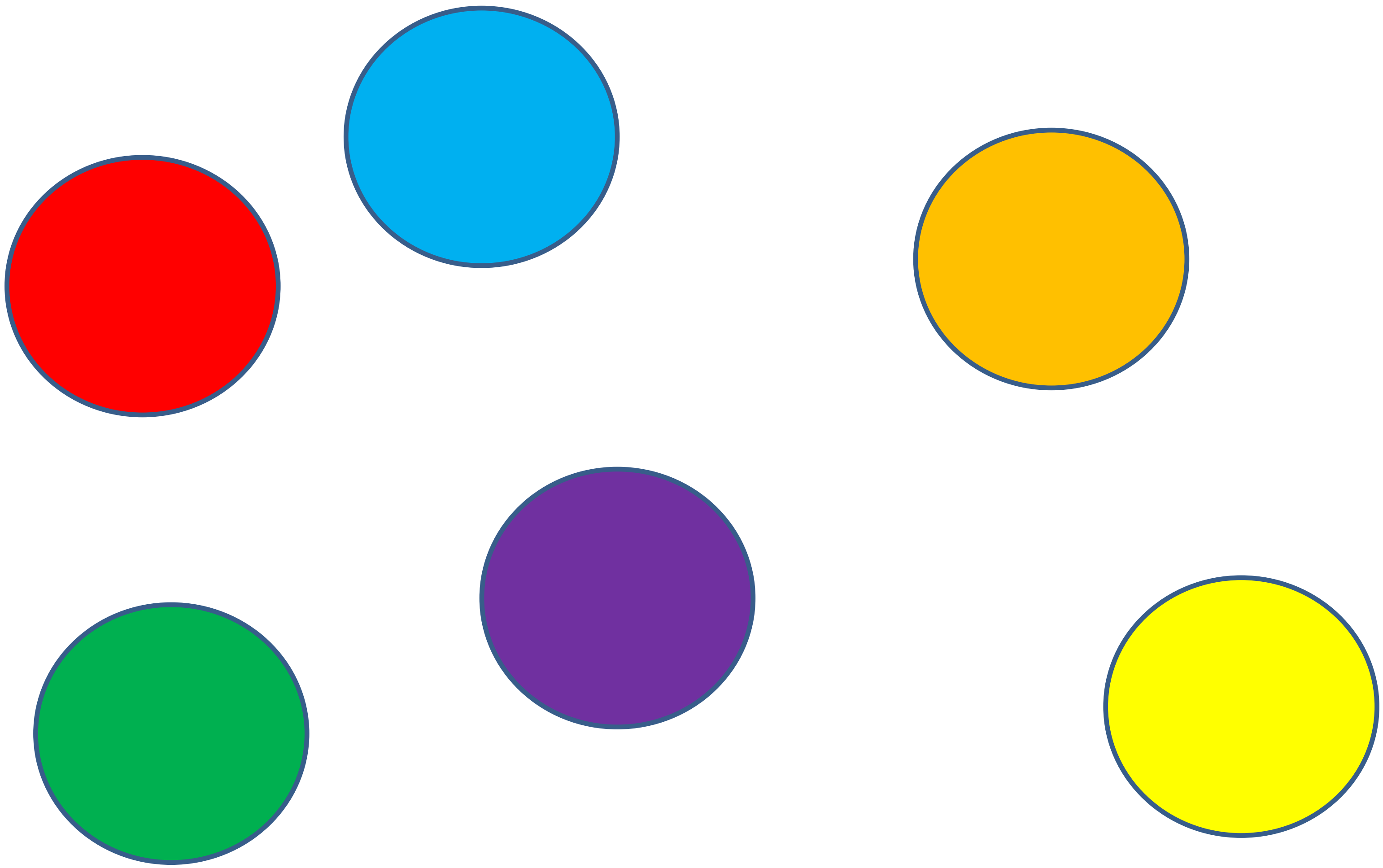
How are carbon stocks estimated?

1. Reference to IPCC standard tables
2. ‘Transfer’ of values from similar sites
3. Simple field surveys to quantify the volume of vegetation in different habitats

Some notes on the price of carbon

- There is no ‘right’ price for carbon
- Values range from \$3 per tonne to over \$200 per tonne
- Values depend on local context e.g. values used by the Government or published studies from the region
- We use a range of values to show sensitivity

How is TESSA different from other tools?



How is TESSA different from other tools?

Compared to other tools:

- Rapid (median = 39 person days)
- Low cost (median £4,200)
- Primary data collection in most cases not modelling per se
- Low specialist technical knowledge (e.g. no GIS but simple excel/maths needed)
- Relevant to site scale / local decision-making

Limitations

- Does not quantify/measure ‘all’ services but does ‘scoping’
- Other types of value
- Uncertainty
- Ecological tipping points, levels of sustainability, resilience
- How to bring in climate change?

Where next?

- Broadening of services covered
- Providing training
- Web-enabled tool
- Development of a community of users and support forum?
- Assessment of global case studies
- Analysis of the impact of case studies on real world decisions affecting biodiversity conservation

Broadening the coverage of services

Global climate regulation

Harvested wild goods

Water-related services

Cultivated goods

Nature-based recreation (includes tourism)

Coastal protection (forthcoming)

Cultural services (forthcoming)

Questions in the concept note

- Adaptability?
- Spatial scale?
- Classification system?
- Labour and infrastructure requirements?
- Linkage to beneficiaries?

Thank you…

Acknowledgements

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Further information

- TESSA is accessible here: http://www.birdlife.org/datazone/info/estoolkit
- Contact: Kelvin Peh (kelvin.peh@gmail.com) or Jenny Birch (jenny.birch@birdlife.org)
- Peh et al. (2013) TESSA: A toolkit for rapid assessment of ecosystem services at sites of biodiversity conservation importance. *Ecosystem Services* 5, 51-55