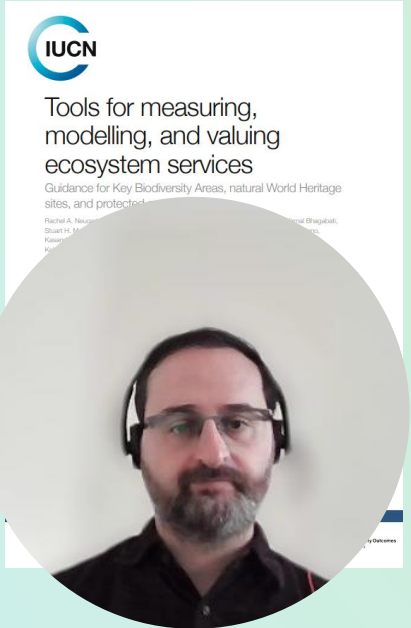# Introduction to the Tools for Assessing Ecosystem Services

Stefano Barchiesi, PhD

Senior Ecosystem Services Officer

BirdLife International

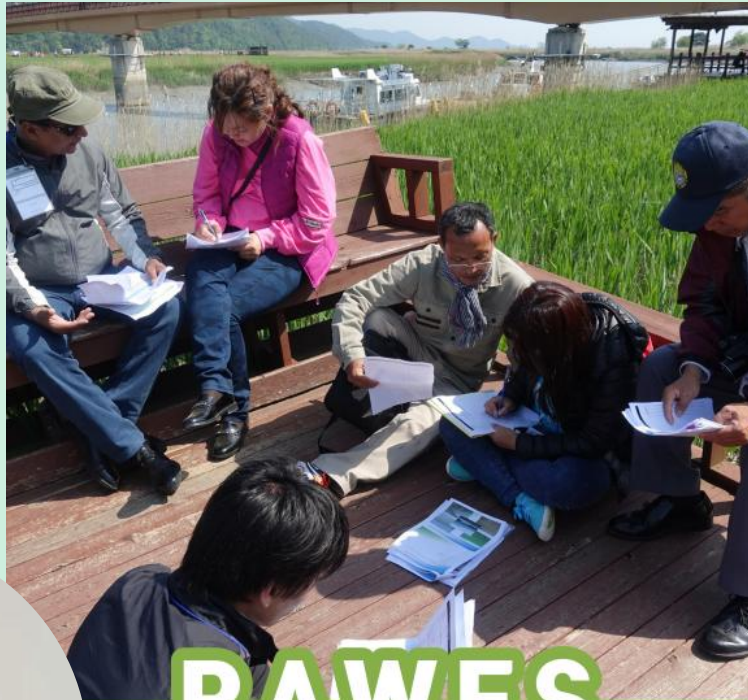stefano.barchiesi@birdlife.org

Decision tree for tool selection

Adapted from Neugarten et al., 2018.
https://portals.iucn.org/library/node/47778

Rapid Assessment of Wetland Ecosystem Services (RAWES)

RAWES

RAPID ASSESSMENT OF WETLAND ECOSYSTEM SERVICES

A practitioner's guide

13th Meeting of the Conference of the Contracting Parties to the Ramsar Convention on Wetlands

"Wetlands for a Sustainable Urban Future"
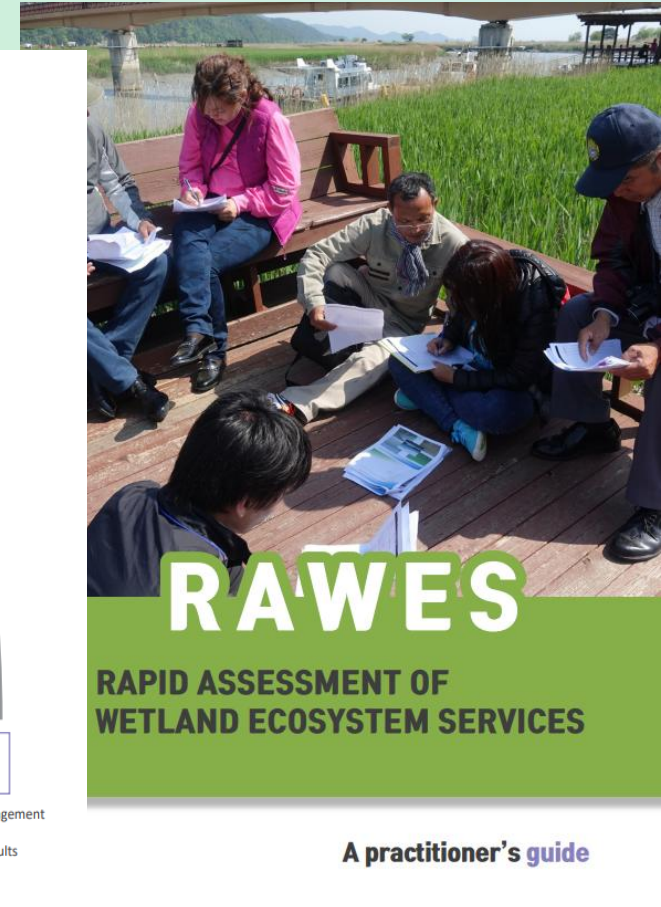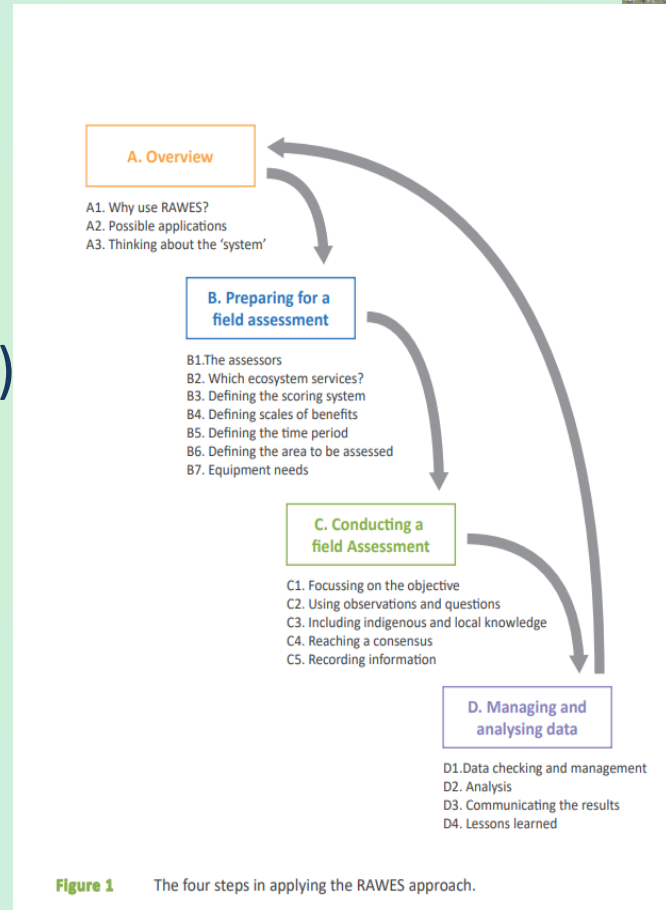Dubai, United Arab Emirates, 21-29 October 2018

Resolution XIII.17

Rapidly assessing wetland ecosystem services

1. RECOGNIZING that, to achieve the Mission of the Ramsar Convention as described in the Strategic Plan 2016-2024, it is essential that vital ecosystem functions and the ecosystem services that wetlands provide to people and nature are fully recognized, maintained, restored and wisely used and that the need to develop approaches for assessing both ecosystem functions and ecosystem services is recognized;

2. RECALLING that Annex A to Resolution IX.1 on *Additional scientific and technical guidance for implementing the Ramsar wise use concept* defines the ecological character of wetlands as "the combination of the ecosystem components, processes and benefits/services that characterize the wetland at a given point in time"; ALSO RECALLING that the *Guidance for valuing the benefits derived from wetland ecosystem services* (Ramsar Technical Report No.3 / Technical Series No.27 of the Convention on Biological Diversity) provides guidance for valuing wetlands and advice on when and why wetland valuation should be undertaken and sets out a framework for the integrated assessment and valuation of wetland services;

3. NOTING that a priority area of focus for the Convention under the Ramsar Strategic Plan 2016-2024 (Resolution XII.2) is to enhance the information about ecosystem functions and the ecosystem services that wetlands provide to people and nature; ALSO RECALLING Target 11 of the Ramsar Strategic Plan 2016-2024, "Wetland functions, services and benefits are widely demonstrated, documented and disseminated", and that the assessment of ecosystem services of Wetlands of International Importance (Ramsar Sites) is a key indicator of progress against this target;

4. FURTHER recognizing that, under Resolution XII. 3[1], on *Enhancing the languages of the Convention and its visibility and stature, and increasing synergies with other multilateral environmental agreements and other international institutions*, Contracting Parties and other stakeholders are encouraged "to increase their efforts to communicate on the values of ecosystem services of wetlands in other sectors' strategies, plans and regulations, and integrate them into a basin approach to land-use plans and other relevant local, national and global decisions";

Rapid Assessment of Wetland Ecosystem Services (RAWES)

- ➢ Ramsar-specific

- ➢ Systemic

- ➢ Rapid (2 person-days)

- ➢ Qualitative

- ➢ Comprehensive

A. Overview

A1. Why use RAWES?
A2. Possible applications
A3. Thinking about the 'system'

B. Preparing for a field assessment

B1. The assessors
B2. Which ecosystem services?
B3. Defining the scoring system
B4. Defining scales of benefits
B5. Defining the time period
B6. Defining the area to be assessed
B7. Equipment needs

C. Conducting a field Assessment

C1. Focussing on the objective
C2. Using observations and questions
C3. Including indigenous and local knowledge
C4. Reaching a consensus
C5. Recording information

D. Managing and analysing data

D1. Data checking and management
D2. Analysis
D3. Communicating the results
D4. Lessons learned

Figure 1   The four steps in applying the RAWES approach.

RAWES

RAPID ASSESSMENT OF WETLAND ECOSYSTEM SERVICES

A practitioner's guide

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What is TESSA?

Toolkit for Ecosystem Service Site-based Assessment

TOOLKIT FOR ECOSYSTEM SERVICE SITE-BASED ASSESSMENT

Version 3.0

Kelvin S.-H. Peh, Andrew P. Balmford, Richard B. Bradbury, Claire Brown, Stuart H. M. Butchart, Francine M. R. Hughes, Lisa Ingwall-King, Michael A. MacDonald, Anne-Sophie Pellier, Ali J. Stattersfield, David H. L. Thomas, Rosie J. Trevelyan, Matt Walpole & Jenny C. Merriman.
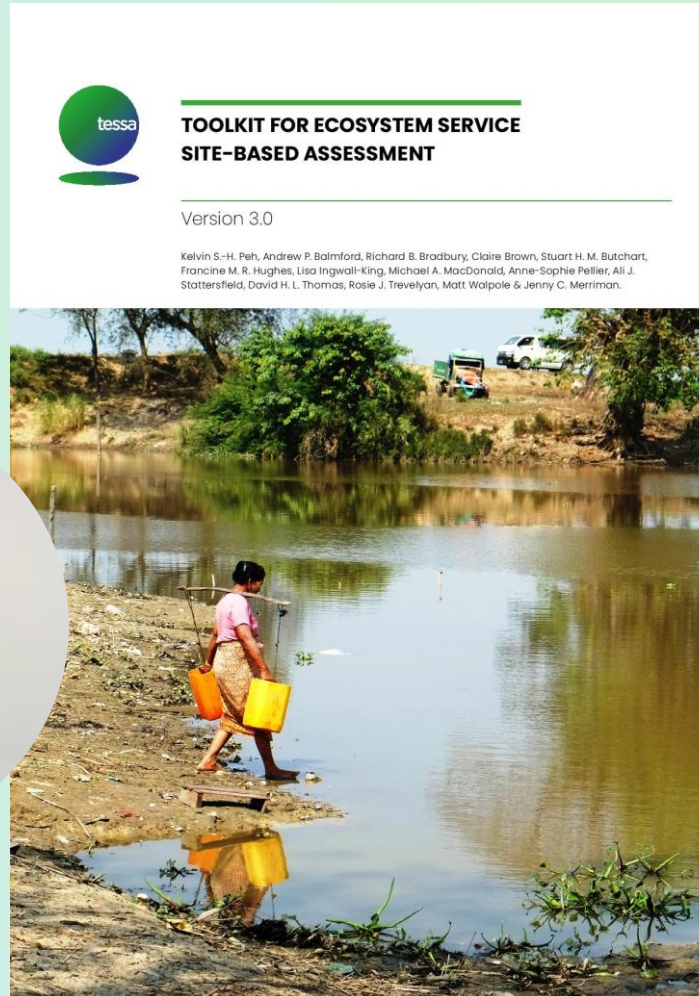
- ✓ Innovative, yet practical
- ✓ For non-experts
- ✓ Low-cost methods
- ✓ Scientifically robust
- ✓ Site to Landscape Scale (100 ha – 10,000 ha)
- ✓ Trade-offs and beneficiaries

https://www.birdlife.org/tessa-tools/

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Partnership for nature and people

TESSA – A Step by Step Guidance

Allows users to develop an understanding of the benefits people receive from nature, and assess their value in order to generate information for efficient decision-making

- ➤ Set the objectives of the assessment

- ➤ Decide on what services to focus

- ➤ Methods to measure ecosystem services

- ➤ Present and communicate the results

Step 1.
Preparation

What is your objective? · What is your 'assessment site'? · What is the site context? · Who are the stakeholders? · How will you communicate the results?

Step 2.
Preliminary scoping appraisal

What will change in ecosystem service delivery as a result of a management or policy decision? · What impact will this have on different groups of people in terms of the benefits they get from the site?
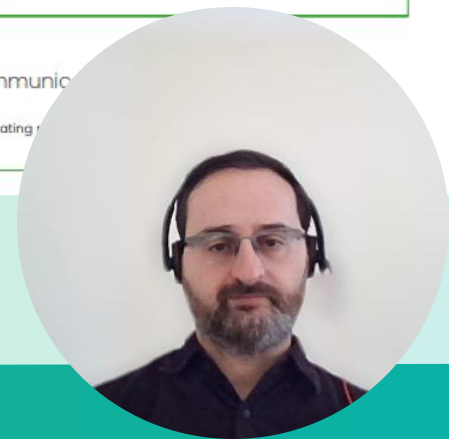
Step 3.
Determine the alternative state

How do I define the plausible alternative state? · How do I collect data for the alternative state?

Step 4.
Planning the full assessment

Which services to assess · Which methods to use

Step 5.
Collect data at the assessment and comparison sites

Coastal protection · Cultural services · Harvested wild goods · Pollination · Cultivated goods · Global climate regulation · Nature-based tourism · Water services

Step 6.
Analyse and communic...

Presenting and Communicating...

Stakeholder engagement

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A collaborative contribution

The Toolkit for Ecosystem Service Site-based Assessment has been developed by

tessa · a.r.u. · BirdLife INTERNATIONAL · UNIVERSITY OF CAMBRIDGE · rspb giving nature a home · TROPICAL BIOLOGY ASSOCIATION · UN environment · WCMC · University of Southampton

Piloting, feedback, development and improvement of TESSA

Donors

AXA · AXA Research Fund · Stockholm Resilience Centre · Stockholm University

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Wider development

AFRICAN WILDLIFE FOUNDATION · WILDLIFE CONSERVATION SOCIETY · UNIVERSITY OF LEEDS · PRIFYSGOL BANGOR UNIVERSITY · PRINCETON UNIVERSITY

CONSERVATION INTERNATIONAL · Cranfield UNIVERSITY

A ROCHA · UCL · KING'S College LONDON

WWF · UNIVERSITY OF ABERDEEN

FAUNA & FLORA INTERNATIONAL

natural capital PROJECT · Council of Scientific & Industrial Research · National Trust · US University of Sussex · The Open University

ROYAL BOTANIC GARDEN EDINBURGH · CEH Centre for Ecology & Hydrology · iied · fera · UEA University of East Anglia · The University Of Sheffield. · STAFFORDSHIRE UNIVERSITY

Implementation

NatureFiji MareqetiViti · NatureUganda

Grupo Jaragua, Inc. · blue ventures beyond conservation

UNIVERSITY OF CAMBRIDGE · WWT · A ROCHA · UNIVERSITY OF Southampton

FAUNA & FLORA INTERNATIONAL · Association Burundaise ABN

Persatuan Pencinta Alam Malaysia (Malaysian Nature Society) · rspb giving nature a home · Anglia Ruskin University · NatureKenya The East Africa Natural History Society

BirdLife ZIMBABWE · BANCA · WWF · AVES Y CONSERVACIÓN BIRDLIFE EN ECUADOR

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TESSA applications worldwide

Legend

◆ TESSA Project Sites

Number of downloads (last 12 months): >600

Produced by the Information Management Division, BirdLife International, February 2019

TESSA Publications and Case Studies: https://www.birdlife.org/tessa-tools/

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TESSA users

➢ Int'l NGOs / NGOs / GOs

➢ **Conservation practitioners (first target)**

➢ **Forestry, fisheries, water managers, land use planners, development organizations, researchers, etc.**

➢ Expanding to **corporate users**

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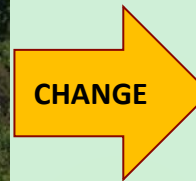
How to use TESSA?

Key Concepts in TESSA

❖ **Assessing the impacts of change – The Alternative State**

❖ **Comparative valuation of multiple ecosystem services**

❖ **Importance of beneficiaries and trade-offs**

❖ **Step-by-step framework**

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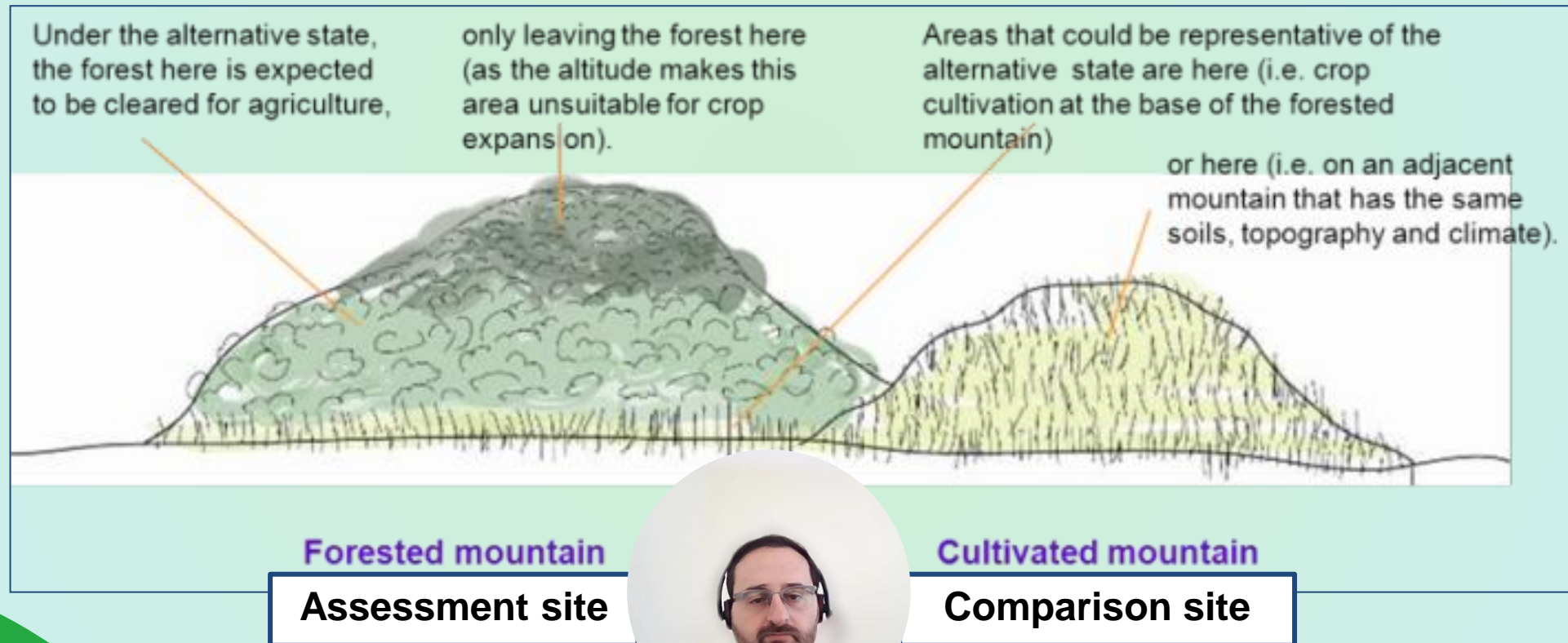Partnership for nature and people

Assessing the impact of change

CHANGE

**Site assessment
(current state)
100% Native forest**

**Alternative state
95% Subsistence agriculture
5% Secondary Forest**

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How to measure ES in the Alternative State conditions?

- As much as possible, measurements should be taken from a <u>real place</u> to represent the alternative condition of your **assessment site** = the **comparison site(s)**
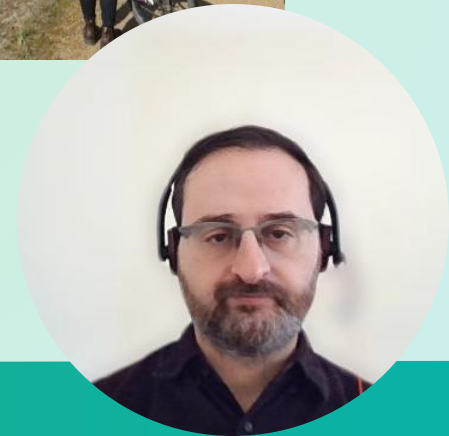

Under the alternative state, the forest here is expected to be cleared for agriculture,

only leaving the forest here (as the altitude makes this area unsuitable for crop expansion).

Areas that could be representative of the alternative state are here (i.e. crop cultivation at the base of the forested mountain)

or here (i.e. on an adjacent mountain that has the same soils, topography and climate).

Forested mountain

Cultivated mountain

Assessment site

Comparison site

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Why comparative valuation of multiple ES?

✓ Simple assessment of the gross values of a particular service is less useful - Relative values give decision-makers an idea of the <u>net consequences</u> of decisions

✓ Understand the impacts of management or land-use change on ES delivery

✓ Influence decision-making and promote efficient planning

✓ Preserve ES & their associated benefits people rely on

✓ Inform on human well-being & biodiversity conservation objectives
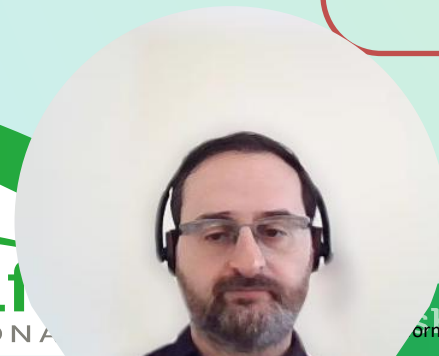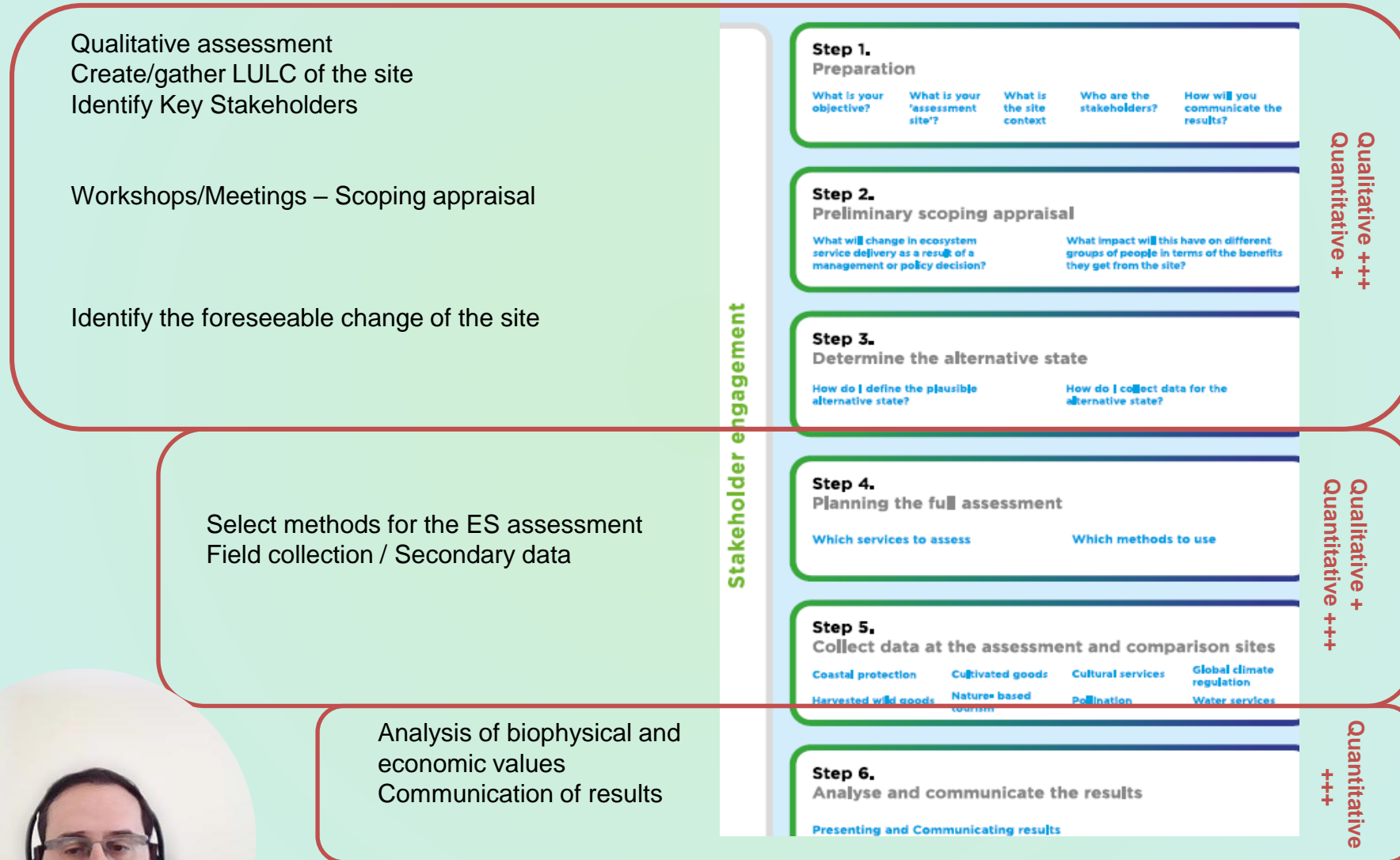
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Beneficiaries

An ecosystem service only exists if someone derives benefits from it.

Social, political, economic and ecological factors play a role in the **distribution of benefits**, and the **impacts of change.** These may not be equitable.

It is essential to **understand who the beneficiaries are** so that the full consequences of changes in ES can be assessed.

6 Steps of TESSA

Qualitative assessment
Create/gather LULC of the site
Identify Key Stakeholders

Workshops/Meetings – Scoping appraisal

Identify the foreseeable change of the site

Select methods for the ES assessment
Field collection / Secondary data

Analysis of biophysical and economic values
Communication of results

Step-by-step framework

Figure 4. TESSA Step by Step Framework

Step 1.
Preparation

What is your objective? | What is your 'assessment site'? | What is the site context | Who are the stakeholders? | How will you communicate the results?

Step 2.
Preliminary scoping appraisal

What will change in ecosystem service delivery as a result of a management or policy decision? | What impact will this have on different groups of people in terms of the benefits they get from the site?

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Which services to assess | Which methods to use

Step 5.
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Coastal protection | Cultivated goods | Cultural services | Global climate regulation
Harvested wild goods | Nature-based tourism | Pollination | Water services

Step 6.
Analyse and communicate the results

Presenting and Communicating results

Stakeholder engagement

Qualitative +++ Quantitative +

Qualitative + Quantitative +++

Quantitative +++

Importance of stakeholder engagement

➢ TESSA encourages stakeholder engagement throughout the process from Step 1 through 6

➢ Guidance on how to identify and engage the appropriate people.

➢ Engagement throughout the process built strong relationships invaluable for the project(s), improves information flow, and fosters ownership.
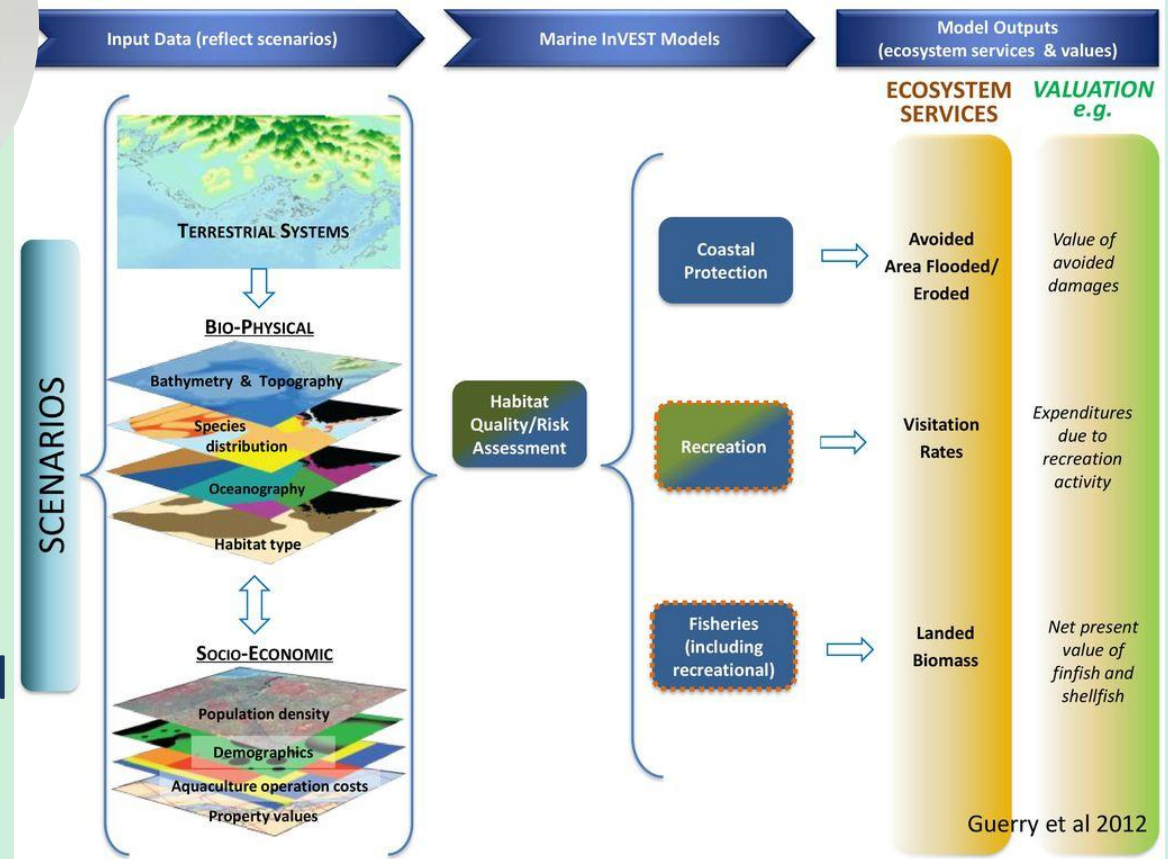

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TESSA is a flexible framework

✓As simple as possible without losing science

✓Use to level of own capacity and knowledge

✓Designed to be adapted to suit context

✓Welcome "add-ons" and other complementary methods

✓ Encourage feedback and further improvements through new projects

Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST)

- ➤ Modular

- ➤ Based on complex equations

- ➤ Maps in, maps out

- ➤ Stand-alone app but GIS software still needed

Guerry et al 2012

https://naturalcapitalproject.stanford.edu/software/invest

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ANY QUESTIONS?

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