

EVAMAB UNESCO-MAB MANUAL

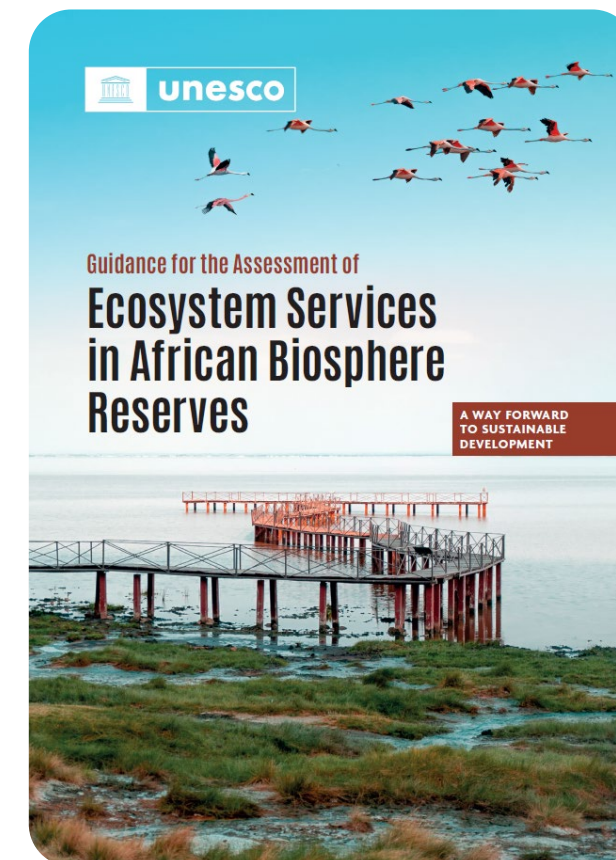
“African Biosphere Reserves: guidance to assess ecosystem services”

By Luc Janssens de Bisthoven (CEBioS coordinator)

With Anne-Julie Rochette & Pierre Huybrechts (CEBioS)



1^{er} AU 20
DÉCEMBRE 2022
COP15





CEBioS⁺



CEBioS⁺

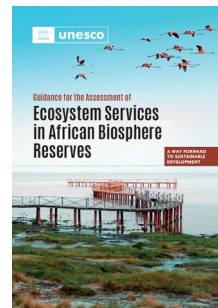
KU LEUVEN

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2017-2020



Economic valuation of
ecosystem services
in Man and Biosphere
reserves



Lake Tana (Ethiopia)



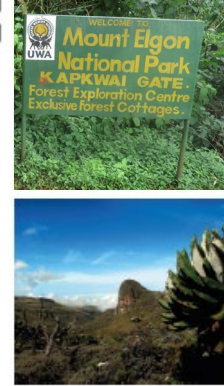
Pendjari National Park
(Benin)



Lake Manyara (Tanzania)



Mount Elgon
(Uganda)



General objective:

To assess the value(s) of priority ecosystem services for a better appreciation of the potential for management and socio-economic integration.

Specific objectives:

- To select, test and adapt rapid assessment tools
- To formulate pertinent stakeholder engagement and policy advice for managers and decision-makers



About 20 North and South scientists conducted field work and carried out research in 4 African BRs. This included field surveys and stakeholder workshops in:

Tanzania: Lake Manyara BR

Uganda: Mount Elgon BR

Ethiopia: Lake Tana BR

Benin: Pendjari BR

THE EVAMAB PROJECT

Closing workshop: About 35 scientists and African BRs managers gathered in Ethiopia to discuss the results of the EVAMAB project, and priorities for this manual.

The draft manual was presented at the AfriMAB meeting in Abidjan (October 2019), with around 150 representatives of the AfriMAB network.

A reading committee reviewed and validated the content of the manual.

More info, visit: <http://www.biodiv.be/evamab>

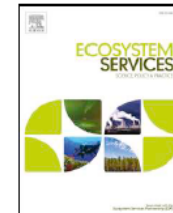


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Ecosystem Services

journal homepage: www.elsevier.com/locate/ecoser



Assessment tools for ES

Ecosystem services assessment tools for African Biosphere Reserves: A review and user-informed classification



J. Hugé^{a,b,c,d,*}, A.J. Rochette^e, S. de Béthune^e, C.C. Parra Paitan^f, K. Vanderhaegen^g,
T. Vandervelden^{c,e}, S. Van Passel^h, M.P.M. Vanhove^{i,j,k,l}, B. Verbist^g, D. Verheyen^e, T. Waas^m,
I. Janssens^{c,e}, L. Janssens de Bisthoven^e

Pendjari NP, Bénin

Biological Conservation 272 (2022) 109598



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journal homepage: www.elsevier.com/locate/biocon



Policy analysis

Conservation conflict following a management shift in Pendjari National Park (Benin)

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Lake Tana, Ethiopia



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Journal of Great Lakes Research

Volume 46, Issue 5, October 2020, Pages 1459–1468



Farmers' preferences towards water hyacinth control: A contingent valuation study

Wito Van Oijstaeijen^a, Steven Van Passel^a, Jan Cools^b, Luc Janssens de Bisthoven^c, Jean Hugé^{c,d,e,f}, Daregot Berihun^g, Nega Ejigu^g, Jan Nyssen^h

Ecosystem services and MAB

Global Ecology and Conservation 28 (2021) e01697



Rapid economic valuation of ecosystem services in man and biosphere reserves in Africa: A review

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Mnt Elgon, Uganda

Land Use Policy 84 (2019) 316–327



Farmers' perspectives on payments for ecosystem services in Uganda

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Contents lists available at [ScienceDirect](#)

Journal of Environmental Management

journal homepage: <http://www.elsevier.com/locate/jenvman>



Research article

Social-ecological assessment of Lake Manyara basin, Tanzania: A mixed method approach

L. Janssens de Bisthoven^{a,*}, M.P.M. Vanhove^{a,b,c,l,m}, A.-J. Rochette^a, J. Hugé^{j,k,n,o},
S. Verbesselt^b, R. Machunda^d, L. Munishi^d, M. Wynants^e, A. Steensels^b, M. Malan-Meerkotter^f,
S. Henok^f, T. Nhiwatiwa^g, B. Casier^h, Y.A. Kiwangoⁱ, R. Kaitilaⁱ, H. Komakech^d, L. Brendonck^b

Environmental Management
<https://doi.org/10.1007/s00267-021-01466-x>



Stakeholder Analysis on Ecosystem Services of Lake Manyara Sub-basin (Tanzania): How to Overcome Confounding Factors

Luc Janssens de Bisthoven¹ · Maarten Vanhove² · Anne-Julie Rochette¹ · Jean Hugé^{2,3,4} · Luc Brendonck^{5,6}

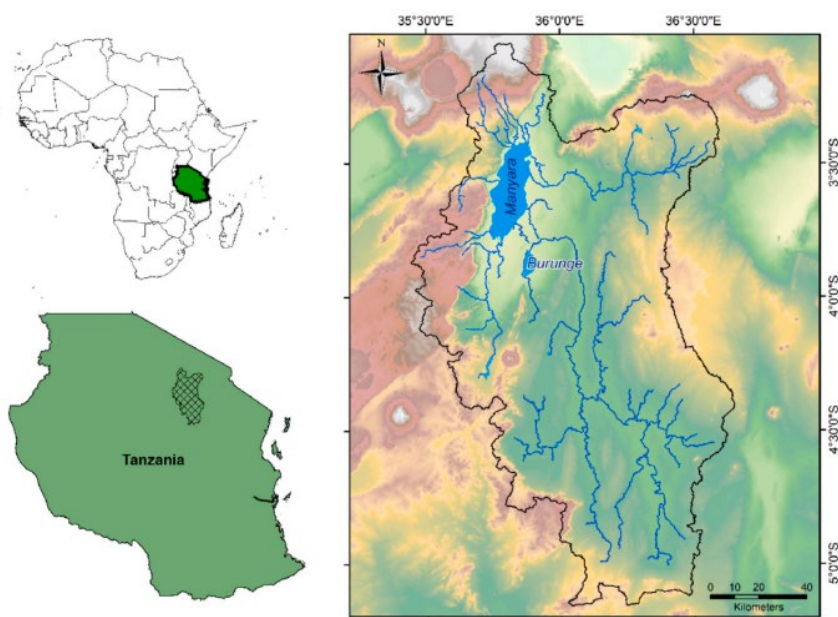
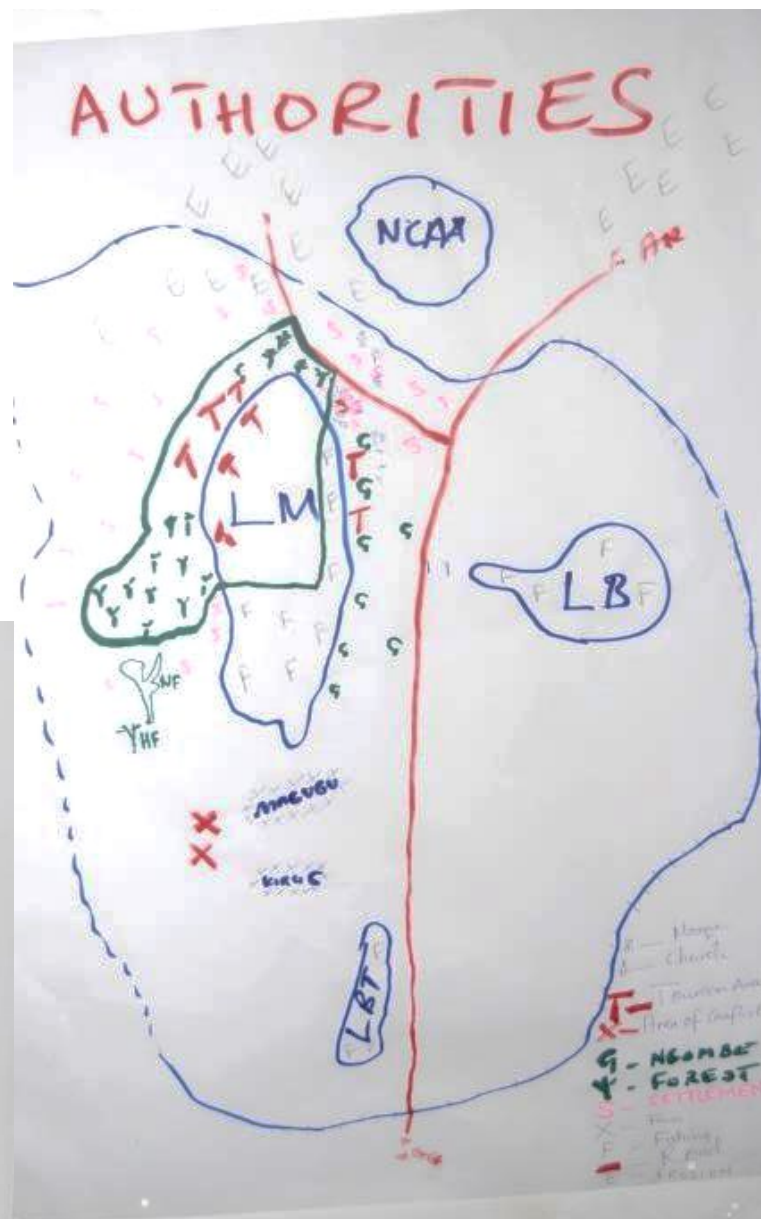


Fig. 2. The Lake Manyara catchment in Tanzania and its hydrological network (adapted from Wynants et al., 2018).






Oryx

Article contents

Abstract

Conserving African biosphere reserves: a workshop on the valuation of ecosystem services in Man and the Biosphere Reserves

Published online by Cambridge University Press: 01 October 2019

Luc Janssens de Bisthoven , Anne-Julie Rochette, Erik Verheyen, Tewogbade Jean-Didier Akpona, Bruno Verbist, Koen Vanderhaegen, Zerubabeeli Naturinda, Steven Van Passel, Daregot Berihun and Linus Munishi ...Show all authors 

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Visibility-dissemination

THE CONVERSATION

Academic rigour, journalistic flair

Biosphere reserves and human well-being: lessons from UNESCO's EVAMAB project

Published: March 23, 2021 8:54pm GMT • Updated: April 28, 2021 4:51pm BST



A flock of birds flies near Lake Manyara, Tanzania. Luc Janssens de Bisthoven, Author provided

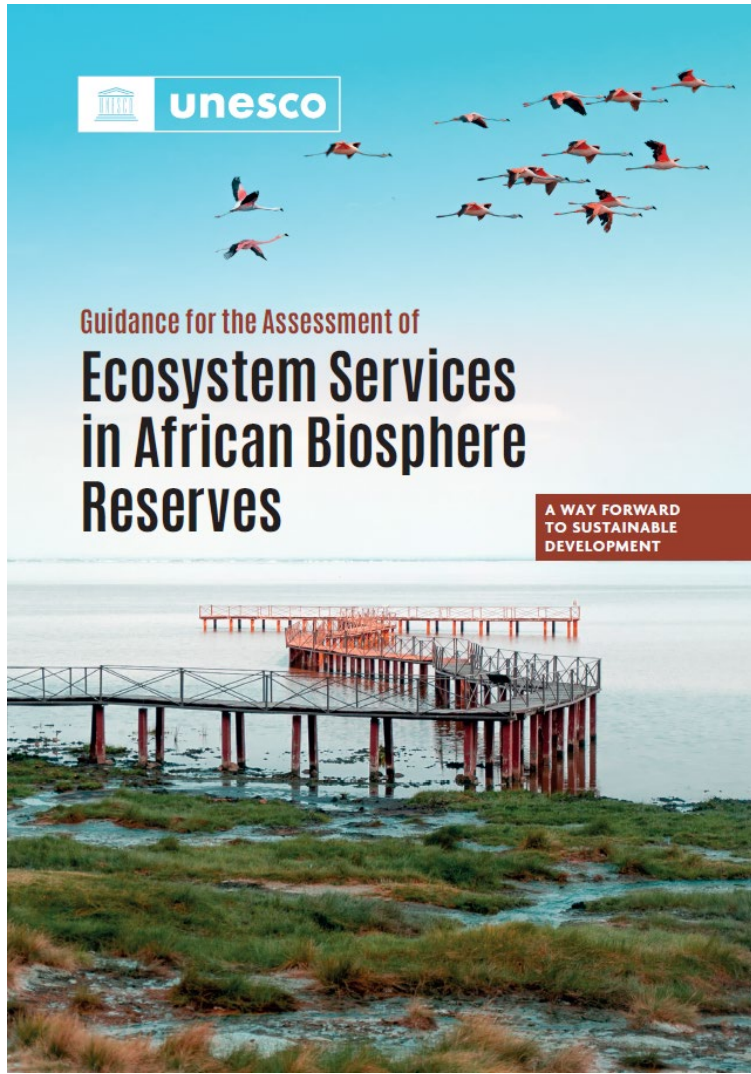
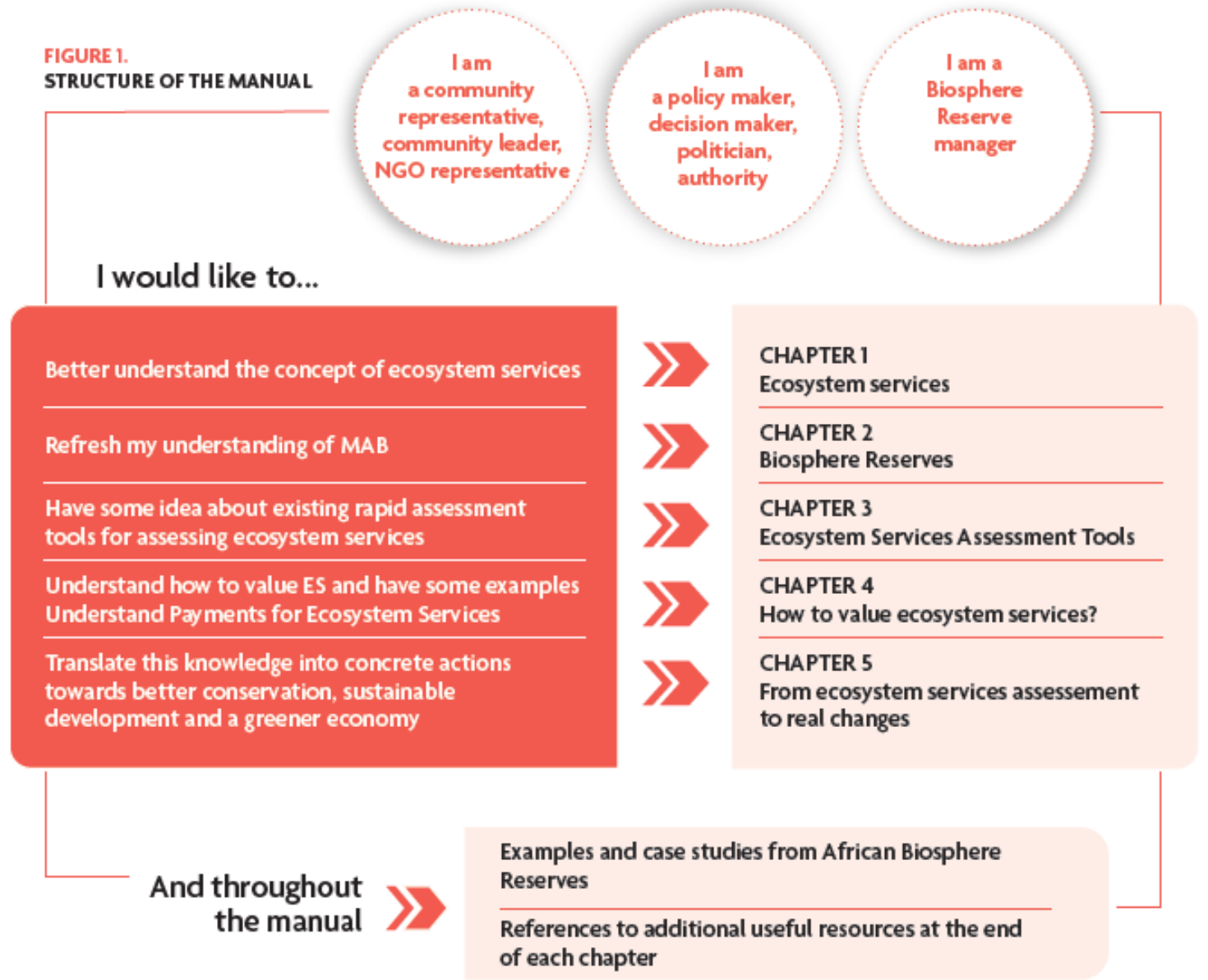


FIGURE 1.
STRUCTURE OF THE MANUAL



Chapter 1

Ecosystem services

I. Janssens, E. Bocquet, J. Hugé, L. Janssens de Bisthoven
and A-J. Rochette

Contents

- What is biodiversity? (Figure 3)
- Humans and nature
- Why do we protect nature?
- What are ecosystem services?
- Services provided by ecosystems are essential to human well-being
- Who benefits from ecosystem services?
- Ecosystem services at risk

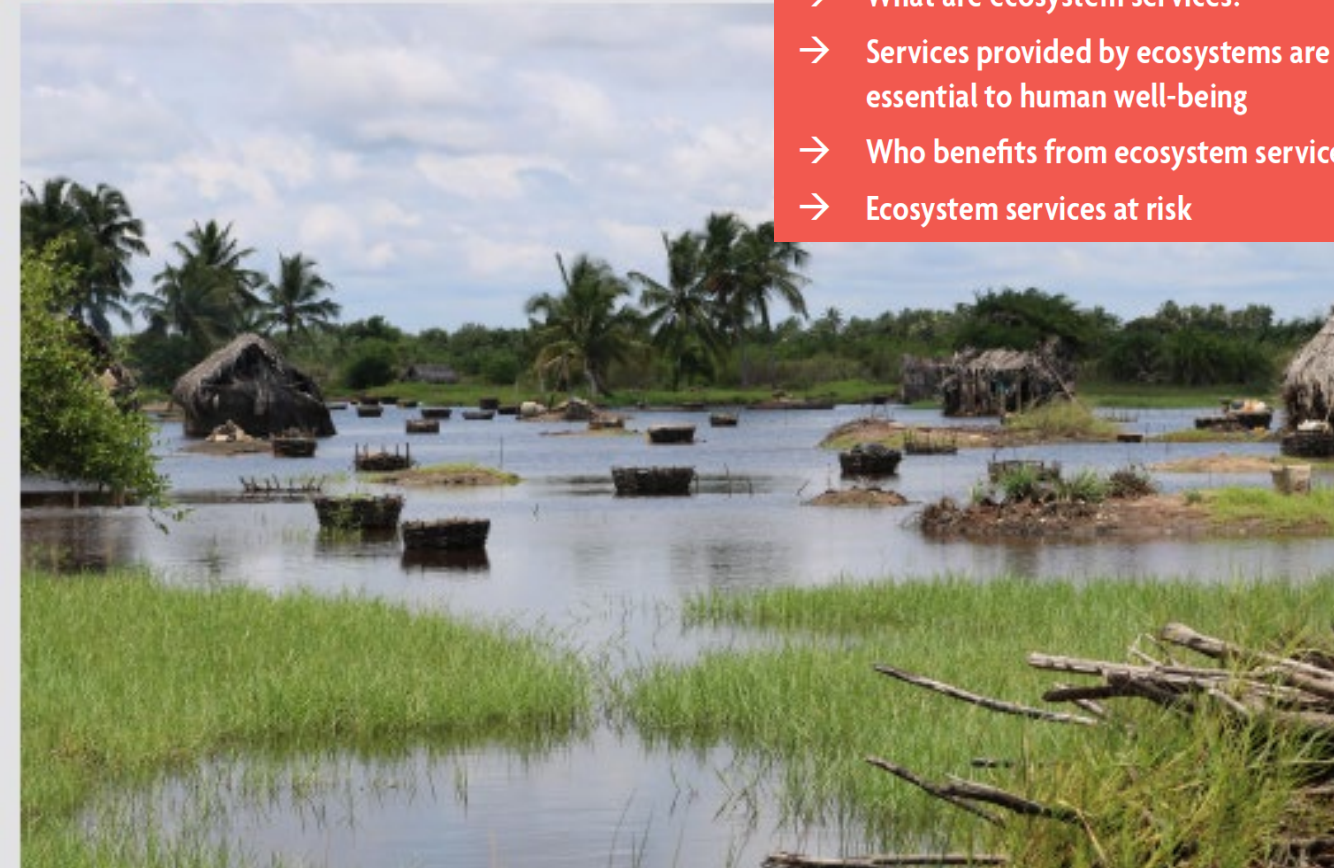


FIGURE 3. THE THREE LEVELS OF BIOLOGICAL DIVERSITY



FIGURE 4. DIFFERENT LEVELS OF COMPLEXITY WITHIN AN ECOSYSTEM (A TO C)

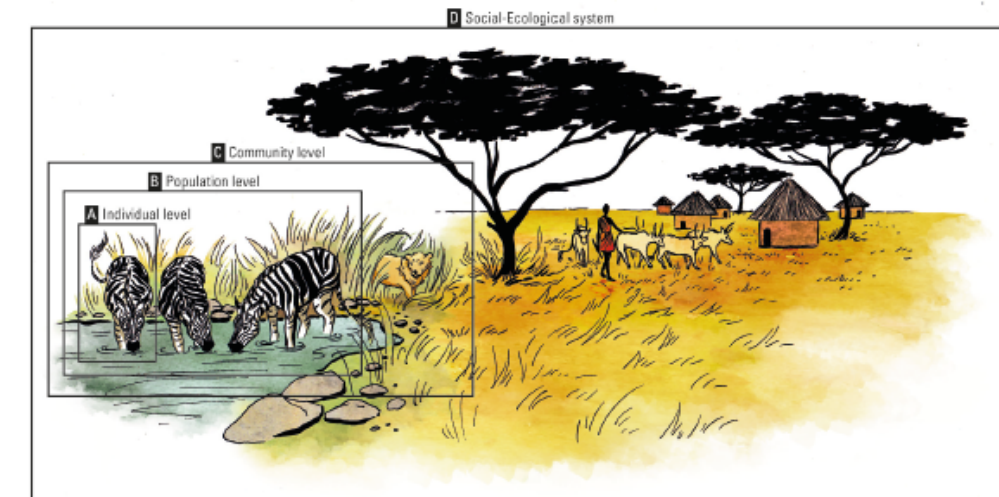


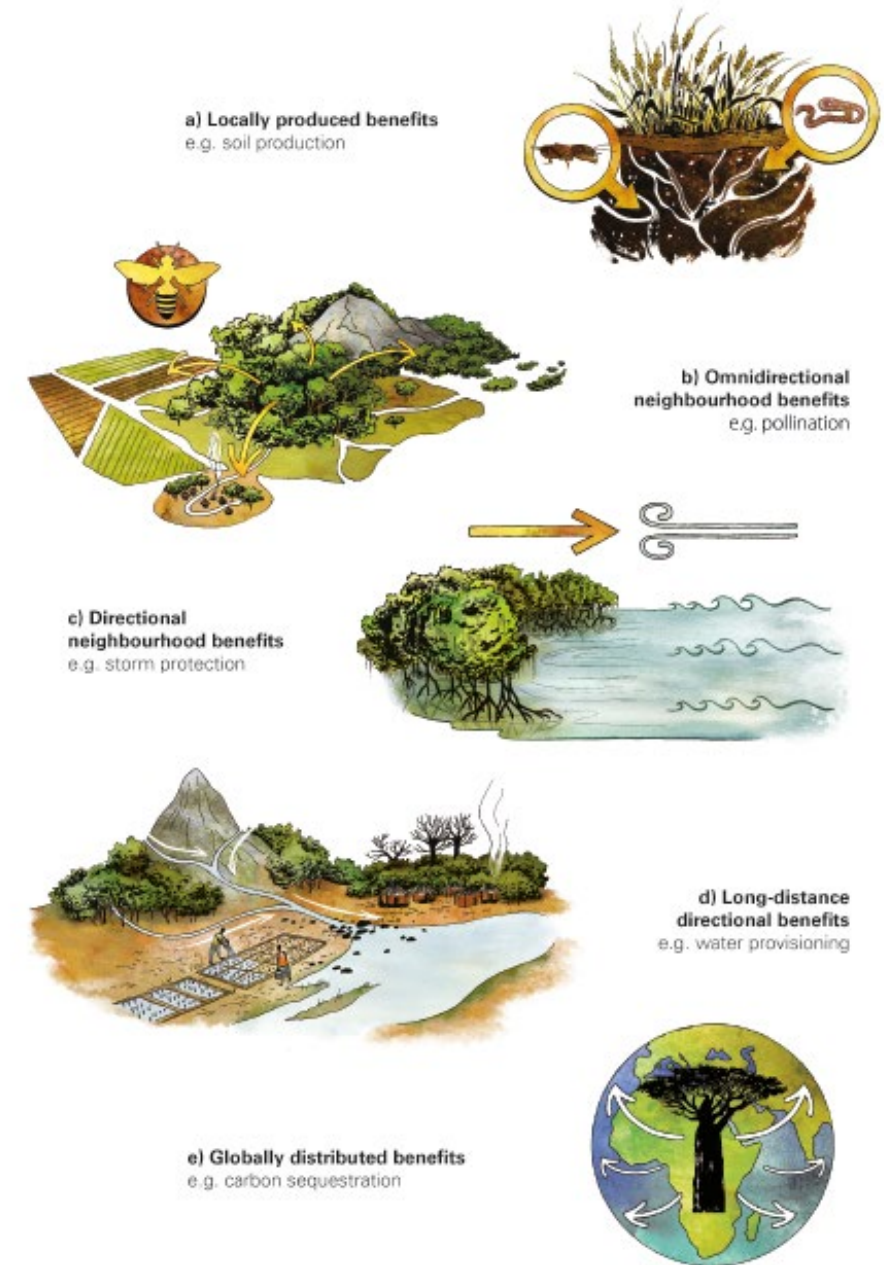
Illustration : Mado Borthet, RBINS

FIGURE 7. FOUR TYPES OF ECOSYSTEM SERVICES AND EXAMPLES FOR EACH CATEGORY
(Source: WWF)



FIGURE 8. EXAMPLES OF ECOSYSTEM SERVICES
© L. Janssens de Bisthoven and H. Keunen

FIGURE 11. CATEGORIES OF ECOSYSTEM SERVICE FLOW IN RELATION TO THEIR SPATIAL CONFIGURATION



Chapter 2

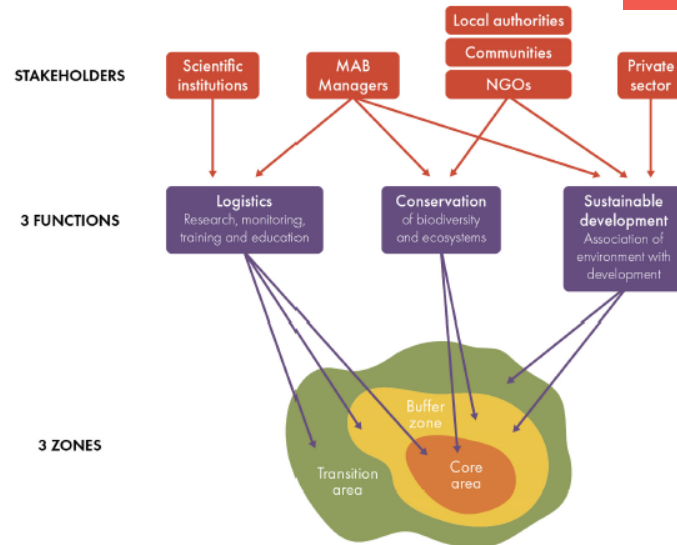
Biosphere reserves

Living laboratories for sustainable development

I. Janssens, E. Bocquet, J. Hugé, L. Janssens de Bisthoven and A.-J. Rochette



FIGURE 20. ZONATION, THE THREE FUNCTIONS OF A BIOSPHERE RESERVE AND THE STAKEHOLDERS ASSOCIATED WITH EACH OF THESE FUNCTIONS



Contents

- The Man and the Biosphere (MAB) Programme
- Challenges, stakes and interests for MAB managers and links with ecosystem services
 - The central role of stakeholders
 - What is the strategy for biosphere reserves at the global level?
 - Main challenges in biosphere reserves

BOX 9. ZONATION OF LAKE TANA BIOSPHERE RESERVE

Each biosphere reserve can determine the activities that are allowed or not allowed in each zone. Table 2 presents a list of activities that are permitted and prohibited in the different zones of Lake Tana Biosphere Reserve, Ethiopia.



Carte: UNESCO, Photo : S. Van Passel



TABLE 2. ACTIVITIES THAT ARE PERMITTED AND PROHIBITED IN THE THREE ZONES OF LAKE TANA BIOSPHERE RESERVE (2019)

	PERMITTED	PROHIBITED
CORE AREA	<p>Let nature take care of itself Entering the core area(s) is allowed only for non-destructive activities, such as research (with a special permit from the biosphere reserve authorities).</p>	<p>Destructive and economic activities</p> <ul style="list-style-type: none"> • hunting and removal of wild animals (including their eggs); • cutting, collecting or damaging plants/trees; • lighting fires, smoking, or slash and burn practices; • picking up, taking away or damaging any items, natural or humanmade; • fishing, farming, and livestock grazing; • mineral exploration, digging or sand extraction; • any disposal of waste or other humanmade materials; • any type of construction works; and • damaging, changing or removing any boundary marks of a core area.
BUFFER ZONE	<p>Sustainable use of natural resources (e.g. traditional fishing and organic farming)</p> <ul style="list-style-type: none"> • Traditional (seasonal) fishery, organic farming, beekeeping and similar activities; • environmental research and education; • recreation and eco-tourism; and • limited human activity (allowed and often guarded by community management systems and governed by utilization bylaws). 	<p>Harmful and destructive practices</p> <ul style="list-style-type: none"> • use of chemical fertilizer and pesticides; • washing of clothes and vehicles near water sources; • (infrastructure) construction (buildings, roads); • mining, drilling and other large-scale earth movement; and • over-use of water and plants (e.g. for grazing).
TRANSITION AREA	<p>All other legal human activities A focus on sustainable and ecologically sound practices should be favoured and promoted to ensure Lake Tana Biosphere Reserve becomes model region for sustainable development.</p>	<p>Purely destructive and damaging activities Activities illegal according to Ethiopian law.</p>

Chapter 3

Ecosystem services assessment tools

J. Hugé, L. Janssens de Bisthoven,
I. Janssens and A.-J. Rochette



Contents

- What are ecosystem services assessment tools and what are they for?
- What are the reasons for using (and not using) ecosystem services tools?
- How to select the right ecosystem services tool?
 - Which ecosystem services tools exist?
 - Visual supports to select the most relevant tool
- Applying ecosystem services tools in practice
 - Lessons learned from the application of ecosystem services tools
 - Ecosystem services tools and beyond – ‘hybrid’ tools harnessing the best of different approaches

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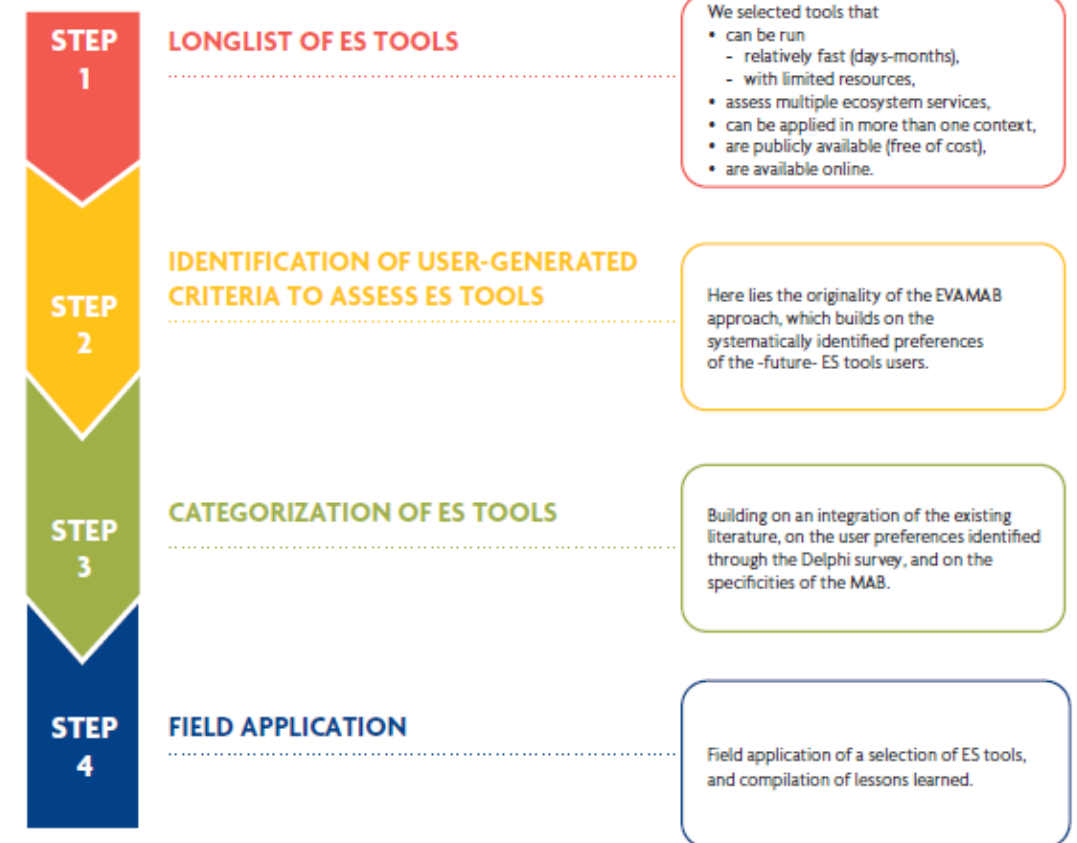


Ecosystem services assessment tools for African Biosphere Reserves: A review and user-informed classification

J. Hugé^{a,b,c,d,*}, A.-J. Rochette^e, S. de Béthune^e, C.C. Parra Paitan^f, K. Vanderhaegen^g,
T. Vandervelden^{c,e}, S. Van Passel^h, M.P.M. Vanhove^{i,j,k,l}, B. Verbist^g, D. Verheyen^e, T. Waas^m,
I. Janssens^{c,e}, L. Janssens de Bisthoven^e



FIGURE 24.
STEPS FOLLOWED BY EVAMAB TO SELECT AND APPLY ECOSYSTEM SERVICES RAPID ASSESSMENT TOOLS SUITED TO AFRICAN BIOSPHERE RESERVES



TIME	INPUT	SKILLS	OUTPUT	ECOSYSTEM SERVICES CATEGORY
Days-weeks	Spatial data	Geographic Information System (GIS)	Qualitative data	Supporting services
Weeks-months	Field sampling	Field ecology	Quantitative data	Regulating services
Months-year	Stakeholder-based input	Stakeholder involvement	Spatial data	Provisioning services
	Available data		Economic values	Cultural services

FIGURE 30.
OVERVIEW OF ECOSYSTEM SERVICES TOOLS BASED ON REQUIRED INPUT DATA

Do you want to pick your tool based on the types of **inputs needed**?

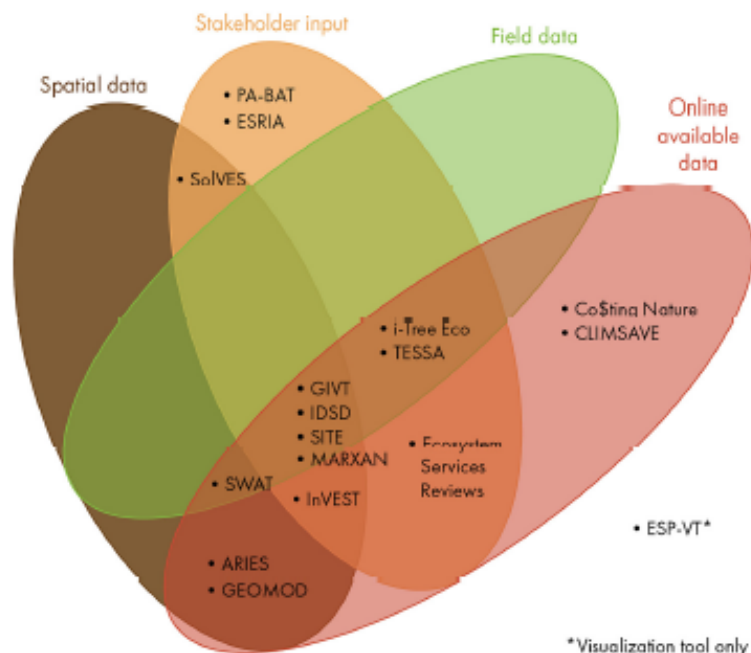
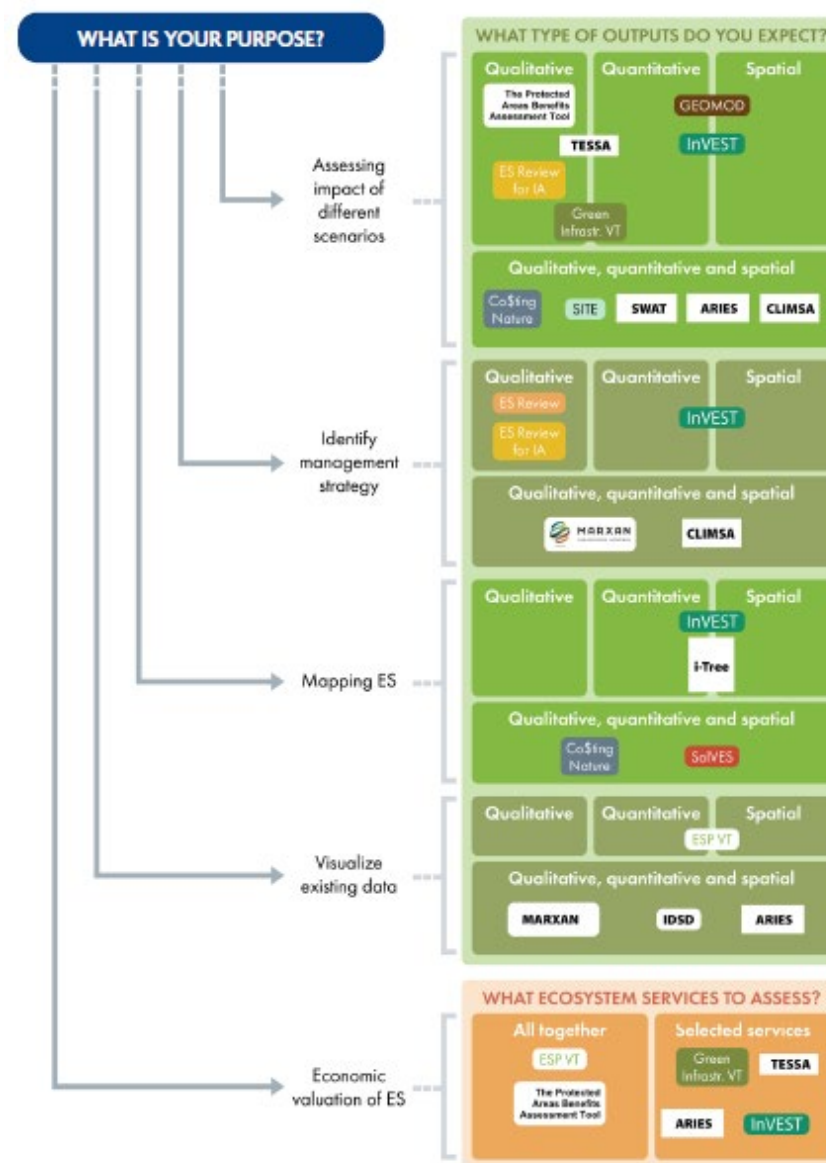


FIGURE 25.
DECISION TREE TO HELP SELECT THE MOST APPROPRIATE ASSESSMENT TOOL



Chapter 4

How to value ecosystem services

A.-J. Rochette, K. Vanderhaegen, S. Van Passel, H. Azadi, S. Jacobs and B. Verbist

Contents

- Why value biodiversity and ecosystem services?
- Different value dimensions, complementary methods
- Focus on economic valuation methods
- Why (not) give an economic value to ecosystem services?
- Economic valuation approaches
- What are Payments for Ecosystem Services (PES)?
 - Different scales of PES schemes, for different ecosystem services, involving different actors
 - Different types of PES
- PES schemes should be set up with caution, taking into account many socio-economic, governance and power factors
- How to set up reward mechanisms for ecosystem services?



FIGURE 42.
THE TOTAL ECONOMIC VALUE FRAMEWORK

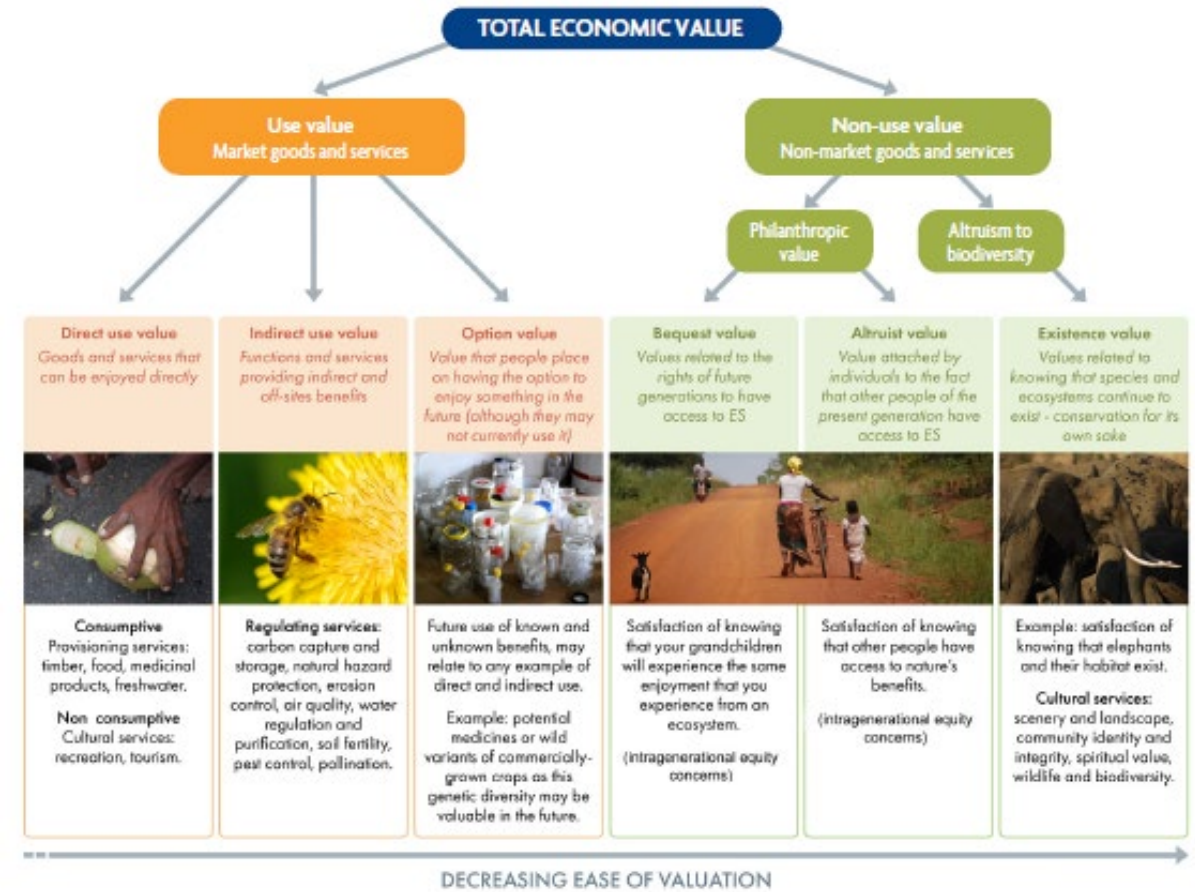


FIGURE 48.
ESSENTIAL STEPS FOR THE DEVELOPMENT OF PES SCHEMES



Source: Defra, Crown.

From ecosystem services assessment to actual change

A-J Rochette, J. Hugé and L. Janssens de Bisthoven

Contents

- How to achieve actual change
- How can ecosystem services tools contribute to better biosphere reserve management?
- How can ecosystem services assessments trigger change?
- From ecosystem services to value chains
- Stakeholders: How and when to engage them
- Communication

FIGURE 53.
PROCESS OF ACHIEVING OUTCOMES ON THE BASIS OF
ECOSYSTEM SERVICE ASSESSMENT

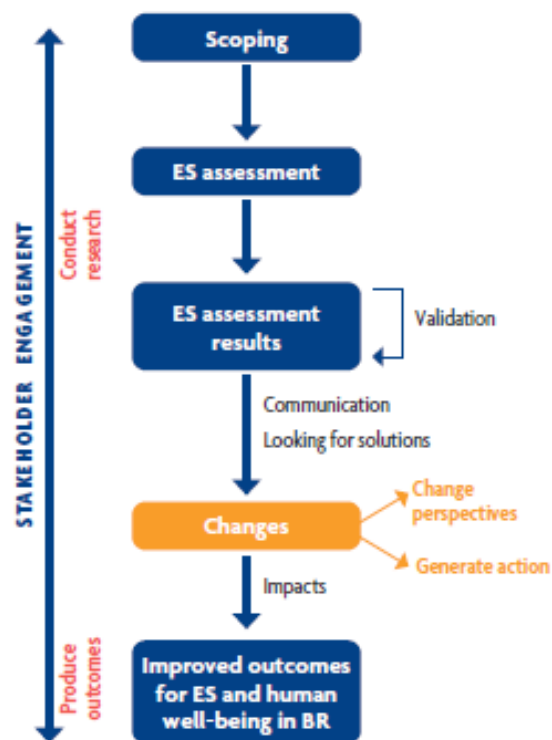


FIGURE 57.
STAKEHOLDER ENGAGEMENT THROUGHOUT THE ENTIRE ECOSYSTEM SERVICES ASSESSMENT PROCESS

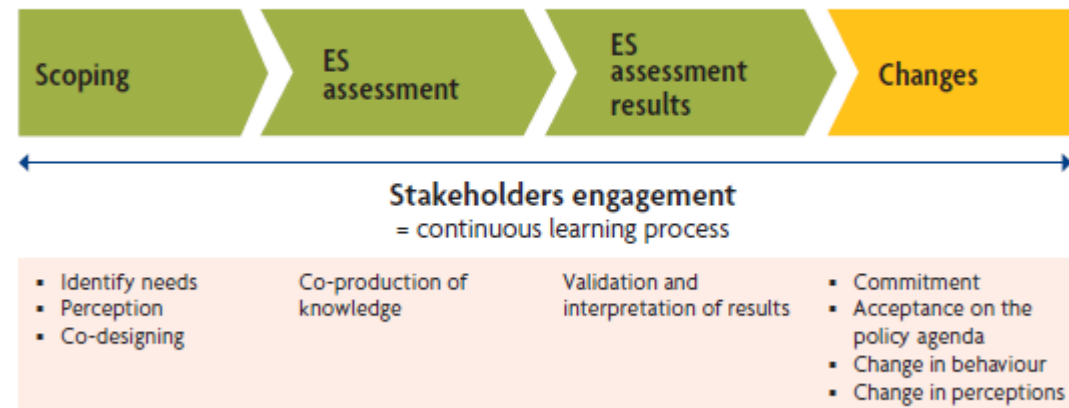


TABLE 17.
COMMUNICATION METHODS BEST SUITED FOR DIFFERENT TARGET AUDIENCES IN BIOSPHERE RESERVES

Target audience	Interest in ecosystem services provided by the biosphere reserve	Use of the ecosystem services assessment study	Communication tools
Local community	Extractive use, recreational use, harvesting, derived economic benefit (e.g. tourism)	Increase in knowledge about the value of ecosystem services, demonstrate need for and benefits of sustainable use of natural resources	Local outreach, e.g. community education campaign, community meetings, local news story, local radio
NGOs	Conservation, poverty reduction, social and economic development	Provision to all parties of the same data on which to come to a consensus about the economic benefits and losses of biosphere reserves	Policy brief and full report, presentation, side event at regional or international conservation meeting, short film

Next steps and conclusions

- Dissemination of Manual in framework of 50 years of UNESCO-MAB
 - IUCN world congress (Marseille 2021)
 - APAC (Rwanda, 2022)
 - CBD COP (Montreal, 2022)
- No simple answers to such complex management issues surrounding ecosystem services in Biosphere reserves
- Added value:
 - Answer to an expressed need
 - Selection (and sometimes simplification) of relevant existing information, not always available to BR managers - Own graphical design
 - Concrete case studies coming from the EVAMAB project and other Biosphere Reserves
- Concepts to be taken cautiously: capacity building will be key

Q&A

Q&A on Unesco-MAB in Africa
(10 min.)



Thank you!

