Training on the TESSA toolkit

Lake Piso Robertsport and Monrovia, Liberia

12-15 June, 2017

About the training course

The course was requested and organised by the UN Environment TEEB programme and was run in partnership with Liberia's Environmental Protection Agency. The course training programme was designed by the Tropical Biology Association who also led the teaching with input from the UN Environment World Conservation Monitoring Centre and Monitor Trust, Cameroon. The overall aim of the course was to build the capacity of Liberian natural resource managers to understand concepts behind measuring and evaluating ecosystem services, and to use the TESSA toolkit at their priority sites in Liberia. By building this capacity, Liberian managers will be better equipped to provide the information needed for stakeholders to better manage their natural resources sustainably and to deliver results to augment the on-going work under Liberia's TEEB assessment.

There is a potential to incorporate this training and the TESSA toolkit at the outset of future TEEB country projects. By replicating the training to more scientists working on ecosystem services and livelihoods, we will help to create responsible guardians of biodiversity while contributing to human wellbeing.

TESSA: a toolkit for measuring ecosystem services

One of the biggest challenge experts face is lack of reliable information about the amounts of ecosystem services available, and how those services vary across landscapes. The Toolkit for Ecosystem Service Site-based Assessments (TESSA) tackles this challenge by providing a simplified approach to identify, assess and value ecosystem services at site level. The toolkit covers six services: global climate regulation, water-related services, harvested wild goods, cultivated goods, nature-based recreation and cultural services. A key feature of TESSA is that it employs site-based assessments of real data at both the site of interest and a site that represents its alternative state (counter-factual) under a different management situation. The overall aim of TESSA is to generate data to guide decisions aimed at safeguarding ecosystems services for a sustainable future. This is particularly important in Liberia where many communities directly depend on ecosystem services for survival, yet increasing demand is leading to over-exploitation and degradation which ultimately threatens livelihoods.

Relevance to TEEB

The TEEB Liberia study aims to reduce the pressures and threats on coastal mangroves by mainstreaming the value of biodiversity and ecosystem services into coastal and marine planning policies. The project will provide evidence of the benefits of community-based coastal and marine management, the introduction of alternative livelihood options, and the establishment of marine protected areas. TEEB Liberia compares alternative scenarios for coastal mangrove management in Liberia and the resulting differences in the provisioning of ecosystem services and biodiversity impacts. The study identifies the constituencies affected by trade-offs in ecosystem service provisioning, with a focus on vulnerable coastal population groups. The degradation of mangroves has both direct and indirect impacts on the provisioning of ecosystem services and biodiversity, which in turn affects the livelihoods of Liberian communities.

TESSA is relevant to TEEB Liberia because it allows users to develop an understanding of the benefits that people receive from nature, and assess their values, in order to generate information for decision making. The participants on the workshop found the practical guidance that TESSA provides was easy to follow: for example on how to identify which services may be significant at a site of interest, what data are needed to measure them, what methods or sources can be used to obtain the data and how to communicate the results. The toolkit emphasises the importance of comparing estimates for alternative states of a site (for example, before and after conversion to agriculture) so that decision-makers can assess the net consequences of such a change. The toolkit focuses on the site scale to respond to the need to bring this type of work down to the operational level where decisions are usually made (e.g. a KBA, a reserve) using information gathered locally. Application of the toolkit can help to generate information useful for the TEEB Liberia study.

Course content and teaching approach

The course introduced participants to ecosystem services and how to assess them at the site level using the TESSA toolkit. Participants learnt the principle of measuring services both at their site of interest and a site that represents its alternative state (counter-factual) that might exist under a different management scenario. Teaching was delivered through interactive talks, case studies, practicals, discussions and a field trip to a mangrove site at Lake Piso. Case studies were a particularly important means of illustrating real-life examples of measuring ecosystem services using TESSA and the results that are generated, as well as how these results have can be used to inform local and national stakeholders.

Teaching methods included:

- Presentations and interactive talks
- A field trip and a practical exercise for rapid ecosystem appraisals
- Case studies of ecosystem service assessments using TESSA
- Sharing experiences on current priorities in Liberia and barriers to achieving them
- Group discussions on ecosystem assessments in Liberia and how TESSA could be applied in future

1. Introducing ecosystem services and the TESSA toolkit

The course introduced participants to the concept of ecosystem services. Participants learnt about the TESSA approach to assessing ecosystem services. Participants learnt about the economic principles underlying ecosystem service evaluation and the importance of understanding how benefits are distributed. Participants shared which ecosystem services they were working on, highlighting challenges they faced when measuring ecosystem services.

2. Conducting a rapid appraisal and identifying beneficiaries of services

Participants learnt how to conduct a rapid appraisal using the TESSA toolkit, including methods for prioritising ecosystem services and assessing and communicating how services will change under a different management scenario.

The workshop's group visited a village named "Falie" which gave an opportunity to visualise two mangrove ecosystem sites (current state and representative of the alternative state). Participants were given an

exercise to conduct a rapid appraisal of ecosystem services provided by the sites visited. This rapid appraisal field trip assisted in the identification of key habitats, ecosystem services and threats relevant to both sites; as well as beneficiaries and conservation actions in place. Further, the last practical exercise led participants to rank the threats through impact scoring (timing + scope + severity) in order to address the main drivers of change, get a first-view of how changes may impact ecosystem services availability and beneficiary groups, and inform the next stage of the work.

3. Cultural services

TESSA's newest chapter, cultural services, was presented using both the principles and examples that TESSA contains and case studies from where the cultural service module has been applied. The presentation introduced the Cultural Ecosystem Services (CES) module focussing on the definition of the CES, the importance of assessing CES, types of cultural ecosystem benefits and examples of cultural ecosystem services. The five main tasks of the cultural ecosystem services module were introduced and these included:

- Task 1: Identify and describe the cultural ecosystem services and benefits provided by the site
- Task 2: Map the location of the cultural ecosystem services and benefits where appropriate
- Task 3: Assess the cultural ecosystem benefits
- Task 4: Identify and evaluate how the most important cultural ecosystem benefits will be affected by the development/managment options identified
- Task 5: Communicate and disseminate assessment result to stakeholders and decision-makers

The presentation also introduced a panoply of methods for carrying out five main tasks of assessing cultural ecosystem services such as free-listing, photo voice, survey, interpretive drawing, method for mapping cultural ecosystem services and benefits, scoring to assess the importance of cultural ecosystem services in the current and alternative state, statements rating, understanding, describing and mapping the implications of the alternative state on cultural benefits and visioning. Ac case study from Cameroon on assessing Cultural Ecosystem Services was also presented.

Participants welcomed the module as it will help them assess CES which are often difficult and intangible to assess. These complexities mean that different methods and analyses are needed to assess cultural ecosystem services from those commonly used in environmental management. The participants appreciated a comprehensive list of different types of cultural ecosystem benefits that TESSA trainers provided to them. Participants noted that assessing cultural ecosystem services requires one to prepare her/himself in a different way compared to other TESSA modules, to ensure robust results. The presentation stressed that assessors for cultural ecosystem services needs to equip themselves with a good knowledge of cultural ecosystem services and their benefits, the key considerations for assessing cultural ecosystem services and benefits, the research techniques and factors that encourage sharing of knowledge and enable articulation of cultural ecosystem services and their benefits. During the discussion that ensued one participant who is part of the TEEB Liberia study made a commitment to apply the CES module in real life.

4. Case studies

A series of case studies from Cameroon, Madagascar, Malawi, Nepal and Uganda showed in detail how results have been generated from full-scale applications of TESSA. This allowed participants to learn how to compare data from the alternative state (counter-factual) with the current site, and how to convert biophysical measurements into monetary values.

The Cameroon case study gave the most detailed application of TESSA so that participants could see clearly the step by step approach to TESSA as well as the challenges faced and how they have been overcame. The case study showed how the results had been used to influence policy/decisions-making process at various levels. This highlighted useful avenues that the Liberian participants could follow in their own work.

A major component of this case study focused on carbon storage assessment and particularly on how to do the carbon calculations. Participants found it highly relevant in the context of "REDD+" and visualised an opportunity to develop Liberia's mangroves allometric equation in order to stand in "tiers 2" within this context.

5. Communicating results to diverse stakeholders

This session covered how to communicate to different audiences, using different techniques. Using practical examples, participants learnt when to choose tables versus figures and when to use alternatives – such as infographics- for non specialist audiences. There was a particular focus on presenting data and results from ecosystem assessments, using real data from different assessments so that participants could apply these techniques to the data they are collecting from their ecosystem assessments.

Measuring ecosystem services in Liberia and the way forward

Summary of the services the Liberian participants are working on and barriers they face

Participants were asked about the ecosystem services they are working on and major barriers they face in this work. The services identified by the participants include fisheries, forests, water, and multiple services from mangrove, mountain, savannah, dryland and forest ecosystems such as water, fisheries, carbon capture, cultural services (e.g. traditional and indigenous people). It was clear from the list that participants mixed ecosystems with ecosystem processes, ecosystem services and the benefits from ecosystem services As a result, the TESSA facilitators explained the basic ecosystem service concepts to the participants, and beyond this, how to concretely and structurally apply ecosystem service analysis. At the end of the session participants were confident about basic ecosystem service concepts, how to identify ecosystems services and how these services benefit people .g. food, fishing, income.

Participants highlighted the following challenges and barriers they face in their work on ecosystem services.

- Lack of baseline data about some ecosystem services
- Data paucity on mangroves
- Technological bottlenecks e.g. how to do research
- Inadequate capacity
- Inadequate funding

- Poor law enforcement
- Community participation
- Stakeholder engagement and coordination
- Lack of support for community livelihoods development
- Lack of progress on land restoration
- Inadequate budget for conservation
- Lack of political & financial support from key ministries (development planning and finance).

Applying the toolkit in Liberia

On the final day, participants were asked to carry out an exercise on how they could integrate TESSA into the work of organisations that were represented at the workshop. The goal of the exercise was to understand better the concept of scenario analysis (through TESSA's "current state site and alternative state site state" approach), to identify the top three services from they consider as priority at their sites, to understand what data are already available and where the data gaps are, and how would TESSA help them to plug the data gaps.

The three groups identified their priority ecosystem services as: food, fish, construction materials, firewood (energy) and flood regulation. Participants also identified different methods for measuring the ecosystem services and data required to do so in both the current and alternative state and the implications on ecosystem service supply if the service are degraded.

Table 1: Results of the practical exercise on integrating TESSA in Liberia

Ecosystem Services	Method	Measurement	Results	Alternative State	Data needed
Fish	Interviews Observations	Catch per unit effort (CPUE)	Generally positive in the current state	If ecosystem degradation occurs then the supply of this service will be affected negative	Data for this is largely available
Construction	Interview Observation	Number of poles per household per year	Generally positive in the current state	If ecosystem degradation occurs then the supply of this service will be affected negatively	
Energy (firewood)	Interview Observation Survey	Bundles (kgs per household)	Generally positive in the current state	If ecosystem degradation occurs then the supply of this service will be affected negatively	• Volume of word harvested • Number of persons harvesting wood • Market values: wood for sale and home use • Method of harvest • Survey is the main methods
Flood control		• Flood intensity • Flooding frequency • Level of threat	Generally positive in	If ecosystem degradation occurs then	Data needed on: • Flood intensity • Flooding frequency

		• Level of damage	the current state	the supply of this service will be affected negatively	• Level of threat • Level of damage
Food	Survey/Market value	• Volume of fish • Fish harvested • Kiss meat • Crayfish • Number of men /women collecting kiss meat (small nails that lives in brackish-water coastal swamps)	Generally positive in the current state	If ecosystem degradation occurs then the supply of this service will be affected negatively	• Volume of fish • Fish harvested – survey/market value • Kiss meat – survey • Crayfish – survey • Number of men /women collecting kiss meat

Recommendations and suggestions for way forward

Moving forwards, participants agreed to establish a national group to practalise TESSA. They pointed out that they would like to see TESSA applied in Liberia and suggested developing a project proposal to apply TESSA in Liberia focusing on mangroves. Some of the participants made a commitment to apply TESSA modules in real life as part of the TEEB Liberia study. Other participants requested support on how you use TESSA results to make a strong and compelling case for communities to participate in projects such as "REDD+" as direct benefits for participating in such projects are not always obvious to them.

The trainers and UN Environment noted that future TEEB studies could integrate TESSA, incorporating some initial capacity building, from the outset.

Training timetable

Monday 12 June **Introducing ecosystem services and the TESSA toolkit**

08:30	Depart Monrovia to Robertsport
11:30	Arrival Robertsport City Hall
13:30	**Lunch, *Introduction participants***
14:30	Feedback from participants
14:50	TALK & discussion: Ecosystem Services
15:50	Overview of TESSA & the alternative state
17:00	Close

Tuesday 13 June **Planning an assessment and the rapid appraisal**

09:00	Introducing the rapid appraisal and identifying beneficiaries
10:00	Field trip
13:30	**Lunch**
14:30	Practical: Rapid ES Appraisals using the toolkit
16:30	Presenting results from rapid appraisal
17:00	Close

Wednesday 14 June

08:30	Feedback from Day 2
08:45	Toolkit methods carbon Case study from Cameroon
11:00	Case studies showing methods and results for: harvested wild & cultivated goods, recreation,
12:00	**Lunch**
13:30	**Depart for Monrovia**

Thursday 15 June (Monrovia)

09:30	Welcome
10:00	Toolkit methods: Cultural Services
11:00	**Coffee break**
12:00	TALK: Presenting Toolkit Results
12:30	**Lunch**
13:30	Integrating the toolkit into our own work
16:00	Presentations of results
16:30	Feedback and close

The trainers

Name	Organization
Rosie Trevelyan	Tropical Biology Association, UK
Abisha Mapendembe	UN Environment World Conservation Monitoring Centre , UK
Patrick Mbosso	Monitor Trust, Cameroon

Participants and their institutions

The conservation managers and practitioners who participated in the course came from: -

National institutions:
Environmental Protection Agency
Forestry Development Authority
Ministry of Agriculture, Bureau of National Fisheries (BNF)

Civil society & independent consultants:
The Society for the Conservation of Nature of Liberia (SCNL)
Conservation International (CI)
FACE
Agriculture College Monrovia
Environmental Justice Foundation (EJF)

Local government:
Officer for Lake Piso Multiple Reserve
Mayor of Robertsport

Name	Institution	Country
1. Claude Duionoryus Edwin	Environmental Protection Agency of Liberia	Liberia
2. Tennema M. Coleman	Environmental Protection Agency of Liberia	Liberia
3. William T. Thompson	Environmental Protection Agency of Liberia	Liberia
4. George O. Free	Environmental Protection Agency of Liberia	Liberia
5. J.S. Datuama Cammue	Environmental Protection Agency of Liberia	Liberia
6. Jefferson P Lahn	Environmental Protection Agency of Liberia	Liberia
7. Jerry T. Toe	Environmental Protection Agency of Liberia	Liberia
8. Carthy Claudius Nyanneon	Environmental Protection Agency of Liberia	Liberia
9. Harris S. Weah	Environmental Protection Agency of Liberia	Liberia
10. James Z. Aquo	Environmental Protection Agency of Liberia	Liberia
11. Clarence Kamara	Environmental Protection Agency of Liberia	Liberia
12. Hillary C. Obay	Environmental Protection Agency of Liberia	Liberia
13. Edmord Z. Greaves	Ministry of Agriculture	Liberia
14. Romeo A. Vainey	Forestry Department Authority	Liberia
15. Blamah S. Goll	Forestry Department Authority	Liberia
16. John P. Konie	Forestry Department Authority	Liberia

17. D. Wesseh Kay	Bureau of National Fisheries	Liberia
18. Peter G. Mulbah	Conservation International	Liberia
19. Hoff Eric	Agriculture College Monrovia	Liberia
20. Godwin Kennedy	Environmental Justice Foundation	Liberia
21. Jerry Garteh	Society for the Conservation of Nature of Liberia	Liberia
22. Richard S. Sambolah	Farmers Associated to Conserve the Environment (FACE)	Liberia
23. Samuel N. Koffa	Independent Research Scientist & Consultant	Liberia
24. Morris B. Kamara	Independent Consultant	Liberia
25. Hannah K. Staurt	Ministry of Internal Affairs	Liberia
26. Eric V. Pinney	Ministry of Internal Affairs	Liberia
	Trainers and Resource persons	
27. Patrick Mbosso	Monitor Trust	Cameroon
28. Tomas Declercq	UN Environment TEEB Office	Switzerland
29. Rosie Trevelyan	Tropical Biology Association	UK
30. Abisha Mapendembe	UNEP-WCMC	UK

Feedback from Participants

"The presentation of presenting results was excellent"

"TESSA has given me a new direction"

"I can see how communities can benefit from services around them and how I can communicate this."

"I would like to see TESSA applied at sites across Liberia" (several participants said this)

"A very educative 4 days"

"Saving mangroves helps the world at large"

"I appreciated the knowledge on data collection"

"TESSA enables us to understand how to report in a short form"

"I learnt a lot especially from the presentation on the graphical analysis which was beautiful"

"The cultural services knowledge was useful because I am using cultural values at Lake Piso and I am going to apply this knowledge to improve my work"

"I want to apply TESSA and continue my studies in mangroves"

"I benefited from the repertoire of presentation tools that Rosie showed, thank you for bringing her to deliver it"

Lessons learned and suggestions for future courses

"Go to a site other than Lake Piso so we can see a greater contrast in services provided by protected and non-protected areas"

"This should not be the last workshop, it would be helpful to have another one so we can carry out more studies"

"We need follow up training"

"The lodging could be improved"

"We need to a project proposal so we can collect baseline data on mangroves as well as sustainability"

"We need training on data base management"

Acknowledgements

The course was part of the activities under TEEB funded by the European Union. We especially thank the host organisation in Liberia, the Environmental Protection Agency, without whom the course would not have been possible. We thank Akustina Morni at United Nations Institute for Training and Research for her timely assistance with logistics. We thank Lisa Ingwall-King and Abisha Mapendembe at UN Environment WCMC for being instrumental in getting the course off the ground and especially to Abisha for ensuring the logistics of the course worked so well. We thank Patrick Mbosso for his excellent training and for sharing his experiences from applying TESSA in Cameroon.

Authors of the report

Rosie Trevelyan[1], Tropical Biology Association, UK

Abisha Mapendembe, UN Environment World Conservation Monitoring Centre , UK

Patrick Mbosso, Monitor Trust, Cameroon

[1] Rosie Trevelyan,
Tropical Biology Association, The David Attenborough Building, Cambridge CB2 3QZ, UK
Rosie.trevelyan@tropical-bioloy.org