

Comment form for 1st Review Phase of the Deliverable 2b) Regional and subregional assessments of biodiversity and ecosystem services for Africa, Chapter 2 ‘Nature’s benefits to people and quality of life’

Review Editor: Gregor Schwerhoff
Institute: Mercator Research Institute on Global Commons and Climate Change
Address: EUREF Campus 19 Torgauer Straße 12-15, 10829 Berlin, Germany
Email address: schwerhoff@mcc-berlin.net

Reviewers:

Abdelfattah Badr (AB)	Nkue N. Daniel (NND)
Diane Douglas (DD)	Patricia Balvanera (PB)
German IPBES Coordination office and national scientists (IPBES)	Safaa A. Ghoneim (SAG)
Gianluca Ragusa (GR)	Susan Ringrose (SR)
Intergovernmental Technical Panel on Soils (ITPS)	Tom Breeze (TB)
Jean C. Ganglo (JCG)	Vincent-Akpu Ijeoma (VAI)
Majda Amina Aziza (MAA)	William Olupot (WO)
Nakashima - ILK expert (N)	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
1	Susan Ringrose (SR)	0	0	0	0	The current version of the assessment encompasses a wide range of topics that are extremely relevant for Africa. Yet, it seems to require much more work. The earlier sections could be moved to the sections with actual data to provide context and discuss the consequences of the observed patterns. The whole chapter would benefit from a reorganization in a way that a consistent conceptual structure is presented and then developed. More actual data is needed. More references to the data sources are needed. The figures do not provide enough information on the data sources, the response variables being depicted and the main messages emerging from them. I suggest the incorporation of the South African team that have been working on ecosystem services assessments for a long time and that of social scientists to further strengthen this chapter.	the suggested structure of the chapter has been taken into consideration
2	Diane Douglas (DD)	0	General			A half-to-one-page abstract/executive summary related to the background, methodology and key findings would be helpful, particularly for new readers. An abstract is already included in Chapter 6.	Executive summary to be developed further
3	Jean C. Ganglo (JCG)	1	55	1	64	This paragraph opening the chapter is not very appealing nor very clear. What were the authors trying to convey? Is there a more constructive and engaging way to do this?	Addressed

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
4	Nkue N. Daniel (NND)	3	3	3	4	Place ; after Akachuku, 2008. Place ; after Nelson et al., 2009 instead of ,	Addressed
5	Tom Breeze (TB)	3	55	3	81	May be "Natural assets" should be defined or clarified	Addressed
6	Abdelfattah Badr (AB)	3	55	3	81	This is a great introduction, very concise and to the point. I would suggest just updating it a little bit to include the framework of benefits and values from IPBES itself.	Addressed
7	German IPBES Coordination office and national scientists (IPBES)	3	67			Not in the reference list	Addressed
8	Jean C. Ganglo (JCG)	3	72	3		Write sometime instead of some time	Addressed
9	Abdelfattah Badr (AB)	3	82	3	92	It is unclear to me what the authors are trying to achieve with this assessment. I understand that assessing ecosystem services through space and time are a critical product of this endeavor and yet wonder if the mandate of this assessment is to actually undertake the mapping or rather assess what is known and not known and what are the consequences of that	I entirely agree with PB. These elaborate methods are never explicit as to how they have been used....no maps to visually represent the synthesised data [Mapping assessment]
10	Nkue N. Daniel (NND)	3	83	3	85	add "(stocks)" after "quantities" and "of benefits (flows)" after delivery. This will give a clear definition of these terms to readers who may be unfamiliar with them, which is helpful as they are common in the literature.	Addressed

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
11	Tom Breeze (TB)	3	83	3	92	Add at the end of the first sentence "per biome with respect to the typology of MA (2005). Really, lack of data is a bottleneck for the success of ES mapping as define but what are the suggestions / measures to overcome such challenge? What actions do we have to plan to get better knowledge of our ecosystem functioning?"	Addressed
12	Susan Ringrose (SR)	3	83	3	92	Consider Le CleC'h et al. (2014), who is one of the authors who worked on the mapping of ES. He presents the aims of many researcher to define a standard methodology for ES mapping and the difficulties encounters. Still, he shows that the current ways to map ES in 45% of cases is through indicators of functions or ecosystem processes. Till now, only approximations are done in the mapping of ES. Also, there is an inequality in representation when mapping ES. Some ES are not or rarely mapped such as water infiltration and the impacts on agriculture.	Unfortunately the recommended paper is in French. But I feel the content of it is important to enlighten readers of what is ES mapping
13	Vincent-Akpu Ijeoma (VAI) (VAI)	3	85	3	87	It may be worth clarifying what services these models map. This could be either an extension of this sentence or as a table (with e.g. a column stating whether it's web or GIS based, one column each for the four main service types where you list the services it models and, if space affords, a column giving a very brief description of what data is required). I think such a table would be very useful.	Addressed

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
14	Tom Breeze (TB)	3	87			Leave space between bract and such	Addressed
15	Abdelfattah Badr (AB)	3	87	3	87	InVEST, ARIES, GUMBO, SoIVES, etc should be explained.	Addressed
16	Nkue N. Daniel (NND)	4	100	4	105	Mapping Ecosystems as you referred to just list very broad and general ecosystems and say nothing about the various ecosystems included in the general types defined. How to address their representativeness is not also specified. I suggest for example that in the category of forest, forest types such as evergreen forest, semi-deciduous forests, dry forests... be mentioned as well as their representativeness in the approach of mapping. As for data identification, I am afraid of the huge data gaps on many ecosystems that have seldom been studied. Here you need to address data gaps at least by suggesting that permanent plots to follow up ecosystem functioning will be facilitated in ecosystems where data are lacking.	Addressed
17	Patricia Balvanera (PB)	4	106	4	109	Include African urban ecosystems	Addressed
18	Tom Breeze (TB)	4	107	4	107	It's important to distinguish between crop agrosystems and livestock agrosystems	Addressed
19	Abdelfattah Badr (AB)	4	120	4	123	CICES should be written in full to give a better understanding	Addressed
20	Patricia Balvanera (PB)	4	120	4	125	Why this approach? A justification and brief technical description would be helpful.	Addressed

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
1	Tom Breeze (TB)	4	130			Move table 2:1 to next page (5) and improve layout	Addressed
22	Abdelfattah Badr (AB)	4	130	4	130	Include african urban ecosystems. In the cultural section include the food consumptions diversity (this is different from the nutrition in the provisioning. In Africa in the same ecosystem, people of different culture doesn't eat the same food. This have a diversity on the impacts of the ecosystem)	Addressed
23	Abdelfattah Badr (AB)	4	130	5	131	Table 2.1. Is this table useful? It is basically just using the CICES list of services, and repeating several times the types of indicators and the vegetation types but it is empty. What will be found in this table? I was expecting to see more here about the resulting maps and the information they provided but there was a change of topic to values. It is unclear to the reader if you are just trying to present a road map of the chapter	Table 2.1 deleted
24	German IPBES Coordination office and national scientists (IPBES)	6	139	6	150	This section seems to assume that the reader is familiar with the IPBES framework and some of the terms used. The various types of value in particular are going to be very confusing for those who are not familiar already. A lot of readers will also be wondering where economic valuation comes into this so it would be useful to make that explicit both in the text and table.	IPBES terms described in the glossary of terms listed as one of the report's annexes
25	Susan Ringrose (SR)	6	140	6	141	Did you mean the values guide?	Yes . I meant the values guide

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
26	Patricia Balvanera (PB)	6	146			Remove below	Changes made as suggested
27	Susan Ringrose (SR)	6	151	9	197	This section is basically copying the elements you found particularly relevant in the IPBES guide. While understand the importance of doing so for internal purposes I wonder how useful this is for the assessment itself	This section is deleted as it was deemed not relevant to the chapter
28	Majda Amina Aziza (MAA)	6	154	6	154	"social economic" should be either "social, economic" or "socio-economic"	Changes made as suggested
29	Majda Amina Aziza (MAA)	6	160			Genetic approaches may be important in valuing the ES	Changes made as suggested
30	Patricia Balvanera (PB)	6	170			Remove below	Changes made as suggested
31	German IPBES Coordination office and national scientists (IPBES)	6	171	6	171	Some examples of the use of valuation/measurement of ecosystem services should be included here, again don't assume that the reader will be familiar with a framework. Laurens et al (2013) Journal of Environmental Management 119, 208-219 is a good example from an economic perspective.	Laurens et al. (2013) included in reference list and cited in text
32	Majda Amina Aziza (MAA)	6		6		Fig 2.1 is of very poor quality	Figure deleted
33	Majda Amina Aziza (MAA)	7	178			The quality of Figure 2.1 requires improvement and its legend in not informative	Figure deleted
34	German IPBES Coordination office and national	7	195			Move table 2:1 to next page (8) and improve layout	Table 2.1 deleted

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
	scientists (IPBES)						
35	Tom Breeze (TB)	9	197	11	283	<p>I'm not sure why this is in this chapter, this seems like something that should be in Chapter 3 or 6, especially as they are not reused throughout. The indicators proposed are incomplete (pollination and pest regulation are not included at all, despite both having a substantial impact on agricultural productivity) and I do see why each biome has different indicators for the same service, which should have similar benefits. e.g. Why is desert the only biome where crop productivity is considered an indicator of food, when livestock grazing and cropping are all possible on the other biomes? There is also no mention of agroecosystems. I think this table needs very serious work to be a practical review of available indicators and then would question it's usefulness here.</p>	<p>During previous meeting with delegates, it has been decided that this part remains in the chapter 2. However, we let the scientific committee to decide of the relevance of this part to the chapter or not.</p> <p>Pollination and pest regulation are now included in the list of indicators provided. Agro ecosystems are human-modified system. As such, they do not originality stand as a biome but they derive from human-induced activities. In addition, resilience could lead the system to recover its main status.</p>

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
36	Nakashima - ILK expert (N)	9	197	the end of this chapter		As the Ecosystem Services Assessment is one of my main research areas, I think that there is a big issue here. as the different Natural Ecosystems require different indicators!!! So many sets of indicators and procedures for Ecosystem Service Assessment have been developed for particular ecosystems (e.g.: Wetlands, forests, Riverine, ...). See publications of U.S. Army Corps of Engineers, UK National Ecosystem Assessment, Ed. Maltby,... Also, the MEA report highlighted this fact!! I've a personal example in this regard: as my PhD developed an Ecosystem Service Assessment tool (procedure and set of indicators) for Coastal Wetlands...And I would be happy to share its results with you, if you like. So, I recommend discussing ES of each type of natural ecosystems with consideration of its especial features, functions and accordingly ecosystem services!	Pollination and pest regulation are now included in the list of indicators provided.
37	Abdelfattah Badr (AB)	9	208	9	237	A table will be very useful. This table could more explicitly link the indicators to ecosystem services and provide a rationale for such links. On the other hand it seems that indicators go all the way for basic indicators of the state of the ecosystem to those more directly linked to the supply or delivery of services. It would be really good to dissect these dimensions or components of ecosystem services	The comment has been considered accordingly to improve the section

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
38	Susan Ringrose (SR)	9	209	9	2019	Biome and ES indicators in Forests and Savannas should also include dynamics parameters such as annual increment in diameter, basal area, volume, biomass, carbon storage, mortality, regeneration, recruitment...	the suggestion has been considered accordingly
39	Patricia Balvanera (PB)	9	220	9	222	Grass land indicators should also include species richness, species abundance distribution such as Shannon index, dynamics of cattle's populations in relation to the capacity of grass land to prevent over grazing etc.	The suggestion has been considered accordingly
40	Nakashima - ILK expert (N)	9	221	9	222	why cattle only? How about other livestock, and how about also indicator animal species in the case of PAs?	Livestock has been preferred
410	Susan Ringrose (SR)	10	238	10	240	Please, add to the first sentence "and the ability of ecosystems to provide such desires"	The suggestion has been considered accordingly
42	Tom Breeze (TB)	10	246	10	246	In reference list, there is 'Daily G.C.1997' not 'Daily et al 1997'	The appropriate reference has been considered
43	Susan Ringrose (SR)	10	254	11	283	This section feels quite a bit unnecessary. If these paragraphs would be explicitly linked to the actual results of the assessment they might be much more useful	We let the scientific committee decide of the relevance of this part to the chapter or not
44	Nakashima - ILK expert (N)	10	256	10	256	population size of what? people or the biological resources they exploit?	Population size of local inhabitant has been considered
45	Susan Ringrose (SR)	10	265	10	271	Impact of fuel origin, type, combustion, emissions could be taken into account,	The suggestion has been considered accordingly
46	Susan Ringrose (SR)	10	273	10	273	I would replace "are concerned with" with "include"	The suggestion has been considered accordingly

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
47	Patricia Balvanera (PB)	10	276	10	276	"the number of floods" or "the frequency of flood events"?	The frequency of flood events has been considered
48	Abdelfattah Badr (AB)	11	281	11	282	how about recreational and aesthetic values or potentials? An upcoming publication will provide one way of how to do this based on research in a forest reserve in Uganda	Information on revenue generated through recreation added
49	Abdelfattah Badr (AB)	11	284	ff		The process on "major" of MIES should given here; this may be helpful for new readers/stakeholders.	Addressed
50	Tom Breeze (TB)	11	284			<p>in section 2.2. MIES for livelihoods: ADD examples of local uses of biodiversity and natural resources:</p> <p>- Blanco & Carrière 2016 (Morocco): (p31-32) "In this context of on-going livelihood modernization, vegetation still constitutes a useful resource for the community. Firstly, vegetation still represent a forage resource for domestic small herds and for semi-nomadic herders. While in most houses and tents, cooking is done with gas, firewood and charcoal extracted for woody plants are still used for some specific preparations (e.g. bread and tea). Plants also ensure various everyday life needs, notably for traditional medicines, aromatic uses, goatskin tanning, fences around irrigated garden and tent camps, etc."</p> <p>- Bobo et al. 2014 (Cameroon): (p14) "Like in other areas of Central Africa, the primary use of wildlife in the study area is for consumption. This is because many people depend on bushmeat as a means to survive during time of hardship (e.g.</p>	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>unemployment and crop failure), or to gain additional income for special needs (e.g. school fees, festivals and funerals)".</p> <p>- Dalle et al. 2005 (Ethiopia): (p10) "Drought-resistant forage species are key resources for animal production and food security of pastoralists. Table 7 shows some of the top ranked drought-resistant forage trees and shrubs. <i>Boscia mossambicensis</i>, <i>Rhus natalensis</i> and <i>Pappia capensis</i> were the three most appreciated drought-resistant woody species."</p> <p>- Dembélé et al. 2015 (Mali): (p1) "In the Sahelian countries, the majority of people live in rural areas and depend mainly on natural resources for subsistence and income generation [1-3]. Wild plants play important social, cultural, aesthetic and ethical roles for rural communities, as local people depend on them for food [4,5], traditional medicine [6,7], construction, handicrafts [8], cosmetics, forage and revenues [9,10]."</p> <p>- Elias 2015 (Burkina Faso): (p27) "Native fruit trees provide crucial benefits to local ecosystems and livelihoods (Kalaba et al., 2009; Faye et al., 2010; Bayala et al., 2011). In sub-Saharan Africa, the shea tree (<i>Vitellaria paradoxa</i> C.F. Gaertn.) is indigenous to 18 countries across a 5000-km long and 500-km wide expanse of semi-arid savanna (Hall et al., 1996). Due to its myriad uses, farmers have selectively protected the species in their fields since 1000 A.D. (Neumann et al., 1998;</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>Kahlheber,1999). The result has been a discontinuous cover of scattered shea trees under which crops are grown (Pullan, 1974; Boffa, 1999). In these agroforestry parklands, which contain fewer trees than uncultivated lands, the species grows in nearly pure stands, illustrating the role of humans in shaping tree densities (Harlan et al., 1976; Boffa, 1999; Lovett and Haq, 2000a)."</p> <p>- Gebauer et al. 2016 (Sudan): (p383) "Several studies have highlighted baobab as one of the most important IFTs [Indigenous Fruit Trees], with considerable ethnobotanical significance, in Sudan (e.g. Bella et al. 2002; Gebauer et al. 2002a, b; El Tahir 2004; El Tahir and Gebauer 2004; Gebauer and Osman 2004; Adam et al. 2012, 2013) and in Kenya (e.g. Muok et al. 2000; Mbabu and Wekesa 2004; Muok 2005; Simitu and Oginosako 2005; Simitu et al. 2009; Mwema et al. 2012; McMullin and Kehlenbeck 2015)."</p> <p>- Golden 2014 (Madagascar): (p256) "In addition to agriculture, local people obtain a seemingly endless variety of resources from their surrounding environment. They harvest wildlife for food (Golden 2009; Golden et al. 2011; Golden et al. 2014), honey, ethnobotanical and ethnozoological medicines (Golden et al. 2012), earth for consumption (Golden et al. 2012), firewood and construction materials, among others. This intimate relationship with their surroundings, cultivated over millennia, has fostered a strong</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>sense of respect for their natural environment and spiritual connections with ecological processes."</p> <p>- Sulieyman et al. 2012 (Sudan): (p233)"Vegetation changes influence the rural economy in the Sahel region as a broad spectrum of natural plants is used for food, fodder, firewood or medicinal purposes. The livelihood of people is highly associated with plant species in their surrounding and this gives them a profound knowledge of plant resources in the local environment (Wezel & Lykke, 2006)."</p> <p>- Thomas & Twyman 2004 (Namibia, Botswana, South Africa): (p219) "Over the last century the Kalahari rangelands have been used opportunistically, seasonally and permanently for a range of natural-resource-based livelihoods. These include: livestock production (cattle, goats and sheep, both for subsistence and commercial use); hunting (both subsistence and commercial); provision of fuelwood and building materials; production of edible and tradable foods from the veld; and as a site for living. Use of natural resources has changed over time and is highly variable for different groups (and people within these groups) varying daily, weekly, seasonally and between years."</p> <p>- Kimpouni et al. 2014 (Congo): the authors describe local practices of hunting birds (ixeutique) by using glue made from latex issued from trees and plants. The authors record the plants used for</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>this purpose and their qualities.</p> <p>- Moussa & Yamba 2008 (Niger): (p158): "[A distinction is made between principal and secondary resources. Principal resources regroup plants, waters, lands and animals. The farm draws most of its income from the lands (or gonaki). Breeding represents the second resource identified in each village by the following terms: kiwo, dabobi (or animals or cattle). Denomination usually refers to breeding problems and conflicts between farmers and nomad heders through terms like makiyaka (pasture area) and burtali (passing path). Waters are important, because water is life: it refers to the wells (rijiya), drillings (rijiya murtsatse), ponds (tapki). Hydric resources, constituted by surface waters, are mostly located in fossil valleys and in more or less temporary ponds, threatened by the silting process which considerably reduces the storage capacity."</p>	
51	Nakashima - ILK expert (N)	11	285	11	306	This section has no citations at all but should have one on almost every sentence.	References added
52	Nakashima - ILK expert (N)	11	286	11	288	This should be the major provision services as no other ecosystem services are listed here.	Provision services listed as suggested
53	Susan Ringrose (SR)	11	289	11	290	What thresholds of data availability were needed to qualify them as major? How did you review relevant literature? I have some doubts about this as it has turned much of the chapter into a review of provisioning services only whereas other	This was agreed at the authors meeting to concentrate efforts on provisioning services and their link to livelihoods

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						services are simply under appreciated and less immediately relevant.	
54	Abdelfattah Badr (AB)	11	294	11	302	Oasis is also a particular natural ecosystem, important for food livelihood, may is included in a type of ecosystem taken into account, it can be considered as a wetland area	It has been included under section
55	Patricia Balvanera (PB)	11	294	17	382	These paragraphs should be extensively revised. The inter-linkage between ES and food security should be elaborated more carefully.	Revisions have been made where feasible
56	Abdelfattah Badr (AB)	11	295	11	295	Spelling of indicated	Changes made as suggested
57	Nkue N. Daniel (NND)	11	299	11	300	nice. See if adding some publications to these and other similar opening statements would be useful	Changes made as suggested
58	Nakashima - ILK expert (N)	11	303	17	331	The earlier sections emphasized the spatial patterns while the data your provide is temporal. The format is a bit strange. Please make more explicit mention of the data sources and methods used to produce these figures. I am unsure about the need to link the data with other continents for this assessments. More information is needed on what is the Y variable that is being mapped. Is this all maize? Why? Why are there different colors for different crops in the 3rd pannel while you seem to be refering only to maize according to the legend of the Y axis? This section is critical to the assessment and seems quite poor.	not addressed or responded to
59	Majda Amina Aziza (MAA)	11	308	16	310	Table 2.3 : Fuel : efficient use of fuel from the positive and negative points of view, because of emissions due to fuel wood combustion	Information on negative contributions of fuel added

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
60	German IPBES Coordination office and national scientists (IPBES)	11	308	16	310	Table 2.3 : Fuel : is fossile oil considered not comming from biodiversity?	It is considered as part of contributions offered by nature
61	Vincent-Akpu ljeoma (VAI) (VAI)	12	308			Remove Source; start with Adapted	Changes made as suggested
62	Tom Breeze (TB)	12	308	12	308	This table seems misplaced to me. Would this table be relevant for the presentation of the indicators? Why is the list of services in concordance with the MA typology and ot the CICES? I have personally no preference for either but you did state you would be using the CICES list of services? This table is quite useful.	Table deleted
63	Vincent-Akpu ljeoma (VAI) (VAI)	12	308			Take into consideration the urban ecosystem. HAVE A LOOK ON THE IMAGES FOUND IN THE IMAGES SHEET (it is a proposals)	Thank you!
64	Gianluca Ragusa (GR)	12	309	16	310	Mangrove loss should be included, this is due to its use as fuel wood in Nigeria and some coastal west Arican countries	Explained in chapter 3
65	Tom Breeze (TB)	17	313	17	315	I'd suggest moving this sentence to line 330, after the various examples of NTFPs you provide. From there it can be expanded. Chapter 5 of the IPBES pollinator assessment for more information and useful references on local beekeeping. Replace "non-widespread" with "limited", although I'm not sure it's that limited in some parts of Africa.	Changes made as suggested

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
66	Jean C. Ganglo (JCG)	17	317	17	317	Write palm wine instead of alm wine	Changes made as suggested
67	Susan Ringrose (SR)	17	317	17	317	Do you mean palmwine	Yes, I meant the palm wine
68	Patricia Balvanera (PB)	17	320	17	330	<p>ADD reference to uses beyond food, fuel and water. EXAMPLES to add:</p> <p>- Halmy 2016 (Egypt): MIES also support Indigenous and local livelihoods through other traditional uses, "such as tanning (e.g. Calligonum polygonoides, Cistanche phelypaea), detergent making (e.g. Anabasis articulata), rope making, handicraft supplies (e.g. Juncus acutus, Juncus rigidus, Lygeum sparntum, Medemia argun, Phoenix dactylifera, Typha domingensis, Thymelaea hirsuta) and in the making of thatches and shelters." - (Marwa Waseem A. Halmy (2016). <i>Traditional knowledge associated with desert ecosystems in Egypt. In Marie Roué, Alfred Oteng-Yeboah, Peris Kariuki and Yao Adou (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Africa: Contributions to an IPBES regional assessment. UNESCO: Paris.</i>)</p> <p>- Chibememe et al. 2014 (Zimbabwe): (p198) in Zimbabwe, "certain trees are not supposed to be cut due to their qualities of bringing rain, fortunes, food and providing medicines and these include: baobab, marula (Sclerocarya birrea), sausage tree (Kigelia africana) and the monkey cake (Piliostigma thinning)."</p>	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>- Hammi et al. 2010 (Morocco) (p1861): in the Moroccan High Atlas Mountains:"in these ecosystems, forests remain an important resource for the subsistence of local populations".</p> <p>- Paré, S. et al. 2010: (Burkina Faso): (p277) "A total of 82 species were identified, 90% of them were used for medicinal purposes, 78% for fodder, 73% for food, 67% for house construction, and 58% for wood carving. This suggests that forests play a key role in sustaining the rural livelihood and contributing to poverty reduction."</p>	
69	Vincent-Akpu ljeoma (VAI) (VAI)	17	328	17	330	Other African countries still practice traditional slash and burn like Nigeria and Ghana	Changes made as suggested
70	Nakashima - ILK expert (N)	17	331	17	331	tropical forests "contain" or "are"?	Changes made as suggested
71	Vincent-Akpu ljeoma (VAI) (VAI)	17	356	24	661	Figures 2.2, 2.4, 2.5, 2.6 2.7 have no titles; some were not cited in the write up	Changes made as suggested
72	Majda Amina Aziza (MAA)	17	356	18	359	These figures are very awkward to read and just seem to show that there's been a higher rate of yield growth in the last few years. But no context is established for them and it's such a recent trend that I would be inclined to remove them and just explain these recent increases (including some explanation of why they are occurring) within the text. It would also be useful to indicate the extent of regional variation.	The figure have been removed from the text

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
73	Patricia Balvanera (PB)	17	357			Figure 2.2 is poorly presented and its [source: is unknown ???].	Source added
74	Tom Breeze (TB)	17				The quality of Fig. 2.2 is low and the source is missing.	Source added
75	William Olupot (WO)	18	358	18	359	Would you add a text to explain the figure	Changes made as suggested
76	Tom Breeze (TB)	18	359			Remove See Figure 2.2. and add explanatory text	Changes made as suggested
77	Vincent-Akpu Ijeoma (VAI) (VAI)	18	359	18	359	There should be a write up before citing "see figure 2.2"	Changes made as suggested
78	Abdelfattah Badr (AB)	18	360	18	382	Is aquaculture in fish farms using imported species for fish production and fish feeding included in local ecosystem services concerning fish and food security?	Changes made as suggested
79	Nakashima - ILK expert (N)	18	361	18	368	There should be a reference	References added
80	Patricia Balvanera (PB)	18	361	18	361	Would you name the source, which is "Béné C. and Heck S. (2005)"	References added
81	Patricia Balvanera (PB)	18	361	18	363	Source? On average, fish constitutes over 21 % of daily protein intake for the region's population, and is the cheapest source of animal protein on the continent. It has been estimated that some 200 million Africans rely at least in part on fish for nutrition (Source: University of Dar Es Salaam, 2012).	Source suggested is used to develop text on socio-economic benefits of fish

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
82	German IPBES Coordination office and national scientists (IPBES)	18	371	18	373	<p><i>"because small scale processing and/or trading at local markets require (...) and can be undertaken by unskilled labour, they provide opportunities for a large number of women".</i></p> <p>REMARK the sentence seems to establish a parallel between unskilled labour and women...</p>	Changes made as suggested
83	Gianluca Ragusa (GR)	18	373	16	375	from the lowest 374 strata of the community where they lack education, literacy, facilities, materials and the financial capital to engage in other 375 activities	Comment not clear
84	William Olupot (WO)	18	379	18	380	<p>I can't agree with this, considering the above mentioned considerations. The main reasons are an historical low consumption of fish, lack of funds and governance (AU has only recently a policy, as well as member countries, high level of losses post-capture and low quality of value chains lack of data (namely for inland fisheries, and all the constraints mentioned items above). According to The State of World Fisheries and Aquaculture 2014 (Source: FAO, 2014) availability of fish from Africa's fisheries could be increased by: (i) rebuilding overfished or depleted stocks and ensuring that small-scale fishers receive sufficient resources; (ii) reducing post-harvest losses; and (iii) ensuring a sufficient portion of small pelagic fish is made available for human consumption. As regards (i), good management is needed to ensure recovery of overexploited and depleted stocks. 380 reason for</p>	Changes have been made to take this into consideration

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						this decline is the levelling off in captures fish production and the still-growing population.	
85	Abdelfattah Badr (AB)	18	383	18	384	The figure is quite interesting but was elaborated in 2003. Is it possible to reproduce this with more recent data? Can you discuss on the temporality of this data and how much it holds through time?	Figure deleted
86	Susan Ringrose (SR)	19	387	22	557	This section seems quite unrelated to the previous one and somehow unsupported by the presentation of patterns that would then lead to the corresponding recommendations. Many ideas from many different sources are in there but I wonder if this is an assessment or rather an exposition of a particular set of solutions that the authors already had in mind. Again, is more data available from different sources to make this section more robust?	This section was reworked and rephrased accordingly
87	Gianluca Ragusa (GR)	19	388	19	393	This reads more like an exert from a speech, consider rephrasing.	Rephrased
88	Abdelfattah Badr (AB)	19	401	19	402	May be this point should be lightly developed, it is an important information.	Thank you!
89	Susan Ringrose (SR)	20	439	20	447	There was been several other programmes and projects funded by different donors (EEU, WB, USAID, bilateral donors) and from 2015, AU-IBAR is implementing a continental programme for fisheries and aquaculture development, funded by EU.	Noted
90	Tom Breeze (TB)	20	445	20	445	Mali is experiencing projects for artificial reproduction of tilapia and catfish, for repopulating seasonal basins (Mares) and rear Tilapia in	Addressed

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						floating cages, apart for strenghtening governace, value chains, markets and hopefully reduce post.capture losses.	
91	Nkue N. Daniel (NND)	20	446	20	447	The word is already	Corrected
92	Nakashima - ILK expert (N)	20	449	20	449	Nile Tilapia and all tilapia species are not omnivourous.	Corrected
93	German IPBES Coordination office and national scientists (IPBES)	20	457	20	457	integrated agriculture-aquaculture. There are some emerging experiences in aquaponics in South Africa, growing in neighbouring countries mitigated by the costts of starting up and management.	Agriculture-aquaculture incorporated
94	Nakashima - ILK expert (N)	20	464	20	465	Limit the use of short paragraph	Paragraph shortened

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
95	Vincent-Akpu Ijeoma (VAI) (VAI)	20	466			on new approach to fishery management: EXAMPLE to highlight the potential role of involving local communities and local knowledge in the assessment of the state of fisheries and their management, and the elaboration of sustainable practices: - Gaspare et al. 2015. Complementarity of fishers' traditional ecological knowledge and conventional science: contributions to the management of groupers (Epinephelinae) fisheries around Mafia Island, Tanzania. (p89): "In a developing country like Tanzania, small-scale fishers rely on TEK in their daily fishing activities, gained through practice and observations over time and passed on through generations, from old to young fishers. (...) When they face dwindling fisheries resources, fishers adapt to changing circumstances".	The suggest literature has been used to strengthen inclusion of ILK into the chapter
96	Intergovernmental Technical Panel on Soils (ITPS)	22	527	22	529	Provide support (technical and financial) for local authorities and for small-scale, labour intensive, coastal and inland fisheries	Addressed
97	Abdelfattah Badr (AB)	22	529	22	529	improve fish market value chains through local small-scale investments and support to local organisations including in a gender focused perspective	Addressed
98	Abdelfattah Badr (AB)	22	531	22	557	International community can also help for technology transfer and capacity building concerning fisheries and on-farm ponds,	Addressed

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
99	Tom Breeze (TB)	22	557			Remove the See Figure 2.4. and add explanatory text as legend for that figure	Addressed
100	Safaa A. Ghoneim (SAG) (SAG)	22	558	23	591	Is there no data to support this section?	Addressed
101	Nakashima - ILK expert (N)	22	568	22	569	It is a nice and rare experience, that can be considered as modern and can be developed to be sustainable, regarding to new bioenergy technologies, is it possible to give some examples of these countries, to highlight the information,	Examples of bioenergy technologies provided

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
102	Vincent-Akpu Ijeoma (VAI) (VAI)	23	592			<p>section 2.2.4. "Water and livelihoods in Africa" ADD example on the Role of wetlands: - Dixon 2008 (Ethiopoia): (p341) "Through their provision of environmental services and socioeconomic benefits, wetlands play an important role in the livelihoods of many people in developing countries (Silvius et al., 2000; Millennium Ecosystem Assessment, 2005). In Africa in particular, fishing, pastoralism and agriculture are often dependant on the ecohydrological regimes of inland wetland systems such as lakes, floodplains and swamps (Scoones, 1990; Adams, 1993; Acreman & Hollis, 1996; Woodhouse et al., 2000)." (p343-344) As reservoirs of soil moisture, wetlands are also valuable agricultural resources, traditionally used, albeit on a small, informal scale, to cultivate maize much earlier in the agricultural calendar than in the uplands (Tafesse, 1996; Wood, 1996) during dry periods of the year normally associated with food shortages (June to September). Over the last century, however, in response to population pressure, commercialization and government-driven food security policies, wetland cultivation has extended beyond the use of wetland margins to include much larger areas, and the drainage and cultivation of whole wetlands are now a common practice throughout the region.</p>	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
103	Patricia Balvanera (PB)	23	593	23	594	Rainfall is a major source of water in Africa.	Addressed
104	Jean C. Ganglo (JCG)	23	601			Figure 2.5 is poorly presented and the map of Africa used to demonstrate the information is too old; moreover the legend is not explanatory	Addressed
105	Jean C. Ganglo (JCG)	23	601	23	601	What is this figure representing? Please provide more information about the response variables being mapped and its ecological and societal meaning as well as the consequences of the observed patterns	Addressed
106	William Olupot (WO)	24	618	25	674	Very sparse and scarce information is presented here with little context and explanation. It is important to separate hydrological processes from the supply of freshwater from superficial and groundwater sources, the actual delivery of water to the users, the issues related to water access, water quality and sanitation, and issues of water demand.	Addressed
107	Jean C. Ganglo (JCG)	24	618	24	639	there are many paragraphs with no reference to back the findings	Addressed
108	Vincent-Akpu Ijeoma (VAI) (VAI)	24	630	24	630	"Figure 2.6:[source: ???]" The source is UN (2012). It is in the "The Millennium Development Goals Report 2012", page 53.	Addressed
109	Patricia Balvanera (PB)	24	631	14	661	The source of Figures 2.6 and 2.7 should be given.	Addressed
110	William Olupot (WO)	24	639			Figure 2.6: the quality of the figure is poor and the legend is absent	Addressed

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
111	Majda Amina Aziza (MAA)	24	645	24	649	not clear, but should be describing Fig 2.7	Addressed
112	William Olupot (WO)	24	645	24	655	Fig 2.7 : total crop water consumption agriculture, it is not clear, what "total" includes in term of area, all the continent?	Addressed
113	Nakashima - ILK expert (N)	24	645	24	649	The paragraph is not clear.	Paragraph clarified
114	William Olupot (WO)	24	660			Figure 2.6: the quality of the figure is poor and the legend is absent	Addressed
115	Nakashima - ILK expert (N)	25	663	25	664	The paragraph is not clear.	Paragraph clarified
116	German IPBES Coordination office and national scientists (IPBES)	25	675			Revise the subtitle Progress so far state progress in what??	Subtitle revised
117	Jean C. Ganglo (JCG)	25	676	25	683	The respective reference is needed.	references added
118	Tom Breeze (TB)	25	684			The box to the left is not titled	Box deleted
119	Susan Ringrose (SR)	25	684	25	691	WASH: An explanation is needed.	WASH explained
120	William Olupot (WO)	25	697	25	703	An important information about water harvesting technologies, that can be developed may be by adding some other examples.	Addressed

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
121	Tom Breeze (TB)	26	705	36	1187	Overall, chapter 2.3 is very good, other sub-chapters in Chapter 2 may follow this example.	Thank you for your comments we are glad that the chapter is considered good.
122	Susan Ringrose (SR)	26	705	26	705	The list of services in the previous section is strikingly short relative to the introduction that promises to inform on a huge list of services. Also the amount of data is also quite scarce and contrasting with the aspirations set in the introduction	This is a reflection of limited evidence that is well documented as noted according to our criteria.
123	Susan Ringrose (SR)	26	705			The title is too long and may be revised	Title revised
124	German IPBES Coordination office and national scientists (IPBES)	26	707	26	741	More work is needed to provide a more cohesive framework for this section	Suggest to leave the essential part of the chapter introduction delineating key concepts and the criteria by which 2.3 is evaluated. Seem to reflect the same comment as above.
125	Susan Ringrose (SR)	26	707			Chapter 2.3.1 is overall not very useful and somehow redundant. The findings start on p.27, L. 761	We are happy to delete this introduction section if it is deemed redundant.
126	Vincent-Akpu Ijeoma (VAI) (VAI)	26	708	26	710	What is the meaning of MIES, is it major ES on line 286 or most important ES	Most important ecosystem services

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
127	Tom Breeze (TB)	26	731	26	734	<p><i>"It further assesses the role of knowledge systems particularly both science and diverse indigenous and local knowledge (ILK) contribute to the conservation and sustainable use of biodiversity and ecosystems. People are in constant interaction with their ecosystem and through the social-ecological interactions they nurture sophisticated sets of knowledge and practices. "</i></p> <p>ADD references to give weight to the argument:</p> <ul style="list-style-type: none"> - Andersen et al. 2014. - Gadgil et al. 1993 - Berkes et al. 2000 - Nakashima & Roué 2002 <p>FOR EXAMPLE:</p> <ul style="list-style-type: none"> - Bollig & Schulte 1999 (Namibia): (p505) "During the rainy season, large herds congregate around the major settlements, and the ranges used in the dry season are excluded from grazing for several months. In the dry season, the highly mobile cattle camps move together in one phalanx into as yet unexploited areas. Nobody is allowed to settle "ahead of others". This rule means that the pasture is used systematically and not in a patchy way. Excessive mobility of cattle camp is criticized and sometimes punished. Herders hold that too much pasture is lost to trampling in the case of excessive mobility." (p511-512): "Pastoralists are not interested in grasses as such, but only in the relation between grasses and herds. They are interested in their surrounding as pasture and not 	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>as a natural savanna. Their knowledge and their institutions of pasture management relate to a cultural landscape and not to a climax vegetation. Thus they are first of all interested in the continued productivity of ranges. Loss in biodiversity and the changes from perennial to annual grasses do not affect or interest them as long as the ranges remain productive. Second, they are interested in maintaining equal (the Pokot case) or selective access (the HImba case) to key resources."</p> <p>- Dalle et al. 2005: (p15) "Borana pastoralists avoid overgrazing by shifting grazing both spatially and temporally, minimize dominance of a few species by burning their rangelands, and shift their villages when they noted signs of overgrazing and degradation."</p> <p>- Dixon 2008 (Ethiopia): (p351) "The intimate knowledge and understanding of the wetland environment among wetland users, in most cases, inform management practices such as fallowing and ditch blocking for moisture management that support sustainable utilization (Dixon, 2003). Furthermore, many wetland farmers are active in small-scale experimentation in response to problems and adapting to change. Where WMIs are functional, they support such activities, either by directly facilitating the diffusion of innovations or simply affording farmers more time to engage in adaptive practices. The subsequent heterogeneity in knowledge engendered among wetland</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>communities, arguably contributes further to the resilience and adaptive capacity of the WMI (Berkes et al., 2002)."</p> <p>- Elias 2015 (Burkina Faso): (p34) "Guided by the repertoires of ecological knowledge outlined above, the women and men interviewed have adopted agroforestry practices that deliberately or inadvertently improve the species' vigour and productivity. These practices represent a form of 'protoculture' or management of valued trees that are not deliberately planted (Boffa, 1995). Consequently, shea parklands reflect not only the shea tree's natural regeneration patterns, but also the management and conservation practises of female and male agriculturalists who value the species' myriad purposes."</p> <p>- Hammi et al. 2010 (Morocco): (p1861) "Topographic, edaphic and climatic conditions create stressful growing conditions and sensitive ecosystems. Nonetheless, in these ecosystems, forests remain an important resource for the subsistence of local populations. Historically the vulnerability of this resource has prompted mankind to establish traditional control forms of forest and pastoral areas. These common resource management systems are still functioning in the Moroccan High Atlas Mountains under the name of agdal which refers to the territory, the resources and access rules laid down by the local population in order to manage the territory." (p1862) "Agdal is</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>a Berber generic term designating areas where access rights and uses of natural resources are governed by a local institution—usually the village, intervillage or intertribal assembly—which fixes rules concerning boundaries, periods and modalities of natural resource exploitation (Artz et al., 1986; Auclair, 1996; Ilahiane, 1999; Venema, 2002; Auclair and Alifriqui, 2005). Although agdals exist all over Morocco in various environments, our concerns will focus here on forest agdals which are less widespread and have been studied less than pastoral agdals."</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
128	German IPBES Coordination office and national scientists (IPBES)	26	742			<p>Section "Spiritual and religious significance and values of ecosystems and cultural services"</p> <p>ADD references and examples from:</p> <ul style="list-style-type: none"> - Mburu and Kaguna 2016 (Kenya): MIES play a central role in cultural and spiritual practices for many Indigenous communities. "Traditional seeds, especially millet, played a central role in ritual practice in Tharaka as no ritual could happen without them." "Certain seeds/crops were critical during rituals and ceremonies. For instance, millet was so special that porridge made from it was used in most ceremonies. Honey was also important during ceremonies such as marriage, since a special brew made from it was used as part of materials given out during dowry settlement and drunk during the wedding ceremony." (<i>Gathara Mburu and Sabella Kaguna (2016). Community dialogue on ILK relevant for food and water protection in Tharaka, Kenya. In Marie Roué, Alfred Oteng-Yeboah, Peris Kariuki and Yao Adou (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Africa: Contributions to an IPBES regional assessment. UNESCO: Paris.</i>) - Ole Kaunga 2016 (Kenya): Maasai ways of life and learning are directly linked to nature, culture and spirituality. ". They use natural resources in every aspect of their lives, from food to housing, clothing, cosmetics and healing rituals; for example, this is why certain tree species are have spiritual value and are used in rituals." "The 	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>Laikipia maasai have spiritual and traditional experts who use their special skills to understand and interpret nature and then advise the community. " "The rituals and ceremonies help the community connect with nature and remember the role of nature in sustenance of life. They help the community interpret unusual signals from the ecosystem and also make key decisions about preparation for migration as advised by the spiritual leader. " "Both communities [in this study] have the Loibonok (diviners/seers) who can tell fortunes, foresee and tell the future of individual, family and community life. Because the communities are dependent on livestock for the sustenance of life, and the livestock entirely depend on a healthy environment for their survival, a large proportion of traditional knowledge is grounded in understanding and interpreting the biodiversity of the eco-regions." (Johnson M. Ole Kaunga (2016). <i>The use of Indigenous traditional knowledge for ecological and bio-diverse resource management by the Laikipia Maasai and the Samburu. In Marie Roué, Alfred Oteng-Yeboah, Peris Kariuki and Yao Adou (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Africa: Contributions to an IPBES regional assessment. UNESCO: Paris</i>)</p> <p>+ Akouehou 2004 Institutional environment and traditional management of forest areas: the case</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>of the Monts Kouffé region in central Benin</p> <p>+ Agnissan 2012 “Pastoral and spiritual reverses In agrarian Senoufo space in Côte d'Ivoire”</p> <p>+ Bobo et al. 2014 “Wildlife use and the role of taboos in the conservation of wildlife around the Nkwende Hills Forest Reserve, South-west Cameroon”</p> <p>+ Chibememe 2014 “Embracing indigenous knowledge systems in the management of dryland ecosystems in the Great Limpopo Transfrontier Conservation Area: the case of Chibememe and Tshovani communities, Chiredzi, Zimbabwe”</p> <p>+ Cormier-Salem et al. 2010. “Mangrove System Sustainability: Public Incentives and Local Strategies in West Africa”</p> <p>+ Elias 2015. “Gender, knowledge-sharing and management of shea (<i>Vitellia paradoxa</i>) parkands in central-west Burkina Faso”</p> <p>+ Golden 2014. “Spiritual roots of the land - Hierarchy and relationships of the religious cosmologies of humans and their environment in the Maroantsetra region of Madagascar”</p> <p>+ Moore 2009 “Beware the Elephant in the Bush: myths, memory and indigenous traditional knowledge in northeastern Namibia”</p> <p>+ Virtanen 2002. “The role of customary institutions in the conservation of biodiversity: sacred forests in Mozambique”</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
129	Vincent-Akpu Ijeoma (VAI) (VAI)	27	747	32	1010	This section is very relevant to the assessment of values of nature and nature's benefits and the documentation of different world views. Yet, it would benefit from a more consistent structure. The delineation of this structure could be one of the key objectives of the values workshop for the african assessment to be held in Morocco. A clearer distinction between the theoretical basis and the actual data for Africa might be needed too.	We are happy that the reviewer considered that this section is very relevant. The structure has been considered within the overall framework of the chapter. The relevance of the theory in this section is to contextualise the importance of spiritual significance. The next comment may help to address this comment.
130	Susan Ringrose (SR)	27	748	27	760	This paragraph should be removed and placed under the subheading 2.3.2	This is a good suggestion and may address the previous comment. Please remove and place under the subheading 2.3.2.
131	Susan Ringrose (SR)	27	775	27	777	this is too general a statement. This is not true for all african cultures	Statement amended to Within some African contexts creations are sacred and spiritual consciousness is the highest form of the knowledge system.

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
132	Patricia Balvanera (PB)	28	810			<p>totems and taboos for conservation of ecosystems: Possible examples to add: - Bobo et al. 2014 (Cameroon): (p17) "With respect to wildlife use, four types of taboos were identified. These are habitat, species specific, method and segment taboos." (p17) "These totems play great roles in the conservation of certain species because it is believed that when a totem is killed, a person will die in the village or neighbouring village." - Chibememe et al. 2014 (Zimbabwe): (p193): "Dudley, Higgins-Zogob, and Mansourian (2005) believe these traditional systems such as sacred sites are probably the oldest method of habitat protection on the planet and still form a large and mainly unrecognised network of sanctuaries around the world". (p195): "The majority of the traditional leaders and village elders (n=39; 98%) believe that the Chibememe community and its neighbours has over millenia developed IKS-based resource access, harvesting and use systems that have helped conserve and sustain local resources and their livelihoods, including the use of sacred places, taboos and totems". (p198): "It was indicated that animals used as totems would be voluntarily protected from any plunderers by the respective animal totemic holders. Such a system of assigning people certain totemic animals reduces harvesting pressure on particular animal species as it is considered a taboo for a person to</p>	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>kill or eat one's totemic animal". (p200): "In a study on sacred trees and groves, Burrow (2010) notes that 'the baobab has numerous cultural and mythical associations in Africa and Madagascar because of its shape, longevity, multitude of uses and as a residence of spirits'. In most cases, forest and woodland areas where such trees are found are not allowed to be destroyed and in turn become habitats for a variety of plants and animal species." (p200): "Sangwe Communal Land is located in a dry region where water is a crucial component of the lives and livelihood of local communities, thus any site that protects, and stores water is highly respected (see Annex 1). Consistent with Wels (2003), we also noted that the Chibememe community respected sacred marshes where ritual ceremonies were conducted from time immemorial and would resent any crop production activities on such places. Such a belief has had a positive impact on the protection of biodiversity found in these areas and has for centuries contributed to the conservation of dryland forest, water and wildlife resources in the semi-arid areas of Zimbabwe."</p> <p>- Elias 2015 (Burkina Faso): (p30): "Social institutions and taboos regulate access to tree species such as shea, the planting and felling of which are customarily restricted".</p> <p>- Golden 2014 (Madagascar): (p262): "Obeying taboos is a living memorial of the past and a</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>demonstration of respect and reciprocity to ancestors. I found that although the origin stories of taboos were often not driven by a conservation ethic, taboos, if widely respected, can serve a conservation purpose". (p259): "Inside everything (both living and non-living entities), there are things that cannot be seen by human eyes. Although possible to corrupt them, all these invisible forces were originally designed by Zanahary [[equivalent to the Judeo-Christian "God"]] to help people. A common example cited by people is that if a man walks into the forest to extract timber and the axe bounces off a tree, then the man must not cut it down. If the axe sticks in the tree, then Zanahary is permitting it to be cut down. Local people will explain that this system is designed both to help the forest and to help people."</p> <p>- Virtanen 2002 (Mozambique): (p228) "Parts of nature are protected under traditional norms according to two different premises: the controls can be either space or species-based (Mandondo 1997:355). Many species-based controls are linked to beliefs about spirits and their dwelling places. But in addition to religious controls, some species are protected for their utilitarian value, such as medicinal plants, fruit trees, and those species, which are believed to provide environmental services. However, if conservation is pursued at the level of ecosystems, the main interest lies with</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>space-based controls over larger areas under tree cover, such as sacred forests." (p229) "Due to their embeddedness in specific cultural systems sacred sites have also a spiritual dimension, and their persistence cannot be assessed separately from the cultural institutions which make them meaningful and valuable for the local populations. Traditionally protected forests can be divided into the following socio-cultural categories: i) burial grounds; ii) places where deities or spirits are believed to reside; iii) places for ritual; iv) sites linked to special historical events or populations, and v) forests that surround natural sacred features, like rocks, caves or ponds."</p> <p>- Cormier-Salem et al. 2010 (Senegal and Guinea Bissau): (p414) "Through these practices and beliefs, Bijagos communities make the resource (shellfish) and spaces (rios, mangrove trees, etc.) sacred and turn them into a common heritage. For instance, the mangroves made sacred by and for the group of initiated (or Difuntu) women are controlled by a system of traditional rules, which limit access to the sites and their exploitation."</p>	
133	Tom Breeze (TB)	29	844	29	844		Add in 'For some indigenous Africans... and 'Some local and indigenous peoples around Africa...'

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
134	Nakashima - ILK expert (N)	29	857			<p>section "religious significance and values of ecosystems and cultural services" :</p> <p>ADD references and examples of spirituality e.g. - Mburu and Kaguna 2016: "A number of hills in Tharaka land are regarded as sacred. The people understand ecosystem services provided by hills, including trapping rain-bearing clouds and hence influencing rainfall regimes, hosting forests rich in biodiversity, hosting honey bees, wildlife, and being sources of rivers and valuable wood." "Certain seeds/crops were critical during rituals and ceremonies. For instance, millet was so special that porridge made from it was used in most ceremonies. Honey was also important during ceremonies such as marriage, since a special brew made from it was used as part of materials given out during dowry settlement and drunk during the wedding ceremony." (<i>Gathara Mburu and Sabella Kaguna (2016). Community dialogue on ILK relevant for food and water protection in Tharaka, Kenya. In Marie Roué, Alfred Oteng-Yeboah, Peris Kariuki and Yao Adou (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Africa: Contributions to an IPBES regional assessment. UNESCO: Paris.</i>)</p> <p>ADD references and examples + Akouehou 2004 Institutional environment and traditional management of forest areas: the case of the Monts Kouffé region in central Benin + Agnissan 2012 "Pastoral and spiritual reverses In</p>	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>agrarian Senoufo space in Côte d'Ivoire”</p> <p>+ Bobo et al. 2014 “Wildlife use and the role of taboos in the conservation of wildlife around the Nkwende Hills Forest Reserve, South-west Cameroon”</p> <p>+ Chibememe 2014 “Embracing indigenous knowledge systems in the management of dryland ecosystems in the Great Limpopo Transfrontier Conservation Area: the case of Chibememe and Tshovani communities, Chiredzi, Zimbabwe”</p> <p>+ Cormier-Salem et al. 2010. “Mangrove System Sustainability: Public Incentives and Local Strategies in West Africa”</p> <p>+ Elias 2015. “Gender, knowledge-sharing and management of shea (<i>Vitellia paradoxa</i>) parkands in central-west Burkina Faso”</p> <p>+ Golden 2014. “Spiritual roots of the land - Hierarchy and relationships of the religious cosmologies of humans and their environment in the Maroantsetra region of Madagascar”</p> <p>+ Moore 2009 “Beware the Elephant in the Bush: myths, memory and indigenous traditional knowledge in northeastern Namibia”</p> <p>+ Virtanen 2002. “The role of customary institutions in the conservation of biodiversity: sacred forests in Mozambique”</p> <p>+ Campbell 2005. "Sacred groves for forest conservation in Ghana's coastal savannas: assessing ecological and social dimensions"</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
135	Susan Ringrose (SR)	30	886	30	886	In reference list, there is 'Biggs et al 2015' not 'Biggs et al 2004'	There should be a Biggs et al 2004 in the reference list. Biggs R., 2004 currently listed in the reference list should be amended to include co-authors R. Biggs, E. Bohensky, P.V. Desanker, C. Fabricius, T. Lynam, A.A. Misselhorn, C. Musvoto, M. Mutale, B. Reyers, R.J. Scholes, S. Shikongo, A.S. van Jaarsveld 2004 Nature supporting people: the southern African millennium ecosystem assessment integrated report. Council for Scientific and Industrial Research.

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
136	Vincent-Akpu Ijeoma (VAI) (VAI)	30	915			<p>section "biodiversity and ecosystem services and cultural identity" :</p> <p>POSSIBLE EXAMPLES to add:</p> <p>- Ole Kaunga 2016 (Kenya): "The Samburu and Maasai have praise songs for their livestock... The songs are an intimate communication between the cow and the person singing... There are milking songs that are sung to soothe the lactating animal to produce more milk. The song is a sign of bonding, close attachment and interdependence between the cow and the family." [An example of a women's song for milking the cows, sung to soothe the lactating animal to produce more milk, is included in the paper]. (<i>Johnson M. Ole Kaunga (2016). The use of Indigenous traditional knowledge for ecological and bio-diverse resource management by the Laikipia Maasai and the Samburu. In Marie Roué, Alfred Oteng-Yeboah, Peris Kariuki and Yao Adou (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Africa: Contributions to an IPBES regional assessment. UNESCO: Paris</i>)</p> <p>- Blanco & Carrière 2016 (Morocco): (p37) "Furthermore, some uses [of plants] are not material and belong to the immaterial and socio-cultural sphere, through stories, legends, and beliefs".</p> <p>- Bobo et al. 2014 (Cameroon): (p1): "Like other communities living around forest areas, the studied communities use wildlife in their culture</p>	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>and tradition. Wildlife is not only used for consumption, but also for traditional medicines, craft materials and spiritual purposes. But, threats to wildlife and their traditional uses are real and acculturation seems to be the main driver. High priority should be given to the reconciling conservation of species with high values for local communities and human needs".</p> <p>- Cormier-Salem et al. 2010: (p414) "In Bijagos culture, shellfish also have patrimonial and symbolic values. Religious aspects and ceremonies punctuate Bijagos's social life and influence the spatial organization (for instance via sacred sites) and resources exploitation (for instance via shellfish-gathering regulations in terms of site access and seasons). Initiation rites, based on the transition from one age group to another, show the importance of shellfish in the older/younger relationship. The youngest help the oldest, offering them such products as tobacco, rice, palm wine or shellfish. It is called o pagamento de grandeza, meaning 'pay [respect to] the greatness [of] wisdom'. Moreover, shellfish have a role in various Bijagos ceremonies, among which the most famous are the Fanado and the Difuntu. Each ceremony is dedicated to a particular shellfish. "</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
137	Patricia Balvanera (PB)	31	932			<p>section "the role of indigenous and local knowledge in biodiversity and ecosystem services provisioning" :</p> <p>POSSIBLE EXAMPLES to add:</p> <ul style="list-style-type: none"> - Andersen et al. 2014. - Baco et al. 2007. Does farmers' traditional knowledge still conserve biodiversity in Benin? [in French]: The authors give examples of farmers' practices enhancing agrobiodiversity (p 205-206): polyvarietal culture, identity and cultural marking of varieties, varietal exchanges between farmers. (p201) "To date, only farmers' knowledge, such as cultural marking of some varieties, and practices based on anthropo-economical determinants, allowed the conservation of this diversity [agrobiodiversity]. In view of the greater and greater scale of the challenges linked to modernity, these patrimonies become insufficient and random to conserve agrobiodiversity". - Bollig & Schulte 1999: "Himba rules of pasture management ensure that grazing pressure is taken away during the crucial months of the late rainy season. This form of management aims at the maintenance of a highly productive pasture of annuals. In this stage, it is a typical disequilibrium system driven by rainfall stochasticity." 	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
138	Majda Amina Aziza (MAA)	31	941	31	942	<p><i>"this African knowledge system is scientific in that it is empirical, experimental and systematic in nature"</i>.</p> <p>SUGGESTION: use knowledge systems rather than system.</p> <p>AND replace into the wider context and debates on the differences and similarities between scientific knowledge and local or indigenous knowledge. Scientific knowledge and indigenous and local knowledge present similarities, like the accumulation of empirical observations (Berkes et al. 2000). They have been widely recognized as equally valid as science, and the divide between them has been massively called into question, from the works of Levi-Strauss (1966), to the contribution of Agrawal (1995) who highlighted the political issues at the origins of this divide. However, scholars also argue that scientific and indigenous and local knowledge correspond to two different knowledge systems, and argue that these differences make it possible for ILK to complement science. Cite notably the works of Berkes (1999).</p>	Levi-Strauss 1966. The Savage Mind; Agrawal 1995. Dismantling the divide between indigenous and scientific knowledge; see mémoire M1 for refs
139	Gianluca Ragusa (GR)	31	951	31	952	<p><i>"Links between indigenous and traditional knowledge has been steadily increasing and of its importance to culture"</i>.</p> <p>UNCLEAR and SUGGESTION: use "indigenous and local knowledge" rather than "traditional", because the term traditional is debated and the expression Indigenous and Local Knowledge has been adopted for the IPBES assessments.</p>	Links between indigenous and traditional knowledge are elaborated in depth

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
140	Patricia Balvanera (PB)	31	954	31	955	<p><i>"The terms indigenous and local knowledge emphasizes that knowledge of resource abundance is linked with knowledge of the resource management systems and institutions they operate within (Danielsen et al., 2014)."</i></p> <p>UNCLEAR</p>	Definition of the term "indigenous and traditional knowledge has been provided in IPBES Glossary
141	Patricia Balvanera (PB)	31	956	31	959	<p><i>"Bohensky et al. (2011) have identified the connection between traditional knowledge in maintaining cultural diversity and protection for biodiversity. They point out that integration of indigenous and local knowledge is crucial for natural resource management, aiding to fill gaps where science cannot."</i></p> <p>ADD refs.:</p> <ul style="list-style-type: none"> - Berkes et al. 2000 - Nakashima & Roué 2002 <p>AND examples showing how ILK can be complementary to science and add new information:</p> <ul style="list-style-type: none"> - Thomas & Twyman 2004 - Gaspare et al. 2015 - Le Fur et al. 2011 	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
142	Vincent-Akpu Ijeoma (VAI) (VAI)	31	963	31	963	<p><i>"The critical role of indigenous and local knowledge is generated through daily experience and facilitates the monitoring and interpretation of resource and ecosystems dynamics. This knowledge plays an important component of institutional memory of how to respond to environmental crisis, disturbance, and other changes over time and space."</i></p> <p>ADD refs: -Nakashima et al. 2012; Berkes 1999 and FOR EXAMPLE: - Andersen et al. 2014 - Egypt and Sudan (p38): "Peoples survival has been bound up with survival of their domestic animals, which in turn has been linked to the abundance and survival of the trees in their tribal lands. Consequently, variation in climate, restrictions on access, and the requirements of animals and vegetation have combined into a complex cultural calculus that has been conveyed by oral tradition".</p>	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
143	Patricia Balvanera (PB)	32	976	32	978	<p><i>"The knowledge of biodiversity and ecosystem services at local and indigenous communities in Africa are not just traditions but adaptive and resilient responses that have evolved overtime in the local communities."</i></p> <p>SUGGESTION: replace "not just traditions" by something like "not traditions in the sense where it is fixed in the past"</p> <p>AND use for example the ref Roué 2012 [in french] (p3): "If, like we tend to understand it in a binary oppositions system, traditional means what does not change, this term would be inappropriate. Traditional knowledge would become, at best, surviving items from the past, at worst, anachronisms of which conservation would lead to a folklorization, turning what is still alive into museum objects. Tradition must be understood, on the contrary, as what binds today's humans with the ones of yesterday, that is to say the interpretation by contemporary societies of what they received from the ones before them"</p>	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
144	German IPBES Coordination office and national scientists (IPBES)	32	984	32	988	<p>"Research in some parts of Africa shows that indigenous and local knowledge in conservation is overly simplistic and under estimated, findings from South Africa (Infield, 1988), Botswana (Parry and Campbell, 1992), Rwanda (Harcourt et al., 1986), Tanzania (Newmark et al., 1993), and Nigeria 987 (Ite, 1996) have found that local and indigenous knowledge is very important in conservation of protected areas."</p> <p>UNCLEAR: Is the intended meaning that CONSIDERATION of ILK is overly simplistic and under estimated, and yet studies have shown that it can actually be of value for conservation?</p>	The suggest literature has been used to strengthen inclusion of ILK into the chapter
145	German IPBES Coordination office and national scientists (IPBES)	32	993	32	995	<p>"Local and indigenous knowledge is acquired through millenia of accumulated experience hence local communities can be excellent conservators of biodiversity and sustainable management of ecosystem services."</p> <p>ADD refs: Nakashima & Roué 2002 Gadgil et al. 1993</p>	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
146	Majda Amina Aziza (MAA)	32	995	32	997	<p><i>"Some indigenous communities breed local crop varieties for improved production using informal innovation systems based on indigenous knowledge, they often employ their own taxonomy (Oldfield and Alcorn 1991)."</i></p> <p>ADD refs dealing with local management of varieties:</p> <ul style="list-style-type: none"> - Battesti 2013. Agrobiodiversity of the date palm (<i>Phoenix dactylifera</i> L.) in Siwa oasis (Egypt). - Agidie et al. 2014. Agroforestry practices and farmers' perception in Koga watershed, upper blue Nile Basin, Ethiopia. 	The suggest literature has been used to strengthen inclusion of ILK into the chapter
147	German IPBES Coordination office and national scientists (IPBES)	32	1005	32	1008	<p><i>"Integration of traditional and local knowledge in biodiversity conservation is likely to yield successful outcomes if local communities are involved directly as active participants. Incorporation of traditional and local knowledge strengthens the legitimacy of the decision-making process for the local community (MA, 2005)."</i></p> <p>ADD refs:</p> <ul style="list-style-type: none"> - Ayeni 2016. The local experts' perception of environmetnal change and its impacts on surface water in Southern Nigeria. (p46): "local experts knowledge as part of indigenous people's perception could be used as a participatory approach involving the communities in assessing the impact of environmental change on an important service of forest ecosystems such as fresh water provision." - Chibememe et al. 2014 	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<ul style="list-style-type: none"> - Gaspare et al. 2015 - Golden 2014 - Kamau & Medley 2014 - Phutege & Chanda 2004 - Rushemuka et al. 2014 (Rwanda): the authors analyze the system of classification, naming and characterization of soils linked to land use by local farmers. They show that this knowledge allow the farmers to associate each soil type with an adapted land use. They compare this classification with scientific nomenclature and finr them complementary. The authors argue that farmers' soil knowledge should be taken into consideration to implement efficient and accepted soil management measures and technologies to improve the farmers' conditions. 	
148	Vincent-Akpu Ijeoma (VAI) (VAI)	33	1023	34	1058	I wonder if the presentation of the study case could be within a box and allow for the text to build on the insights gained from the study cases	We originally had the examples in boxes but integrated these into the text. It is fine to include boxes if the Lead Authors wish this.
149	Gianluca Ragusa (GR)	33	1030	33	1030	Write "floristic inventories" instead of "inventories floristic"	Please change to floristic inventories

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
150	Gianluca Ragusa (GR)	34	1012	35	1104	I like the division into forests and water but wonder if these could be dissected even further by including maybe also sacred mountains or other geomorphological formations, is that the case, and potentially include the different biomes you had highlighted at the beginning of the chapter	We decided on these two core areas as a way to delineate 2.3 in a coherent and structured way early on in the discussions. Also these two themes encompass many of the examples in the literature and fit with broader discussions around the role and value of water and forests in provisioning MIES. The limitations of the two broader topics should preclude examples from sacred mountains such as Mount Mafa- Bécédi-brignan and other formations of which one our lead authors is an expert.
151	Gianluca Ragusa (GR)	35	1104	22	1104	In Mali is present and operating an ethnique of traditional esculsively fishermen and women traders, called Bozo, depositary of traditional fishing techniques and abilities.	We include the example provided by the reviewer in a sentence in 1104 'In Mali there also exists a tradition of fishermen and women traders, called Bozo, which is a unique demonstration of traditional fishing techniques and abilities. These practices display local culture and knowledge in fishing and water resources as it solidifies local communities...'

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
152	Majda Amina Aziza (MAA)	35	1105			The Introduction section of 2.3.6 (before 2.3.6.1) seems not necessary.	Fine to delete this section
153	Gianluca Ragusa (GR)	35	1122	35	1146	I wonder if these are all the gaps. I felt there were huge gaps in all the previous sections. A synthesis table might be useful	These are the key gaps identified. A synthesis table might be useful way to systematically address the gaps.
154	Gianluca Ragusa (GR)	35	1142	35	1146	<p><i>"Moreover, there are several gaps with the designing of guidelines and methods for western science fusion with indigenous knowledge of local community stakeholders and practitioners in Africa. Both knowledge systems can work in complementary and mutually enriching ways. It is still not clear how to validate these knowledge systems and how to integrate and present indigenous and local knowledge systems satisfactorily (Agrawal, 1995)."</i></p> <p>ADD that there are several methods that have been implemented in numbers of studies , notably in Africa(Ayeni et al. 2016; Bollig & Schulte 1999; Chalmers & Fabricius 2007; Gaspere et al. 2015; Hammi et al. 2010; Kong et al. 2015; LeFur et al. 2011; Rushemuka et al. 2014; Sop & Oldeland 2011; Sulieman et al. 2012; Thomas & Twyman 2004), with different results, efficiency, and benefits for local communities or science, for example, studies based on knowledge co-production; make ref to the method developed in the frame of IPBES, with dialogue workshops... OR keep for section 2.3.6.3. "opportunities" p 36.</p>	Suggested references used and suggested text added

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
155	Susan Ringrose (SR)	36	1147	36	1166	This section is very relevant. Yet I wonder if much more is needed on addressing the different types of barriers, more specifically issues of justice, equity, power relations, inclusion of different world views into decision making	These are all very important and valid points, but beyond the scope of this section and hopefully will be addressed across the report as a whole, especially issues of justice, equity and power relations which are huge topics and the evidence of the linkages is scant to date.
156	Patricia Balvanera (PB)	36	1167	36	1187	Could be further expanded also and linked more explicitly to previous sections of the document	Due to limitations of space we have limited the extent of discussion of opportunities.
157	Vincent-Akpu Ijeoma (VAI) (VAI)	36	1189	43	1423	While I appreciate that reviewing every ecosystem service's benefits is a hefty task, the emphasis on provisioning services to the exclusion of all else leaves Section 2.4. very handicapped. The IPBES pollination assessment found numerous examples of economic benefits associated with pollinators in Africa (Chapter 4 of that assessment) and several non-economic benefits to (Chapter 5). Many ecologists have expressed concerns that Africa's biodiversity may be adversely affected by excessive chemical pest control but this assessment presents no information on pest regulation. I would very strongly suggest expanding away from provision services only approach.	Information on ecological and socio-economic benefits of BES is added

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
158	Patricia Balvanera (PB)	37	1189	39	1256	This section is quite relevant, yet presently it seems like a compilation of a range of ideas and issues that are quite unrelated. I wonder if an integration of these ideas into earlier sections would rather reinforce the previous sections and the relevant messages	Section 2.3.6 aimed to provide a brief summary thus focusing on key gaps, barriers and opportunities. Due to the word limit we have not been able to go into substantial detail, but instead point out key gaps, barriers or opportunities. The list presented here is not exhaustive. We would like to maintain the sections and perhaps think further about whether a summary table would be useful. Although it might put too much weight on our analysis, which is limited by the nature of the space to elaborate on this important aspect of MIES within a short section of a wider chapter.
159	Tom Breeze (TB)	37	1190			The Introduction section of 2.4 seems not necessary.	As I vote for integrating our section into existing ones (see my comment above) it make sense to delete this short introductory text, thus, I deleted it.
160	Vincent-Akpu Ijeoma (VAI) (VAI)	37	1197	37	1197	Should be pest regulation or pest and disease regulation	changed to "pest regulation"

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
161	German IPBES Coordination office and national scientists (IPBES)	37	1201			Remove the word introduction from the subtitle	I deleted the whole section as it became redundant by (i) shifting the whole NTFP section into section 2.2.2.1, and (ii) as the topic is in more detail contained in the section on "NTFP use differs with regard to households' traditional sources of livelihood and individual characteristics"
162	Abdelfattah Badr (AB)	37	1203	39	1256	The relation between social groups and discussion of invasive species/categorization of ES is not clear.	lines 1189 to 1244 deleted
163	German IPBES Coordination office and national scientists (IPBES)	37	1218	37	1230	These definitions are each a bit vague: regulating what for example? Supporting services are not products but the basic functions underpinning the consistent availability of resources for other services (e.g. soil for planting crops, primary production for livestock grazing etc.)	lines 1189 to 1244 deleted
164	Patricia Balvanera (PB)	37	1218	37	1230	This is a different categorisation used previously within the chapter and puts the earlier text at odds with this section (e.g. no supporting services are included in Tables 2.2.). The authors should decide on one framework and use this throughout to avoid this becoming too disorganised (I would suggest the four categorisations here).	lines 1189 to 1244 deleted

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
165	German IPBES Coordination office and national scientists (IPBES)	38	1231	38	1233	This is more of a standard viewpoint of valuing ecosystem services but is embedded in language of "instrumental values" rather than the more pluralistic approach taken earlier in the chapter.	lines 1189 to 1244 deleted
166	Patricia Balvanera (PB)	38	1231	38	1240	Placing Table 2.4 here is not necessary, but should have been discussed in introduction	lines 1189 to 1244 deleted
167	Patricia Balvanera (PB)	38	1234			Remove the word the	lines 1189 to 1244 deleted
168	Vincent-Akpu Ijeoma (VAI) (VAI)	38	1234	39	1256	Discussing valuation of invasive species looks out of place and no link with section 2.4 on line 1189	lines 1189 to 1244 deleted
169	Nakashima - ILK expert (N)	38	1237	38	1240	Pest regulation should be included here. Sense of place is something I have never seen as a service, surely that falls under Cultural/Heritage?	lines 1189 to 1244 deleted
170	Nakashima - ILK expert (N)	38	1241	39	1259	While this is useful (albeit derived almost entirely from one source) it is somewhat lacking in context (you have not introduced ecosystem disservices nor discussed the pressures on ecosystem services in detail yet) and only shows the ecosystem disservices of invasive plants. I would suggest including measures of the economic benefits of ecosystem services first and then putting in these disservices afterwards as their economic impacts often stem from curbing or removing other ecosystem services.	lines 1189 to 1244 deleted

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
171	Patricia Balvanera (PB)	38	1241			Remove the word from	lines 1189 to 1244 deleted
172	Nkue N. Daniel (NND)	38	1241	38	1249	Fig 2.5 It is an example among others, dating from 2006, may be it should be indicated that it is a case study	lines 1189 to 1244 deleted
173	Susan Ringrose (SR)	39	1257	40	1313	This section is very important yet more data would be needed to emphasize its relevance	To me it remains unclear what kind of data the reviewer actually means, e.g. adding more regional information? One could add a lot more data on each of the specific features mentioned already. Since I have difficulties to decide here, I would be grateful to receive some feedback by CLAs & Chairs, respectively, with regard to (i) the level of details as appropriate for the assessment, and (ii) the maximum length of the report
174	German IPBES Coordination office and national scientists (IPBES)	40	1277	42	1397	A very thorough review for the most part but it would benefit from a minor rewrite throughout to emphasise the other values of NTFP (nutritional, medicinal etc.). This is, mostly, already in there, it just needs a change in presentation to make it fit the framework at the beginning of the chapter.	Revised accordingly. I added two short paragraphs on the (i) nutritional and (ii) medicinal values of NTFPs into the section "Non-timber forest products as major provisioning ecosystem services in rural African communities".
175	Vincent-Akpu Ijeoma (VAI) (VAI)	40	1314	42	1377	This section is very relevant and quite informative	Thank you!

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
176	German IPBES Coordination office and national scientists (IPBES)	41	1342	41	1342	spacing of <i>Sclerocarya birrea</i> ,	I inserted a space accordingly
177	Nkue N. Daniel (NND)	41	1361	41	1361	Spelling of women	I corrected the typo
178	William Olupot (WO)	42	1398	43	1422	Again, I'm not sure what indicators have to do with values. This would be good in another chapter but if it is to stay it needs to be directly linked to e.g. the economic disservices of invasive species presented in lines 1241-1259	lines 1398 to 1422 moved to Section 2.3.6 by KH
179	Nakashima - ILK expert (N)	42	1398			Chapter 2.4.2.4 is not clear and therefore needs to be revised; i.e. Table 2.6 or following sentence "soil fertility appears to farmers as a physical reality ...".	lines 1398 to 1422 moved to Section 2.3.6 by KH
180	William Olupot (WO)	42	1398	43	1422	Interesting and relevant section and yet feels out of context. Can it be more explicitly linked to services such as the regulation of soil erosion?	lines 1398 to 1422 moved to Section 2.3.6 by KH

181	Nakashima - ILK expert (N)	42	1398	42	1398	<p>section 2.4.2.4. "uses of species indicators of soil fertility"</p> <p>ADD ref:</p> <p>- Halmy 2016 (Egypt): Native plants in desert regions play an important role in supporting sand fixation and increasing soil fertility "Panicum turgidum, for example, is one of the species that was found to fix sand and increase soil fertility. Local inhabitants in northern part of Sinai have mentioned that they prefer to grow some crops near the cushions of P. turgidum, because they have noticed that growing crops near these plants provides good yields... fungus associations help provide nutrients needed for the species and enhance the soil conditions in the vicinity of the plant." (<i>Marwa Waseem A. Halmy (2016). Traditional knowledge associated with desert ecosystems in Egypt. In Marie Roué, Alfred Oteng-Yeboah, Peris Kariuki and Yao Adou (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Africa: Contributions to an IPBES regional assessment. UNESCO: Paris.</i>)</p> <p>- Shemdoe 2016 (Tanzania): Tribes in Tanzania use ILK to determine soil fertility. "Farmers in these areas have indicated they use their knowledge to determine soil quality using a range of parameters including soil color and types of plants/weeds growing in a certain area. Using local names farmers provided some examples of plants such as mahata (<i>Tragus berteronianus</i>). The presence of these plants in a certain area has been reported as an indicator that the soil is suitable for growing maize. Similarly mphangalile (<i>Bidens lineoriloba</i>)</p>	The suggest literature has been used to strengthen inclusion of ILK into the chapter
-----	-------------------------------	----	------	----	------	---	--

						<p>was named as a plant that indicates that the soil is suitable for growing groundnuts. These indicators have been in use and are still in use in the Mpwapwa district especially in the lowland areas." <i>(Riziki Silas Shemdoo (2016). Indigenous and local knowledge for biodiversity and ecosystem services in Tanzania: the case of two selected communities. In Marie Roué, Alfred Oteng-Yeboah, Peris Kariuki and Yao Adou (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Africa: Contributions to an IPBES regional assessment. UNESCO: Paris.)</i></p> <p>- Suliema- Sulieman et al. 2012: (p237-238) "The reason for using wild plant species as indicators [[of agricultural land degradation]] is that farmers are knowledgeable about which wild plants indicate good or bad soil fertility (Wezel & Haigis, 2000; Olson et al., 2004). Table 3 showed the common grasses and herbs which appeared on the degraded agricultural land and used as indicators of land degradation."</p> <p>- Moussa & Yamba 2008 (Niger) [In French]: "Vegetation allows to recognize poor soils. Thus, presence of grasses like the kounkoumbara (<i>Jacquemontia ovalifolius</i>), the tsintya (<i>Schoenfeldia gracilis</i>) is a sign of soil poorness. However, a soil carrying a multitude of woody species and grass, among which the <i>Guiera senegalensis</i>, <i>Piliostigma reticulatum</i>, <i>Andropogon gayanus</i>, <i>Cenchrus biflorus</i>, is considered as fertile".</p>	
182	Abdelfattah Badr (AB)	43	1412	43	1412	There is no Table 3	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
183	Nakashima - ILK expert (N)	43	1423	43	1423	What is MIES?	Addressed
184	Tom Breeze (TB)	43	1448	44	1477	Relevant section but it is oddly integrated into the frameworks presented earlier	Section reworked to fit well within the chapter
185	Nkue N. Daniel (NND)	44	1441	44	1441	Should it be 'scare' or scarce	Addressed
186	German IPBES Coordination office and national scientists (IPBES)	45	1496	45	1524	Very relevant but not connected enough with the rest of the chapter	Section reworked to fit well within the chapter
187	Abdelfattah Badr (AB)	45	1513			A blank is needed between "needsshould".	Addressed
188	Majda Amina Aziza (MAA)	45	1514	45	1519	This phrase is policy-prescriptive.	The phrase is reworked to be policy relevant
189	Patricia Balvanera (PB)	45	1517	45	1517	May be one word is missing in this sentence "The is need to advocate for integrated need management which establishes access"	Addressed
190	Nkue N. Daniel (NND)	46	1525	54	2075	The list of references needs to be completed.	List completed

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
191	Tom Breeze (TB)	General				<p>ADD consideration of GENDER ISSUES and women's knowledge, which can be different and complementary to men's knowledge.</p> <p>Examples:</p> <ul style="list-style-type: none"> - Mburu and Kaguna 2016 (Kenya): ILK responsibilities for protection of the environment are different between age groups and gender. "gender-related institutions concerned with ecosystem protection include Kiburu and Rwamba. Kiburu is comprised of women who protected sacred sites from destruction. It is a very powerful institution and most of the cases it handled received strict compliance. Rwamba is comprised of men and was the highest human-driven environmental protection institution in the community. If an issue failed to be resolved at Kiburu, it would be taken up by Rwamba. If it failed there, then it was taken to the spirit realm through a powerful ritual." (<i>Gathara Mburu and Sabella Kaguna (2016). Community dialogue on ILK relevant for food and water protection in Tharaka, Kenya. In Marie Roué, Alfred Oteng-Yeboah, Peris Kariuki and Yao Adou (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Africa: Contributions to an IPBES regional assessment. UNESCO: Paris.</i>) - Ole Kaunga 2016 (Kenya): Maasai women use livestock to monitor the dominance and availability of certain plant species within the ecosystem. "The women in the Samburu and Laikipia Maasai 	The suggest literature has been used to strengthen inclusion of ILK into the chapter

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>communities have specialist skills and experiences in monitoring the quality of livestock dung and drops. For example, cow dung is used in making traditional houses.... When milking the livestock they also observe the quantity and colour of the milk. When pasture and water are readily available the milk is exceptionally plentiful and white or a normal milky colour, but during dry seasons the milk output per cow drops and the milk colour turns towards beige. The taste of the milk is used to tell the dominance and availability of certain plant species within the ecological areas currently being used by the livestock. The women use specific livestock to monitor all these aspects." <i>(Johnson M. Ole Kaunga (2016). The use of Indigenous traditional knowledge for ecological and bio-diverse resource management by the Laikipia Maasai and the Samburu. In Marie Roué, Alfred Oteng-Yeboah, Peris Kariuki and Yao Adou (eds.), Indigenous and local knowledge of biodiversity and ecosystems services in Africa: Contributions to an IPBES regional assessment. UNESCO: Paris).</i></p> <p>- Dalle et al. 2005: "The IEK [Indigenous environmental knowledge] of men and women pastoralists was comparable. Although, men were more knowledgeable for the forage value of woody plants, women were more knowledgeable for herbaceous species, demonstrating the complementarities of the IEK of both gender</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						<p>groups. Therefore, research and development activities need to consider both together.</p> <p>- Elias 2015: (p28) "It is now widely acknowledged that gender is "a critical variable in shaping resource access and control, interacting with class, caste, race, ethnicity to shape processes of ecological change" (Rocheleau et al., 1996: 4). Throughout the world, use, knowledge, access, preferences and management of natural resources are primarily organized along gender lines. Historically-rooted and contextspecific norms and belief systems prescribe 'appropriate' behaviour for men and women and a gendered division of labour that guides resource use (Leach, 1994; Rocheleau et al., 1996). Largely due to their differentiated roles and responsibilities in production and reproduction, women generally collect forest products for food, fuel, fodder, medicine, and small-scale trade, whereas men contribute to these but also dominate the collection of animal products (e.g. through hunting) and the extraction of structural fibre such as timber for construction or sale (Jacobson, 1992; Gausset et al., 2005; Sunderland et al., 2014)."</p> <p>- Pourchez 2014 (Reunion, Mauritius, Rodrigues) [in French]: (p35) "Responsibles of the household, their own and often, until the middle of the 20th century, the one of the master where they are employed, present at the birth and the development of the children, successively</p>	

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						midwives, nurses and healers, at the interface between the world of the masters and the world of the slaves, the women carry an important share of the traditional knowledge. Much of this knowledge - linked to the body, motherhood, children, the use of certain plants - were indeed often transmitted from woman to woman. Known plants could be abortive, or aimed to facilitate the birth, or used to treat child illnesses. This, Marie-Ange, 96 years old, from the Reunion, explains to me, about the plants and abortive properties: "Oh well, plants to make the period come, this, it was matter of women. A man would not have put his nose in it!"	
192	Nkue N. Daniel (NND)		70		72	Much of what is discussed here can not happen until westerners appreciate how decision making takes place in Africa - politics there is very different from the west so the process you are discussing needs to reflect on how buy-in can be achieved. You need to know what buttons to press and this varies widely across the continent	The phrase is rephrased to reflect that it is appropriate to all African except westerners.
193	Abdelfattah Badr (AB)		77			Not a new concept - ES valuation assessments have taken place in southern Africa for decades	Noted
194	Patricia Balvanera (PB)		111		115	Discussion on mapping ES but sadly no actual maps not even a pilot project - why say this if the products are not forthcoming? Needs amplification as to how regional inconsistencies in definitions may be resolved	Addressed

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
195	Vincent-Akpu Ijeoma (VAI) (VAI)		127		130	Many data sets are available - to a greater or lesser extent in most African countries - these data sets need to be sought internally often from the relevant government departments as in many countries (not all) web access is limited	Noted
196	Abdelfattah Badr (AB)		209		237	This section needs many more references as ways to measure various indicators over Africa are available in the literature. Need to establish the relevance and hence methods of quantification of indicators - could start with Boyd and Baizhof, 2007	References sourced
197	Jean C. Ganglo (JCG)		216			Using indicators relating to CO2 etc sources and sinks (see Midgley et al, 2012, Milne et al, 2016)	Changes made as suggested
198	Patricia Balvanera (PB)		255		279	Claryfy whether you are describing the provision and regulation of services and whether you are referring to water or crops? Needs a big picture approach as both climate change and man-made interventions can have huge impacts which are difficult to separate out. Not clear what you intend here? (e.g. Chipanshi and Ringrose 2001)	We are describing both provision and regulation services. Text has been modified to reflect this.
199	Susan Ringrose (SR)		311		331	The value of NTFP is huge across all parts of Africa and well published. Need to consider ramifications across the whole continent in terms of the different regions indicating exactly what the problems are in terms of continuity and sustainability.	Noted

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
200	Susan Ringrose (SR)		332			Diagrams confusing - 1. are these crop yields or NTFP yields 2. Need to include all African countries 3. Ethiopia is somewhat unique in this respect - more examples needed	Diagrams have been redesigned and deleted those irrelevant to the content of the chapter
201	Susan Ringrose (SR)		344		352	This is entirely self evident and adds nothing to the discussion	Noted
202	Susan Ringrose (SR)		369		377	References needed to establish the factual content of this section	Agree.
203	Patricia Balvanera (PB)		380		382	Explain the 'captures fish production' sentence	Addressed
204	Susan Ringrose (SR)		395		402	This is a very inaccurate generalisation as trends vary widely across Africa e.g. Cline 2007 Global Warming and Africa and IPCC scenarios. There is a lot of data on the web - why not use the academic literature to provide a more factual basis for your assertions?	Suggested references used.
205	Susan Ringrose (SR)		403		408	Yes but the lack of fisheries (or farming) commercial development is partly result of lack of substantial markets and lack of infrastructure	Information on fisheries added
206	Susan Ringrose (SR)		422		428	Note criticisms of AGRA especially wrt global market access (to detriment of local people) and use of GM products (e.g. Monsanto)	Noted
207	Susan Ringrose (SR)		429			There's no clear sense here as to how Africa's agriculture can be enhanced - a more detailed regional approach is imperative. Fisheries face similar problems. Indicate how the potential can be realised regionally at least.	Noted

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
208	Susan Ringrose (SR)		448		465	Examples could include Nile perch introduction(management!) into Lake Victoria in 1980s - leaving fishermen and others currently with more problems Extreme care (and research) is needed before any intervention takes place	examples included
209	Susan Ringrose (SR)		474			Indicate how a warehousing process benefits 37 000 Ethiopians - must be reference somewhere?	Reference to warehousing in Ethiopia added
210	Susan Ringrose (SR)		522		523	External tariff barriers are substantial and often mitigated within regional entities such as ECOWAS or SADC. Kindly explore these issues in more depth to provide a better understand of some of the real problems facing 'African' development	Thanks, we will
211	Susan Ringrose (SR)		531		537	Economically Africa's greatest assets include its mines (not agriculture or fisheries) - but selling off mining rights to foreign investors (who are often not very interested in environmental impacts) may well cause problems. Important to use tangible examples (with references) rather than developing comments not based on literature sources or even the web.	Socio-economic benefits f BES included
212	Susan Ringrose (SR)		559		591	Overgeneralisations again e.g. charcoal is NOT used in every African city.	Noted
213	Susan Ringrose (SR)		593		594	Indicate how (in what way) freshwater ecosystems are undergoing degradation - examples needed	Examples provided
214	Susan Ringrose (SR)		601		606	This is incorrect. Seasonal aridity is normal over most of semi-arid Africa and most of the vegetation is adapted (e.g. Ringrose et al., 1991)	Changes made as suggested

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
215	Susan Ringrose (SR)		608		630	Needs references and examples of extremes	Examples of extreme weather events as drivers of biodiversity loss are given in chapter 4
216	Susan Ringrose (SR)		641			Need a clear definition and examples of 'water degradation' . Mention should be made of issues around erosion and salinization	definition provided.
217	Susan Ringrose (SR)		645			Explain depletion - do you mean 'irrigation' ????	We meant irrigation
218	Nakashima - ILK expert (N)		784			Incorrect use of vernacular - try indigenous, or informal or plebian	Please replace vernacular with indigenous.
219	Tom Breeze (TB)		814			Sentence needs to be re-written	Suggest to rewrite the sentence: 'The explanation for this law is that if one consumes both, the milk will dry up from the cow or goat.'
220	Nakashima - ILK expert (N)		862			All botanical plant names need to be italicised	Please italicise <i>Turraea stuhlmanii</i> , <i>Grewia bicolor</i> , <i>Erythrina abyssinica</i> , and <i>Ehretia amoena</i> (line 862.)
221	Susan Ringrose (SR)		876			Needs a closing summarizing sentence.	Unclear where this summarizing sentence should be.
222	Nakashima - ILK expert (N)		946		948	Sentence needs to be re-written	Rewrite sentence to: 'Moreover, these knowledge systems are well documented

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
223	Tom Breeze (TB)		974		975	Would be useful to expand on CBNRM - need examples. There are many success stories and many failures -check Regional CBNRM project (2005) in southern Africa.	We would have expanded on this however due to the limitations of word count for each section we decided against this. We could revisit this in future iteration of the chapter.
224	Majda Amina Aziza (MAA)		1057			Be specific as to what vegetation -- Trees, shrubs or herbaceous??	Unclear relevance of this specificity
225	Susan Ringrose (SR)		1070		1077	Indicate how much forest is protected as 'sacred'. A map showing protected areas (PAs) over Africa would be very useful - there are numerous UN based sources for this (check internet)	This is a good suggestion and we will have to source a map that is well documented and available publically, and request permission to use it.

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
226	Jean C. Ganglo (JCG)		1078		1104	Spiritual significance of water is much wider than text suggests - much more work needed rather than just the two west African examples given.	This is a valuable statement and could be addressed with further examples, however we are constrained by limitation of word count for each section. We could expand on included additional examples. We include a sentence to insert at 1081 before UNESCO's list... Spiritual significance of water is wide in Africa. In the context of this report UNESCO's valued list of intangible cultural heritage and register of safeguarding practices contains critical examples with direct links to the critical role of water and links between spirituality, cultural identity, and continuity of traditional ecological knowledge that aids the conservation of water in Africa
227	Susan Ringrose (SR)		1126			Include tourism here	Tourism is included in line 1126 already.
228	Susan Ringrose (SR)		1133		1136	Most African governments respect the spiritual foci of their people - it is mainly outside influences that ignore these issues	This is an interesting point.
229	Nakashima - ILK expert (N)		1152			The diversity is key here - its an asset not a barrier. Local needs must be taken into consideration	Agree.

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
230	Susan Ringrose (SR)		1234		1254	Impact of invasive species needs much more attention since you are considering problems around ecosystem services - examples and references needed	To me it is not clear to what point exactly this comment refers. Assuming that it addresses the issue of "NTPF consumption in urban settings", I added few information. However, empirical data on this topic is largely missing.
231	Gianluca Ragusa (GR)		1367		1377	Examples and references needed on NTFPs - e.g. in Madagascar	Examples provided
232	Vincent-Akpu Ijeoma (VAI) (VAI)		1487 onwards			Chapter needs tangible conclusions	Conclusion to be developed by CLAs
233	Majda Amina Aziza (MAA)		309 onwards			May be more productive to assist countries to implement the Millenium Assessment goals rather than continually to repeat the same material which the various Ministries have heard several times before. Need to indicate whether CO2 is a source or sink in your assessments	CO2 is indicated as both source and sink
234	Tom Breeze (TB)		915 onwards			Reasonable overview but still looking for pros and cons of PAs protected by governments - and differing levels of protection given both within and between countries	That was not the purpose of this section to evaluate pros and cons of PA by government, but to set out the MIES in relation to spirituality within the context of biodiversity.
235	Patricia Balvanera (PB)		Fig 2.5			Figure very unclear. Meaning of %s?	Figure deleted

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
236	Vincent-Akpu Ijeoma (VAI) (VAI)						I actually very much like the idea to integrate our section into existing sections of the chapter. Particular in the case of NTFPs this makes perfect sense as there is a previous section on NTFPs as food-providing ecosystem service, which is section 2.2.2.1 on "Forest products and food security" (p. 11, lines 303-352). Thus, I integrated my sections on NTFPs into this section. However, I didn't alter any of the text of the existing 2.2.2.1 not to interfere with the ongoing revision.
237	Nakashima - ILK expert (N)					Generally the authors are off to a good start but a few persistent issues have popped up: Foremost, a lot of the terminology is different between sections with the earlier parts of the chapter taking a more holistic approach to benefits and their values than the later parts. Some discussion between the authors should be focused on making the chapter consistent in this regard. Secondly, there is a lack of economic evidence presented here; there's a lot of literature on various services out there that should be considered at some point just to illustrate the extent and variation in the benefits of these services to local economies (although you have definitely taken the right approach by prominently including non-economic values as	read to understand

Comment #	Reviewer Name	From Page (start)	From Line (start)	To Page (end)	To Line (end)	Comment	How to Address
						well). Thirdly, flagging up data gaps and uncertainties that affect measurements and estimates of value (in any form) is also very useful but because of the limited citations it is very hard to tell what databases have been looked at and which have not. Fourth, many sections have very few or mostly older citations. If the only information available is old then this needs to be flagged up as a knowledge gap (lack of new data using current scientific techniques) but there should not be any paragraphs without some referenced materials to support them (ILK may be an exception). Perhaps most critical however is the authors focus on provisioning services. While I appreciate that these are especially relevant to this particular assessment, the point of the assessment is to review all ecosystem services, including regulating and cultural services and these should be included throughout. I appreciate that the literature on many of these services relevant to Africa is limited but that in itself is worth flagging up, especially as the methods required to measure these services are already available in other countries.	
238	Patricia Balvanera (PB)					As « (source?)»I propose Authors like Engelman (2011), Shah (2001) and Stallman	references added
239	Tom Breeze (TB)					Good treatment of issues. No recommendations for revision.	Thank you