Reviewer ID	Ch	Fr Pg (start)	Fr Line (start)	To Pg (end)	To Line (end)	Comment	RESPONSE
Andony Melathopoulos	4	45	1093	45	1094	Is there a reference for the claim that functioning pollination markets only exist in the "west"? I know, for example, that there are well developed pollination markets in South America and Japan, and I suspect this is only the time of the iceburg. The only analysis of these markets that I am aware of comes from the Burgett dataset in the Pacific Northwest, so its unclear on what basis one could generalize on the efficiency of these markets. Moreover I am unaware of any research on the global status of pollination markets - although such work would certainly be welcome. I would suggest modifying the sentence unless the authors can back the claim with a reference	Agreed
Andony Melathopoulos	4	46	1130	46	1149	Neumayer (2007) has an important critique of Nordhaus (and Stern, to whom Nordhaus is responding) by pointing out that the focus on discounting rates misses the whole issue that future degradation may result in the perminant loss of natural capital. As Nordhaus points out, even in Stern's worst scenario for climate change, human welfare still expands (but does not expand optimally). Neumayer points out that what Nordhaus and Stern fail to notice is that discounting (no matter what the rate) does not register perminant loss. With respect to pollinators, this may suggest that lowering the discount rate to reflect the importance of pollinator conservation for future generations may miss the point if it leads to high levels of extinction. According to Neumayer, in such cases it may be better to argue on the grounds of preserving natural capital before irreversable loss takes place (ie strong sustainability). This arguement was adapted to the specific case of pollination by Olschewski and Klein (2011) ||| Neumayer, E., 2007. A missed opportunity: The Stern Review on climate change fails to tackle the issue of non-substitutable loss of natural capital. Global Environmental Change 17, 297-301. | Olschewski, R., Klein, A., 2011. Ecosystem services between sustainability and efficiency. Sustainability: Science, Practice & Policy 7, 69.	A reference will be done on this issue

Andony Melathopoulos	4	46	1150	47	1169	I am glad the report foreground the problem of datasets. But at some point there should be an assessment of the most pressing data needs. I certainly think there is a tremendous problem associated with some of the simplest problems (e.g., what crops managed pollinators are allocated to on a national scale). A statement (a table would be even better) outlining the most problematic type of datasets would be helpful.	Agreed. We have added a table to the chapter.
Andony Melathopoulos	4	46	1170	47	1180	I am very sympathetic to the point that valuations may not be meaninful without accounting for the variation in pollinator visitation on crops across space and time. Like the report, I also think part of the solution is long-term monitoring. But it would be helpful if the report could provide insight into how to prioritize such monitoring. Clearly, a government could take up "monitoring" but without a clear focus, resources could be squandered. I'd like to see the authors expand (in 2-3 sentences) what issues need to be considered in our approach to monitoring. To make my point clear, let me provide an example. It strikes me that crops that currently have a massive influence on valuations (e.g., oilseeds) that also lack pollination markets (i.e. where pollinator visitation is not even coarsely regulated as an input by farmers) may not be impacted by pollinator declines because pollinator populations do not exist. Perhaps, in such a case, a pilot study should be conducted to see how dependent these crops are on pollinators *in practice* . If pollinators largely do not play a role in current yield (and I suspect for soybeans they are not) then a monitoring program could excludes these crops in order to focus resources elsewhere. My point here is not that the report adopt my suggestion, but rather that it advance some thoughts on the priorities for monitoring might be set.	It is not the purpose of this assessment to give recommendations to governments. This would be specially problematic In the specific case of what crop types should be prioritized for investigation. For example, in the case of oilseeds, someone can claim that dependency is considered low or pollinator density is low because studies are lacking. Thus, we decided to draw attention the impacts of understudied crop types, particuarly in Section 5.
Andony Melathopoulos	4	49	1233	49	1234	It is very unclear to the reader what these scenarios mean in the actual context of pollination services, since it reads in the text as thought they parallel those used elsewhere (e.g., IPCC). The reader should have some idea of the pollinator-specific dimensions of BAMBU mean and the key pollinator-specific parameters being adjusted among the scenarios be explained (e.g., farm prices for pollinator-dependent crops and the effect on pollinator dependency under scenarios of pollinator decline - Gallai 2009 adjusting D relative to pollinator densities).	Rewrite

Andony Melathopoulos	4	50	1279	51	1318	I thought this section was well written and its summary in Table 6 is excellent.	Thanks!
Andony Melathopoulos	4	54	1429	54	1429	I know we were instructed not to get caught up on copy-editing issues, but honey bee in this section is inconsistent with the previous section and spelled incorrectly (i.e., honeybee).	This will be verified.

Andony Melathopoulos	4	56	1455	56	1497	I had not previously encountered Portfolio Methods, but I read the non-technical parts of the Cong et al. paper. I think this is an interesting approach and I certainly would be excited to see a pollinator application. One issue that should be discussed more is the idea that portfolios (or risks for that matter) for wild and managed pollinators would somehow be similar. The managed pollinator density around a field is largely independent of the capacity of the crop and surrounding landscape to support those populations, since colonies frequently are moved and use resources across several different landscapes. Morover managed pollinators depend on external inputs of sucrose and plant proteins (particularly for honey bee and commercial honey bees, not for leafcutter bees). The *risks* for these managed species, in other words, may have less of an immediate biophysical dimension as a social one (e.g., as Rucker at all point out, prices for honey bee rentals in the US seem less about supply shortages and more about international honey prices and beekeeper expenses, particuly fuel prices). The potential discoupling of portfolios between managed and wild pollinator species should be made clearer in the text. I have included some references below should you wish to raise this issue. But there is another issue, whereby managed species might, in themselves, constitute a *risk factor* for wild populations. Some of this is obvious and well-documented (e.g., pathogen spill over, competion over resources, etc). But another feature is that the welfare benefits of wild pollinators are often predicated on managed pollinator populations *declining* . In other words, expansion or contraction of managed pollinator populations offsets or intensifies the risk associated with declining pollinator populations. Perhaps some of these concerns are covered off in the text and are implicit in the methodology, but it was not clear to me how these concerns were addressed in the 'weakness' section. LLL Kendall	The reviewer makes a number of useful points here that have been incorporated. However, there does seem to be some misunderstanding here - the risk is not to the pollinator but to the beneficiary - ie the producer. This is the point in the cited paper by Cong et al as well; the optimal portfolio is the one that produces the greatest benefits at the lowest risk to the producer. In the case of pollinators risks are a property of populations which can fluctuate across years and need complex modelling to capture (this is a weakness, very specifically for modelling pollination services and has been clarified as such). The example of managed pollinators being a means of reducing risk to wild pollinators is now in the

Andony Melathopoulos	4	57	1499	58	1536	I appreciate the attempt to estimate the vulnerability of different regions to pollinator decline and that such an approach needs to integrate different determinants. But reading over the methodology this approach seemed very abstract and subjective, particularly in terms of the rankings. I cannot envision how the quantitative variation (and by extension, estimates of uncertainty) could be drawn into this framework. Moreover, it seemed as though the citations were all theoretical rather than worked out examples (e.g., as with Cong et al. and soil-mediated services in the Portfolio Methods). I suspect much of my confusion may be productively addressed with a brief example of how this methodology has been previous applied or how it might incorporate the potentially large uncertainty associated with the quantitative dimensions of pollinator yield benefits (e.g., variation in pollinator visitation rate within a crop, variation the production response within a crop to a given visitation rate, etc.)	This paragraph has been updated to further clarify these issues, however it should be noted that the ranking is inherantly subjective to an extent as the capacity to susbstitute capital is rarely known or understood.
Andony Melathopoulos	4	59	1559	59	1572	I thought the weakness section was well articulated.	Ok
Andony Melathopoulos	4	61	1609	62	1633	The Liss et al. review is very good. But reading this section one might get the impression that, in the valuation exercise, pollination services are measured in a myriad of different ways. This is not the case. While there has been a number of different approaches (e.g., replacement costs, contingent valuation, etc) the predominant approach relies on one measurement (dependency) and one dataset (Klien et al. 2007). This fact should be highlighted in this section.	Although the reviewer is correct with regards dependence ratios there are a large number of studies, particuarly using the Yield analysis method that do measure pollination services in ifferent ways

Andony Melathopoulos	4	62	1636	63	1639	There should be some discussion about the Klein et al. dataset. While I completely agree that we need to consider interacting agronomic factors that affect producer profits, I don't think Klein et al. reflect the *actual* "initial/fruit pod set" response to pollinator visitation. Valuations since Klein et al. seem to overlook one of the key insights of that study, namely "we found that inadequate information is available on the pollination biology and pollinator requirements of many crops, especially when considering differences among modern varieties and the contribution to pollination services by different pollinator species" (p 310). The authors, consequently, call for more data from crops collected across multiple years and different growing regions. But as Pauly (1996) long ago noted for fisheries data, the "preliminary" character of preliminary data is readily forgotten. Consequently, there has been little effort to revise these dependency values. The vast majority of valuations and forecasts since 2008 have relied on this dataset. We seem to proliferate new methodologies for valuation but have a real inability to reflect on the empirical grounds from which we draw our inferences. This problem has been highlighted elsewhere (Bauer and Sue Wing 2014, Melathopoulos et al. 2015 and Hanley et al. 2015). Somewhere in the report this problem needs to be identified. || Pauly, D., 1996. One hundred million tonnes of fish, and fisheries research. Fisheries Research 25, 25-28.	The Klein et al dataset is discussed in some depth in section 2 under the dependence ratio methodology. However it is not the purpose of the exercise to dlve very deep into a single paper and as such we do not feel it is necessary to expand on it to a great extent in this section
Andony Melathopoulos	4	63	1639	63	1658	It is unclear why the effect of 'cultivar' is accord a special status in this section and be seperated from "5.2.3.1 Crop management and inputs". I do not understand how this section isn't just dealing with one of the "determinants of the benefit(s) of pollination service" (1660)	The management section will be rewored to make It clear that it is only concerning the addition of inputsthat affect crop
Andony Melathopoulos	4	64	1685	64	1687	Glad to see the Bennett el al. reference. This is an excellent point.	Thanks!
Andony Melathopoulos	4	66	1732	66	1738	But importantly Garibaldi et al. 2013 suggest that such interactions between honey bees and other species are not typical (i.e., the lack of an interaction between honey bees x non-*Apis* species in models predicting fruit set from visitation rates). This finding should be worked into this section	We have updated this paragraph accordingly

Andony Melathopoulos	4	66	1750	66	1755	Similar studies include Javorek et al. on blueberries and Artz and Nault on pumpkin. ||| Artz, D.R., Nault, B.A., 2011. Performance of Apis mellifera, Bombus impatiens, and Peponapis pruinosa (Hymenoptera: Apidae) as pollinators of pumpkin. Journal of economic entomology 104, 1153-1161. | Javorek, S., Mackenzie, K., Vander Kloet, S., 2002. Comparative pollination effectiveness among bees (Hymenoptera: Apoidea) on lowbush blueberry (Ericaceae: Vaccinium angustifolium). Annals of the Entomological Society of America 95, 345-351.	These examples have been added.
Andony Melathopoulos	4	67	1778	68	1787	I think the scope of replacement goes far beyond what is described in this section and the author's ought to go beyond mechanical pollination. Take the example of a large crop like oilseed rape (which a potentially large influence on valuation at national and global scales). In North America we have seen the shift away from self-incompatable B. rapa to self-compatable B. napus in a span of 10 years beginning in the 1990s. B. rapa is barely grown at this point. Moreover, pollinator yield increases have become more complex in this crop with the widespread adoption of hybrid varieties beginning in the 2000s, which are heavily stocked with multiple species of managed pollinators. Yet dependency seems to remain static in all the valuations. Moreover, there is conflicting evidence that the newer hybrid varieties are less pollinator dependent (Marini et al. 2015 speculates this is because hybrids produce more flowers, allowing them to compensate for low pollinator visitations, but Hudewenz et al. 2013 hybrids were more sensitive) This example shows the complex processes through which "artificial" substitutes for pollination can be generated.	For details of breeding pollinator independent varieties, see Chapter 6 where they are discussed as a mitigation strategy. There have not been many studies that have examined the dependence of oilseed rape until the last 5 years so making it difficult to say how reflective old dependence ratios are. While the reviewer is correct that the shortcomings with the current depenence ratios are important to highlight
Barbara Gemmill-Herren	4	5	20	5	28	Yet in many ecosystem valuation systems, inputs such as pollination, or natural pest control are not valued, because they are considered intermediate services that ultimately are valued through the final production. I don't agree with this, I think such services are a public good that has an intrinsic value, built up over years of investment- I hope your chapter may address this oversight/concept	The focus of this chapter necessarily constrains us to focus mostly on the utilitarian value of service. The chapter does however recognise, in several sections, that economic
Barbara Gemmill-Herren	4	8	102	8	105	A key point- completely in line with the point above; can we assign a value to assemblages, networks, diversity of pollinators, recognising that these need to be allowed to build over time?	We agree and reworded the text accordingly.

Barbara Gemmill-Herren	4	9	120	9	120	what is a wide scientific literature?	We removed the term "wide"
Barbara Gemmill-Herren	4	9	124	9	131	I understand the need to outline these different values, but it is not written in a way that is very understandable or approachable by non specialists; could it be rewriteent, with examples that explain what each of these mean?	We agree, these are explained in greater detail in Sections 1 and 2. There has also been a slight
Barbara Gemmill-Herren	4	9	142	9	144	somewhat odd, as this describes the chapter we are now reading? Would you not rather say "This chapter"?	OK
Barbara Gemmill-Herren	4	10	150	10	154	see comments above but I think the whole approach to valuing an intermediate service needs a lot of consideration…and of course it is not simply "the reproduction of certain plants" at stake, it is the production of pollinator-dependent crops for human food and nutrition security, along with the reproduction of certain plants.	The reviewer is right and the text has been modified
Barbara Gemmill-Herren	4	18	367	18	367	why not include club goods in this table, for the sake of completeness?- is there no relevant example in relation to pollination?	There is no relevant example
Barbara Gemmill-Herren	4	19	382	19	400	This would seem so much less like text from an economics textbook if each point was linked to an example from pollinaiton. Surely there have been cba and a specific instance of CEA that could be described (not just hypothetical).	One of the major gaps in the literaure is that there is little evidnece of this being the case - to the authours knowledge there are only a
Barbara Gemmill-Herren	4		1051		1051	Table 4- not clear what the compatibility column refers to	The legend was changed to clarify the compatibility column.
Canadian Government	4	Titles	0			If there is an opportunity to revise the chapter titles, it might be helpful to readers if the titles for chapters 4 and 5 were structured/worded very similarly, indicating that one is economic valuation and one is sociocultural valuation.	The differenciation between chapter 4 and 5 will be explained into chapter 1 (introduction). Economic value is
Chinese government	4	9	125			"Daily et al. 1997" should be "Daily et al., 1997".	OK
Chinese government	4	11	178			Caption of Figure 1 should be "Total value of pollinators and pollination", delete " economic" is better.	I do not agree since many references of this classification maitain the term "Economic" and it

Chinese government	4	11	182	Figure 1		"Consuptive" should be "Consumptive";"geenrations" should be "generations".	These spelling errors have bene corrected
Chinese government	4	12	187			"in both monetary and non-monetary terms" should be "in both monetary and non-monetary forms" is better.	The choice of "term" is more consistent with the language employed in the literature and (indirectly)
Chinese government	4	21	450			"Klein et al, 2007" should be "Klein et al., 2007".	Done
Chinese government	4	33	847			"Breeze et al, 2015" should be "Breeze et al., 2015".	Done
Chinese government	4	33	855			"Henscher et al, 2010" should be "Henscher et al., 2010".	Done
Chinese government	4	33	859			"e.g. Spash et al, 2009" should be "e.g. Spash et al., 2009".	Done
Chinese government	4	46	1145			"Nordhaus 2007" should be "Nordhaus, 2007".	Done
Chinese government	4	46	1149			"Weitzman 1993" should be "Weitzman,1993".	Done
Chinese government	4	48	1207			"Garry et al. 2003" should be "Garry et al., 2003".	Done
Chinese government	4	48	1216	48	1218	The references' form should be corrected.	OK
Chinese government	4	50	1281			"MEA 2003" should be "MEA, 2003".	Done
Chinese government	4	63	1649			"e.g. Garratt et al. 2014" should be "e.g. Garratt et al., 2014".	will be done
Chinese government	4	64	1698			"Bennet et al. 2009" should be "Bennet et al., 2009".	Corrected
Chinese government	4	65	1707			"Lundin et al. 2013 should be "Lundin et al., 2013".	Corrected
Chinese government	4	65	1711, 1721,1722			The references' form should be corrected.	Corrected
Chinese government	4	66	1747			"Greenleaf and Kremen 2006" should be "Greenleaf and Kremen ,2006".	Corrected

Chinese government	4	67	1760, 1765			The references' form should be corrected.	Corrected
Chinese government	4	68	1809			"Klatt et al, 2014" should be "Klatt et al., 2014".	Corrected
Chinese government	4	70	1843			"Diaz et al. 2015" should be "Diaz et al., 2015".	Corrected
Christopher Golden	4	37	959	38	987	It strikes me that an economist wrote this section and fails to understand the true value of nutrition and healthy diets to human wellbeing. It is stated in L963 that deficiencies in nutrition lead to "reduced labour activity and increased healthcare costs." These are important... but what about increasing rates of maternal and perinatal mortality? What about increasing risk of infectious disease and other forms of morbidity? I think the true importance of this section is minimized by a focus on things that can be monetized.	We agree and performed changes in accordance to the reviewer suggestion
Christopher Golden	4	37	959	38	987	In bringing up the Ellis article, I would take the opportunity to differentiate between food security and nutritional security. A country could lose its pollinators and still maintain nutritional security through imports and other forms of trade. Or, it could receive all of its nutrition from non-pollinator-dependent crops. The important nuance in that article is that a country must have a high dependency on pollinatory-dependent crops AND be on the verge of nutritional insecurity in order to feel the effects of pollinator declines.	We agree and performed changes in accordance to the reviewer suggestion

Christopher Golden	4	37	959	38	987	Cite "Impact of Animal Pollinator Declines on Human Nutrition and Global Health" by Matthew R. Smith, Gitanjali M. Singh, Dariush Mozaffarian, and Samuel S. Myers (to be published in the Lancet this month). Main findings are these: Assuming complete removal of pollinators, we estimated that 71M (95% uncertainty interval: 41–262M) people in developing countries could become newly deficient in vitamin A, and an additional 2.2B (1.2–2.5B) already consuming below the EAR would see their vitamin A supplies decline further. Corresponding estimates for folate were 173M (134–225M) and 1.23B (1.12–1.33B). A decline in pollinator services could reduce global fruit supplies by 22.9% (19.5–26.1%), vegetables by 16.3% (15.1–17.7%), and nuts & seeds by 22.1% (17.7–26.4%), with significant heterogeneity by nation. In sum, these dietary changes were estimated to increase global deaths from noncommunicable and malnutrition-related diseases by 1.42M (1.38–1.48M) and disability-adjusted life-years (DALYs) by 27.0M (25.8–29.1M), equaling a 1.1% increase in total DALYs annually. Under a scenario of 50% loss of pollination, deaths and DALYs were roughly cut by half: 0.7M and 13.2M, respectively.	We agree and performed changes in accordance to the reviewer suggestion
Christopher Golden	4	37	967			Define "issues"	Text has been rewritten
Dave Abson	4	1	0	41		General comments: The chapter would benefit significantly from having more economists working on it. There are a number of serious misunderstandings/misinterpretations of some, quite basic, economic principles scattered throughout the chapter (see below for details). In the same way that I would be dubious if economists (even those working on pollination) had written the ecology chapters of this report I am deeply concerned that this chapter seems to have been written primarily by ecologists. I regret to say that I do not believe that the chapter should be published without major revisions, ideally involving experts on ecosystem service valuation theory and methods. As a secondary, but still important concern the structure and flow of the arguments is often quite fragmented, jumping from one idea to the next with little narrative flow to guide the reader between them and no clear structure for the chapter overall.	The reviewer is correct that there are errors in application of terminology within the chapter that should have been corrected in previous drafts. An extensive review process has been conducted by the authours, co-chairs and two additional reviewers with a background in economics in response to this comment in particular:

Dave Abson	4	5	30	5	32	This statement does not really make any sense. Economic values does not "do" anything. It is something humans ascribe to objects and processes. By limited do you mean scarce (this would be the standard terminology)? Moreover, what do you mean by "quantifies...the distribution"? Economic valuation does not tell you much, if anything at all, about distribution	That sentence was rephrased to improve clarity. For example, we changed “limited” with “scarce”. Our view on values follow the IPBES
Dave Abson	4	6	39	6	39	"when benefits relate to existing markets" this should be "goods or services traded in economic markets"	Changed as suggested by the reviewer
Dave Abson	4	6	40	6	40	this line is misleading, for example, hedonic pricing is very much a monetary method, but it does not related benefits "traded directly on markets". Similarly other revealed preference monetary valuations such as travel costs are not related to goods that are directly traded.	We are not sure what the reviewer is referring to here; the sentence in question states that these are non-market values not
Dave Abson	4	6	43	6	44	This is not a good explanation of why economists value at the margin. Marginal valuation matters because it is at the margin where decisions are made.	Rephrased as suggested.
Dave Abson	4	6	51	6	55	there really should be citations here or some explanation regarding how these figures were reached. Especially given that it is noted in the next sentence that "values are highly dependent upon the methods used".	We cannot put citations in the executive summery. The evidnece within the chapter is fully referenced
Dave Abson	4	6	56	6	59	How are "proportional yield" and "general equilibrium models" valuation methods (my understanding is that they are biophysical measures to which economic valuation can be applied)? Avoided costs and replacement costs are not the same thing.	These terms were used in the reviewed version of Section 2, however due to a number of revisions suggested by reviewers and the authours, "proportional yeild"
Dave Abson	4	6	65	6	68	The definition of social capital is very odd, I have never seen it defined in these terms before. How are schools a form of social capital? More problematic natural capital (a stock) is conflated with ecosystems services (flows) that flow from (or are based on the liquidation of) that natural capital stock in conjunction with other capital stocks. This is just wrong.	We reworded those sentences to clarify the concepts.
Dave Abson	4	6	68	7	69	I do not believe that this statement can be justified. Does increased wealth automatically lead to "enhances [in] development and sustainable rural livelihoods? The evidence would suggest not.	We agree and reworded the text to clarify the concepts.

Dave Abson	4	7	69	7	72	I really do not understand what is being suggested here. How would you use this capitals approach to value changes in pollinators? I just cannot see any practical or meaningful way of doing this. For example, how do you assess the affect of pollinator decline on social capital? Do you assume that there is complete substitutability between different capital stocks? what commensurable units would be used to measure (for example) social and financial capital?	We added text to clarify what we mean. More detail can be found in section 2.
Dave Abson	4	7	79	7	83	I think it is an over exaggeration to say that "the benefits of pollination services are broadly understood". For example, we do not have a good handle on the marginal value in a change in pollinators and changes in pollination, or in turn what that means for human well-being. What do you mean by "market databases"? It is a very odd phrase.	Clarified as suggested.
Dave Abson	4	7	87	7	100	Care needed when using terms like "larger scale" these terms can be interpreted very differently in different disciplines. Why mention CBA here and not in the section discussing valuation methods?	We agree. CBA is mentioned as an example to clarify concepts related to scale.
Dave Abson	4	7	92	7	95	Odd definitions of marco and meso economics. Moreover, are these really "analysis frameworks"?	We removed the definitions because there is no space to proper
Dave Abson	4	7	98	7	100	The justification for considering temporal scale is very weak. You do not need two time periods for marginal analysis, it is perfectly possible to substitute space for time to evaluate changes in pollinators. Temporal scale matters because ascribed values are endogenous to changes in the number of pollinators and other system properties. Therefore static values provide only limited, and perhaps misleading information for decision makers	We agree and reworded the text accordingly.
Dave Abson	4	8	102	8	104	what are these methods? I cannot think of any beyond insurance value and that has serious conceptual/methodological problems	We removed the word “suitable” before “methods”. More detail is
Dave Abson	4	8	106	8	108	What do you mean by "joint use"? How does valuation tell you anything about sustainability?	The text has been rephrased to improve clarity.
Dave Abson	4	8	108	8	110	Are you seriously suggesting that risk analyses (vague as that term is) can be used in ecolabeling?	This was not the intention of the text which has now been removed.
Dave Abson	4	9	120	9	122	Argument by assertion. Many people reject the usefulness of economic valuation of ecosystem services. If you want to make this point you need to provide a coherent argument as to why this is the case.	We removed “(and must)” and extended the sentence to 1) reflect that this is not always necessary/appropriate (as

Dave Abson	4	9	129	9	133	how do you "interact with the benefits"? You either receive a benefit or you do not, you don't interact with it. Moreover, I think there is a strong case to be made that crop pollination is an intermediate (i.e. indirect benefit) service not a direct one. Awkward phrase "non-consumptive aims"	sentence rephrase: "… when users directly benefit of pollination services.."
Dave Abson	4	9	150	9	152	This is correct but directly contradicts what is written in line 131 and figure 1	We do not agree with the reviewer: pollination as an intermediate service is still
Dave Abson	4	9	152	9	154	Similar to what? This is not mentioned. "form" should be "from"	The word "similar" has been removed because the example in question
Dave Abson	4	9	155	9	156	Awkward phrasing	Rephrased as: "The rationale behind economic valuation and the specificities of pollinators for which valuation is confronted with is
Dave Abson	4	12	186	12	188	but hedonic pricing could be used to value 'aesthetic service' and this basically a market method.	We are not sure where the reviewers comment fits into the diagram, which does not discuss methods. Hedonic pricing is certainly possible for e.g.
Dave Abson	4	12	188	12	191	if the value for maintaining pollinators is "production and profitability" in the future, how is this a non-monetary value?	We rephrased the text to improve clarity
Dave Abson	4	12	198	12	203	Very unclear discussion given that monetary valuation provides an exchange valuation and therefore a theoretical price of a given service. Both are prices, just one is theoretical and the other that currently expressed by the market	Following this an other comments the use of these terms was extensively reviewed throughout to
Dave Abson	4	12	214	12	217	Poorly expressed. Valuation is a way of eliciting existing values ascribed to objects or services, it does not create those values (well you could argue that deliberative valuations does to some extent).	We rephrased the text to improve clarity
Dave Abson	4	13	226	13	226	How do "values share uncertainty"?	We rephrased the text to improve clarity
Dave Abson	4	13	238	14	256	I find this section problematic because it has so many unexplored normative assumptions in it (for example, that conservation is inherently good) and nowhere is the normative component of the valuation to policy nexus seriously explored.	We rephrased the text to improve clarity

Dave Abson	4	14	259	14	260	I am pretty dubious about the latter of these values, in part because it seems to assume that, for example, in a crop that is 100% dependent on pollinators then pollinators are responsible for the entire value of the crop. Does this mean the labour (and all other factors of production)used to produce those crops are of zero value (logically you could make the same argument for removal of any factor of production and make all other factors of production worth zero -pollination included)? This is precisely the reason such values are meaningless. The next few lines point out the need for marginal analysis, why then present such aggregate global values, what do they really tell us about the world?	We agree. Across the chapter we now included and improved several tables comparing how values change because of different methods and assumptions. In particular Section 7 extends this discussion substantially using a wide number of case studies
Dave Abson	4	15	287	15	289	I don't think valuation tells you about scarcity, rather scarcity inform exchange values.	Well, we tried to clarify according to the mainstream scientific
Dave Abson	4	15	292	15	294	"being too simplistic and causing a loss of information" are only two of the many critiques regarding the application of exchange values to aspects of nature, and probably not the most important ones.	This passages is general and does not refer to the valuation of nature. Anyhow this comments would apply to the valuation of nature as well
Dave Abson	4	15	297	15	298	I have no idea what is meant by "offer information on scarcity issues"? Or why scarcity would not be an issue for understanding the " actual functioning of human societies in their relation to ecosystems.	Some small changes have been made accordingly
Dave Abson	4	16	300	16	300	What tensions? And what is meant by "intensity" in this context?	This text has been clarified to: "Expressing the intensity of the tensions on
Dave Abson	4	16	302	16	313	three concepts are suggested as important, but then a fourth (benefits) is used.	Benefits is mentioned as an ambiguous word, which is normally not expressed
Dave Abson	4	16	320	16	322	This sentence does not make sense grammatically	The point was corrected, thanks
Dave Abson	4	17	323	17	324	Is this statement really true? This would only be the case for stated preference methods surely?	A sentence was added to explain this point
Dave Abson	4	17	324	17	325	"says perception"? What does that mean?	This was a mistake and has been corrected to
Dave Abson	4	17	328	17	330	What about opportunity costs?	As per the reviewer's suggestion a reference to opportunity costs has been
Dave Abson	4	18	355	18	355	Argument by assertion. How does property type influence the existence of externalities? This seems like a very odd thing to say, externalities can exist for any sort of good.	The reviewer is correct and the text has been modified accordingly

Dave Abson	4	18	359	18	365	I would question the non-rival nature of wild pollinators, how are these services different from the service that honey bees provide (which are stated to be rival)? If one plant is pollinated by one pollinator it cannot be pollinating another at the same time. The rivalry comes not in these intermediate services, but in the nature of the final services that these intermediate service contribute. For example, the aesthetic value of a wild flower meadow would be non-rival, while agricultural crops rival, regardless of what type of pollinator provided the pollination on which they depend. Here there also appears to be a misunderstanding of the notion of rivalry (it is not the same as privately owned). Similarly marketable is not the same as excludable	done
Dave Abson	4	18	367	18	367	makes categorical errors some of the boxes refer to the intermediate and some to the final service.	It is actually difficult in a table to introduce too many dimensions. These
Dave Abson	4	18	370	18	371	see previous comments. It depends on the final good being produced, not the type of pollinators.	where ?
Dave Abson	4	18	380	18	380	The choice of the words "affected" and "responsible" here is very odd. Of course the beekeeper are affected by and responsible for their choices with regard to their bees.	changes have ben made for "impacted by the consequences of…"
Dave Abson	4	19	386	19	386	"confrontation"?	We change for "comparison"
Dave Abson	4	19	386	19	388	I have never seen economic analysis defined in these terms. Lots of economic analysis has nothing at all to do with NPV	Well, the reference to NPV if often implicit, since it is obvious to most economists
Dave Abson	4	19	388	19	389	Again a very confused sentence there is nothing inherent in the NPV that says it has to be about net social (as opposed to private) benefits. No mention of discounting in this section?	Discounting is covered in more depth in Section 3
Dave Abson	4	19	395	19	395	no definition of utilitarianism, no definition of social justice, no acknowledgement that there are forms of utilitarianism that explicitly address social justice (e.g. equity maximising utilitarianism).	We have introduced a number of references in response to this point
Dave Abson	4	19	406	19	409	If you are going to make such an intriguing claim why not actually explain what is mean by "more complex than it seems"	Good point, changes have been made accordingly
Dave Abson	4	19	414	20	415	what do you mean by "poor social impact"? Is there a correct way that society should react to such normative science?	I have replaced "poor" by "limited"
Dave Abson	4	19	427	20	428	How do you know the sensitivity is "quite high" has this been tested?	Good point, changes have been made accordingly
Dave Abson	4	20	433	20	435	Here you are assuming that pollinator shortage is the problem… this is highly normative, the socially optimum solution might not have any pollinators at all	That is right. But can we really imagine the life without pollinators?

Dave Abson	4	22	477	22	485	I don't follow this argument they have a market price this of course is influenced by lots of factors, but so too are all market prices. Nevertheless, the represent the exchange values of that service at a given point in time.	This has been rewritten to emphasise that the price of managed pollinators does not refelct the benefit to
Dave Abson	4	23	516	23	524	I would argue that a bigger issue is that these experiments don't consider the opportunity costs of having pollinators (i.e. what is the real object of choice in an economic sense and how is it related to pollination services). For example, you might change pollinator numbers via increase habitat or decreased pesticide usage, both affect yield and profits.	This is not so much a constraint of this or any other method reviewed, all fo which concern themselves with the benefits that are gained or lost with changing pollinator populations. It is still possibile to conduct a cost:benefit analysis where opportunity costs are included in the cost aspect
Dave Abson	4	24	554	24	556	again ignore opportunity cost and the real object of choice for producers (which is not pollinators).	Opportunity costs are part of cost-benefit analysis which is in section 6
Dave Abson	4	25	576	25	579	Replacement cost and avoided costs are not the same thing. The first is the cost to replace an existing service and the second is the additional costs incurred by not having the service. For example, replacement costs for the flood defence service provided by coastal mangroves could be the cost of building and maintaining a concrete barrier, while avoided costs would be the cost of repairing flooded homes. While I acknowledge that the difference is less clear in pollination I think it still makes sense not to conflate to different approaches to valuation in this way.	The authours would argue both approches represent costs avoided in the presence of a service verses it's absence. However as the literature has yet to articulate this view, the referenecs to costs avoided have been
Dave Abson	4	26	614	26	614	A minimum requirement for any replacement cost method is that the most efficient available replacement method is used. In the absence of such a rule the 'value' can be artificially inflated by simply picking a more expensive/less efficient alternative (e.g. hand pollination over managed bees). More fundamentally cost is not an indicator of value. Does the cost of diving for pearls adequately indicate their value?	These assumptions are mentioned in the text, however this has been rewritten to make these assumptions more explicit. The reviewers example is strange as the methodology is about replacing a "free" serive with a labour based one;

Dave Abson	4	26	619	26	621	Why would it be valid when considering total loss of pollinators? Cost still does not equal value.	This is a mistake that slipped through editing. The text was supposed to read that hand pollination
Dave Abson	4	26	634	27	647	Again the object of choice in economics is generally not the number of pollinators.	As above, this is more or an issue for the application of value
Dave Abson	4	27	655	27	660	I can't follow this. If the analysis is done on such fine scales (i.e. based on field data) then the marginal change in production will have no effect on prices? In fact this point is made a few lines later so this text need some clarification.	Localized was a poor choice of words on our part. This has been reworded to reflect this
Dave Abson	4	27	670	28	671	There are lots of other reason why famers don't automatically switch crops (knowledge, tradition etc.) moreover, given that many of the most important animal pollinated crops are not annual crops then the assumption of crop switching is quite problematic.	Reworded to remove mention of ease of substittion as the reviewer is correct and a number of other factors could also
Dave Abson	4	30	738	30	770	Does not really explain how a PF approach works from an economic perspective, the basic assumption of such a model or how those assumptions relate to the specific context of pollination services.	An additional paragraph has been added explaining the economic use of production function models. However, the key assumptions of these analyses are not thought to be especially
Dave Abson	4	30	804	31	805	what about travel cost methods? Or hedonic pricing, while both are problematic in their own ways they could in theory be applied to the non-market aesthetic value of wild plant pollination.	While the reviewer has a point, these methods are not widely recognised as potentially suitable for use in valuing pollination services in the wider literature (e.g. de Groot et al, 2002) and any link to valuation of pollinator gains and losses would be several steps removed from the value estimated

Dave Abson	4	33	843	33	846	This section is unclear in part be cause no clear distinction is drawn in the previous subsections regarding the difference between stated preference applied to the valuation of pollination and the valuation of pollinators. Moreover, how do you relate the change in the non-market good to marginal change in pollinators, this is not a trivial matter.	The overview has been rewritten to stress that the values elicited directly for pollinators are existence values and the values attributed to other benefits
Dave Abson	4	33	848	33	849	Is there any evidence that it is lack of familiarity that results in low response rate (rather than people be to busy, just not caring)? Why are low response rates problematic (as is implied here)?	As the reviewer correctly points out that there are numerous reasons for low response rates we have ommitted this particularity and instead refocused this on two separate factors
Dave Abson	4	33	853	33	855	Jargon, what do you mean by "cost attribute". How is this different from the protest votes or gaming (as there are no consequences related to the ascribed choices) noted in the next paragraph? No mention of option bias, vehicle bias, the fact that giving additional information might change ascribed values and make those surveyed no longer representative.	Reference to protest responses has been removed and instead the text has bene refocuised around the idea that there are factosr that can bias
Dave Abson	4	35	880	35	880	You seem to be implying that capital cannot/is not traded. This is simply not true. Why is the non-monetary section focused on capital? There are also non-monetary approaches to valuing flows (rather than just capital stocks).	This section has been heavilly rewritten to draw distinction between the capital accounting and the non-monetary biophysical measures of capital this
Dave Abson	4	35	982	35	893	"aspects of capital" or "types of capital stocks"? What about flows of goods and services that regulating services provide? Need some justification/explanation of why pollination is regarded as a regulating service.	The section has been extensively rewritten along these lines. Pollination is widely regarded as a regulating service (see the MEA, the UKNEA and numerous core texts and
Dave Abson	4	36	913	36	914	If pollinators are produced by the landscape are they capital stock or flows of "goods"? I would argue that capital stock is the habitat that supports pollinators, as this is the object of economic choice. Nowhere is this section do you really explain how to value capital stocks (or why they are even valuable) and by conflating natural capital stocks, ecosystem services (flows) and accounting frameworks this section is confusing and difficult to follow	This section has been extensively rewritten and should now reflect the reviewers comemnts because of the distinction drawn between monetary and biophysical values of

Dave Abson	4	36	916	36	925	Again it is not clear if this is about modelling stocks (capital) or flows (services) or how any of this relates to economics.	The section has been extensively rewritten to make it clear that this ing
Dave Abson	4	36	929	36	930	Again why "or"?	Reference to bee farming has been removed as this can mean different things to different people (some
Dave Abson	4	36	930	36	934	How is employment a form of human capital? Or for that mater the "availability of nutrients".	The reviewer is correct, both of these are technically flows. The
Dave Abson	4		447	21	452	Also ignore the value of other factors of production, substitution of the pollination service itself (e.g. hand pollination) and the importance of marginal values in economics and decision making. The price question is one of scale(i.e. are the affected producers price takers?) Despite scale being noted as important earlier it is largely ignored throughout the document	These assumptions are largely covered in the preceeding section and are very common throughout the valuation methods listed. As such
Dave Abson	4		830	32	832	Why "or"? Stated preference cannot meaningfully be used to elicit values ascribe to the existence of all pollinators. So they are based on (marginal) changes in pollinators and what values would these relative changes relate to if not existence values (this is not explained).	We have slightly modified the text to reflect this, however without thresholds it's impossible to say that there is no
Dave Abson	4		940	36	941	But you have still not explained how you value pollinators as a form of capital. Do you mean biophysical measures here? Moreover, in accounting you would not include the value of the other forms of capital they enable as these are valued separately and this would lead to double counting.	The section has been extensively rewritten to distingusih betwene valuing capital in a neoclassical sense and the
Dave Abson	4		989	39	989	I find this table very problematic both in terms of the "capital assets" and "measuring effect". How are beekeeping organizations a form of social capital and even if they are do you really believe counting members tells you anything about social capital? Similarly food provision is a flow not a capital stock, there are many other problems with this table.	This table has been completely reworked
David Aston	4	22	472			Information on practice and experience in providing pollination to crops is available	Unfortunately, this comment is too vague for us to understand in full
David Aston	4	36	908			Pesticides and fertilisers are applied in quantitifed dosages whereas managed pollinators can only be quantified in terms of potential flower visits	This principle is similar for other inputs - applying fertilizers does not mean that the plants will always uptake and utilize the
David Aston	4	38	942			No reference is made to members of the public who are an important part of the social capital who support NGO's	As other reviewers have pointed out support of NGOs isn't technically

David Aston	4	General Comment	0			The importance of pollination should be further reinforced by mentioning food security, potential political instability	Food security is mentioned thoughout however links with pollictical stability are several stps removed from the focus of this chapter in itself. There are however
David Aston	4	General Comment	0			Many beekeepers are motivated to keep bees because of their contribution to [pollination	We are not sure where specifically this comment is in reference to
David Aston	4	General Comment	0			No discussion only an Executive Summary which leaves the reader thinking 'so what?	Section 8 has been extensively rewritten to produce a more coherent
German Government	4	6	48	6	59	Please provide the reference(s) for the estimated monetary values.	A reference to the corresponding Table was now included
German Government	4	6	51	6	51	The high level of uncertainty linked to these estimations, which are concretely expressed in US$, should be clearly highlighted, even though this point is taken up again on the pages from 79 onwards.	Changed as suggested by the reviewer
German Government	4	7	79	7	80	Limitations are not only determined by the unavailablity of data. Limitations also emerge from methodological 'challenges', and the need for methogological development.	We agree and reworded the text accordingly.
German Government	4	7	98	7	100	The temporal dimension is not only relevant for the stated marginal value of pollinator gains (i.e. comparison between two points in time), but also important to appropriately quantify the value(s) emerging from a long-term or permanent loss of pollinators (i.e. the loss of a pollinator means that the pollination service is not available for the time scale defined for the calculations).	We agree and reworded the text accordingly.
German Government	4	92	2360	92	2362	This sentence may convey the wrong impression that all necessary data and methods already exist and that if these are used, they can provide solid information for decision-making. We think that it is absolutely crucial to include and highlight gaps and questions regarding existing data and methods in the conclusions section of this document.	This section has been entirely rewritten to better reflect the suggestions of this and numerous other reviewers, the co-chairs and Bureau

German Government	4	92	2364	2387	93	General comment on the recommendations outlined in chapter 8.2: the focus of the recommendations are largely on 'awareness raising'; 'standardization', and 'integration into decsion making processes'. The issue of 'research and development' is only dealt with very marginally on page 93 (lines 2380-2381). We encourage the authors to highlight more clearly/visibly that there is still the need for research and development in the fields of economic valuation methods and data.	This section has been entirely rewritten to better reflect the suggestions of this and numerous other reviewers, the co-chairs and Bureau
German Government	4	93	2374	93	2374	Due to the obivious need for further research on methods, it is important to highlight that it is still too early to finalize the standardization of economic methodologies for pollination assessments. Any efforts to standardize methods should remain open for the scientific advancement in the field of (economic) valorization of biodiversity.	This section has been entirely rewritten to better reflect the suggestions of this and numerous other reviewers, the co-chairs and Bureau
German Government	4	93	2383	93	2383	Additional text: include: "… environmental policies **and economic instruments** to support …"	This section has been entirely rewritten to better reflect the suggestions of this and numerous other
Ir. Ali Mahamane	4	12	183	12	184	Need to cite culturally	The focus of this comment is not clear, we believe it may have been intended
Ir. Ali Mahamane	4	20	417	20	420	There is need to raise awareness on the need to put an emphasis on the economic value of pollinators. Indeed, around the world the economic value of pollinators is ignored.	We agree and reinforce this idea in the paragraph
Johan van Veen	4	6	51	6	51	Not clear what is meant with (2010 US$)?	We clarified the concept by adding the word “constant”.
Johan van Veen	4	45	1093	45	1109	Another important factor not considered by the authors in this paragraph is that many beekeepers nowadays prefer to exploit their hives less for intensive crop pollination and keep the hives for longer periods in natural areas so these can recover and thus reduce losses from CCD. This has become more common practice after 2006.	The reviewer is right we will developp a subsection within the sections 1 and 6 i.e what is an economic analysis of pollinator impact into section 1 and

Juan Llanes Regueiro	4	15	284	15	289	scarcity, and it´s difficult to understand the meaning of “lack of supply” with environmental services. If a limited amount of a resource is given as a result of the earth dimensions, what different makes that people want more? They should be frustrated. There are issues related to economic theory that lack to concreteness of science. Robbins never dreamed from understanding of environmental services as an economic resource. Do we have a scarce atmosphere? How can you improve supply of environmental services if not by a physical amount?. Supply of Faiht?. Please explain.	As far as I remember other changes have been made that answer this point. To make it clear here, scarcity is related to demand and if the demand is growing scarcities appear, disregarding if the good or asset is natural or man-made. Robbins may never have thought about ecosystem services, it does not change the fact that if we have an economic perspective on
Juan Llanes Regueiro	4	45	1103		1109	Why the use of the Word “political”?. This is misleading, because this is more a “policy” intervention. Can you please explain why “political”?	The reviewer is rigth, we will replace political by "policy"
Juan Llanes Regueiro	4	46	1135			The ratio used for the actualization of future values….. Better is: “the procedure used for the actualization of future values to present time and conditions is called discounting”.	Done
Juan Llanes Regueiro	4	50	1245			“the production function”, if not defined earlier (row 735) , this need clarification or a definition. It´s not clear if it’s used as a valuation approach or in some other sense. See page 55, 1423 to 1426 where the meaning is more explicit.	Definition will be improved in section 2 and also added to the glossary.
Juan Llanes Regueiro	4	56	1449		1450	It´s difficult to understand the meaning of “risk”. Please clarify	The definition is provided as per the ISO standard. We were asked to do this and cannot change it
Juan Llanes Regueiro	4	61	1558		1559	statement on rows 1588-1589 is strong biased towards the possibility of monetary valuation with all problems involved. Perhaps an “important limitation”?	"principal limitation" was changed to "important limitation"

Juan Llanes Regueiro	4	71	1870	83	1243	The values are meaningless if there is no reference to the year used for valuation. See table 8 where estimates are based on 2010 US$.	Values are stated as cited thoughout the chapter with the exception of the tables in Section 7 which explicitly convert these to 2015 US$. Although the authours had considered applying this throughout
Juan Llanes Regueiro	4	89	2266			Is “inflated” the best option? Inflated is better used for the future. Perhaps “deflated”	We changed to "adjusted".
Juan Llanes Regueiro	4	90	2299		2300	Contingent valuation is not a perfect tool; there are bias and limitations explored by Pearce almost 20 years ago. A good definition is in IPCC AR5 WG III Glossary; remember that value is also expressed by supply of time, food and other resources.	This section has been entirely rewritten to better reflect the suggestions of this and numerous other reviewers, the co-chairs
Juan Llanes Regueiro	4	94	2394			I think it is Daily, H.C. and not G. Please check.	Has been corrected to Daily, H.C.
Juan Llanes Regueiro	4		1592			who are “we”? Also row 2345.	Reword
Juan Llanes Regueiro	4		2272			to estimate rather than calculate	OK
Madeleine Chagnon	4	0	0			no comments	OK
Madeleine Chagnon	4	45	1093	45	1129	Has the price of a beehive been evaluated according to colony strenght ?	The reviewer is certainly right here. However the section is dedicated to scale, and more particularly the subsection
Madeleine Chagnon	4	66	1732	66	1748	include recent publication from Nature Comm: David Kleijn et al (16 june) DOI: 10.1038/ncomms8414	Added
Madeleine Chagnon	4	71	1866	71	1866	this is the third time we see this figure in the report (see fig 1.9 and preface)	The figure has changed

Madeleine Chagnon	4	71	1870	71	1874	idem- include recent publication DOI: 10.1038/ncomms8414	Reference added
Madeleine Chagnon	4	92	2350	92	2362	These points are imortant. Put Bullets to attrack attention	This section has been entirely rewritten to better reflect the suggestions of this and numerous other
Madeleine Chagnon	4	111	3244	111	3305	Some words in the glossary are in the general glossary. Do you wish to keep both glossaries ?	These should be only in the general glossary. They appeared here by mistake
Marie Stenseke	4	12	177	14	266	In order to make the report more coherent, it should be explained how chapter 4 and chapter 5 relates to each other, i.e. how economic valuation relates to othersociocultural values and to other perspectives on valuation. This could be done either in the introduction of this section, or by a specific question, following the logic of the section.	The reviewer is right however it was agreed that this would be explained in detail in Chapter 1 which serves as an overview of the whole report
Marina Rosales Benites de Franco	4	90	2281	90	2282	…, so it would promote the sustainable agriculture, and the conservation of biodiversity and ecosystem services.	This section has been entirely rewritten to better reflect the suggestions of this and numerous other reviewers, the co-chairs
Marina Rosales Benites de Franco	4	92	2346	92	2347	… can enhance the management of Earth's landscapes, as well as conserving biodiversity and ecosystem services.	This section has been entirely rewritten to better reflect the suggestions of this and numerous other reviewers, the co-chairs
Nicolas Cesard	4	77	2046	77	2046	(Césard and Heri 2015) REFERENCE UPDATED (NOT IN THE REFERENCE LIST) Césard, N., V. Heri. 2015. Indonesian forest communities: Indigenous and local knowledge of pollination and pollinators associated with food production. In: Lyver, P., E. Perez, M. Carneiro da Cunha and M. Roué (eds.). Indigenous and Local Knowledge about Pollination and Pollinators associated with Food Production: Outcomes from a Global Dialogue Workshop (Panama, 1-5 December 2014). UNESCO: Paris, pp. 8-17. Online : http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/IPBES_Pollination-Pollinators_Panama_Workshop.pdf	Done
Nicolas Cesard	4	77	2048	77	2048	with their Maasai, Kikuyu and Kipsigis neighbors in exchanged for... see below	Done

Nicolas Cesard	4	77	2054	77	2054	(Samorai Lengoisa, 2015) REFERENCE UPDATED (NOT IN THE REFERENCE LIST) Samorai Lengoisa, J. 2015. Ogiek peoples of Kenya: Indigenous and local knowledge of pollination and pollinators associated with food production. In: Lyver, P., E. Perez, M. Carneiro da Cunha and M. Roué (eds.). Indigenous and Local Knowledge about Pollination and Pollinators associated with Food Production: Outcomes from a Global Dialogue Workshop (Panama, 1-5 December 2014). UNESCO: Paris, pp. 18-26. Online : http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/IPBES_Pollination-Pollinators_Panama_Workshop.pdf	Done
Nicolas Cesard	4	77	3223	77	3227	This is one reference (book chapter). Should be online. CHANGE IN REFERENCE Mamung, D., Abot, D., 2000, Telang otah urun lunang (air susu hutan). Sebuah potongan cerita Punan dalam mengelola hutan. In: Tim Plasma (ed.) Membongkar mitos. Membangun peran. Inisiatif Lokal dalam Mengelola Sumberdaya Alam di Kalimantan Timur. Jakarta: Plasma, pp. 61-77.	The reference was replaced.
Philippe PUYDARRIEUX	4	9	114	9	115	Is it possible to give an example ?	Done
Philippe PUYDARRIEUX	4	10	150	10	152	The pollination service could be considered as a final service when the beneficiary is a farmer. But, from the point of view of the society at large, pollination could be considered as ecological function or as intermediate service.	Following the definitions and examples in Fischer et al. (2009), pollination service are generally accepted to be an intremediate service as the service itself is an input into production, not a product itself that a
Philippe PUYDARRIEUX	4	11	174	11	174	In the figure 1, the location of "honey" could be discussed. Honey is more a by-product of pollination service and more especially from bee-keeping, which is more an anthropogenic service than a ecosystem service. The location of "honey" should be more relevant in the scope of the assessment of production services. Like for agriculture, pollination service contributes to honey production.	In the contet of Fischer et al. (2009) honey is a final service produced by pollinators (not necessarially pollination services as there are many commericail beekeepers

Philippe PUYDARRIEUX	4	18	369	18	380	This paragraph gives a very interesting analysis. But it should have gone further in order to differenciate the cases when pollination is realy a final service, when it is an ecological function or a intermediate service and when it is a consequence of an environmental service such as honey production	same comment apply
Philippe PUYDARRIEUX	4	36	905	36	906	This sentence could be developped.	This comment does not refer to a complete sentence, however the sentence it relates to has
Philippe PUYDARRIEUX	4	45	1093	45	1096	This paragraph could be more balanced. In some western countries, beekeeping is not only a professional activity but also a leisure. And so it isn't always a question of trade-offs between pollination service and honey production.	The reviewer is right, we could change the sentence explaining that we consider here the professional beekeeper
Philippe PUYDARRIEUX	4	46	1134	46	1135	This sentence could be more nuanced. When the NPV is negative, the investment isn't profitable. The NPV is not the only factor for deciding if the project is accepted or not (e.g. : IRR)	We agree and make some change in order to nuance
Philippe PUYDARRIEUX	4	70	1863	70	1864	This sentence is presented as a rule and should not be in this report. The design of PES scheme depends on States and actors preferences. It is not always relevant to define the payment amounts on the basis of the value of the ecosystem service provided. When the policy target is to change pratices, it is often relevant to set the payment amount according to the costs of the change (investments, learning costs).	Above comment addresses this
Philippe PUYDARRIEUX	4	72	1907	72	1917	This paragraph should be developped. Maps could be used by governments for ressource allocation. For instance, it could be helpful to know where the pollination potential is high, and simultaneously the crop production dependance to pollinators is high. It is also helpful for governments to have some monetary values to support some decisions.	Unfortunately no such maps exist (Schulp et al., 2014 is one possible exception but this has a number of caveats that are not well explained in the
Promila Kapoor	4	54	1789		1812	a. The possibility of losing the the key species their heritage, diversity and linked cultures are very high if the values are nor nor respected(Kapoor,2005). Pollinators are identified as key species (Kapoor and Usher, 1992)	Unsure what this refers to? Chapter 5?
Richard Corlett	General	0	0			This is an excellent SOD. Congratulations to the author team.	Thanks!

Thomas Brooks	General Comment		0			Congratulations to everyone involved on this impressive piece of work; the IPBES pollination assessment is shaping up to be a really valuable contribution. I am now comfortable that the assessment builds on and reflects in appropriate ways the various contributions from IUCN on the subject of pollination, notably a) the IUCN SSC Red List of Threatened Species http://www.iucnredlist.org and b) the IUCN CEM/SSC Worldwide Integrated Assessment of the Impact of Systemic Pesticides on Biodiversity and Ecosystems http://link.springer.com/journal/11356/22/1/page/1, and citation to the specific papers therein. It is very important that these citations are retained through to the final publication of the IPBES pollination assessment, reflecting IPBES's mandate to build from existing work. I also make a few suggestions and comments on other points I noticed as appropriate	Thanks!
UK Government	4	5	20	5	21	it was not clear what aspects of the statement the "unresolved element relates to - the role of economic valuation in itself in correcting these market failures?	Yes, the role of economic valuation.
UK Government	4	5	30	5	31	it was not clear what aspects of the statement the "unresolved element relates to - this seemed a relatively uncontentious statement rather than requirement for evidence to resolve?	It is about the definition of value. The previous comment demonstrates this
UK Government	4	12	188	12	191	Example of non monetary value was more related to resilience of pollinator asset for delivery of services for crop production - not clear this was fully teased out as this resilience issue is a characteristic of the stock with links through to impacts on crop production that can be valued in monetary terms?	We rephrased the text to improve clarity
UK Government	4	12	208	12	209	I agree with distinction between price and value and that valuation is not about privatising nature. However I would question the comments that then follow in relation to markets - it did not seem to be the place to be making judgements about how well markets would work or not?	We rephrased the text to improve clarity
UK Government	4	14	255	14	266	paragraph could be better explained - it was not clear whether this was around use values being only one component or marginal values being as important as any total valuations	We rephrased the text to improve clarity
UK Government	4	20	423	20	426	feels very academic speak - what does this mean? For example what is "changing routines"?	Good point, changes have been made accordingly
UK Government	4	21	437	39	990	This is a long section and would benefit from a conclusion/summary which discusses policy implications, or linked it to section 8	See section 8

UK Government	4	36	907	36	907	I don't disagree with thinking about pollinators as capital. However, we seem to be conflating capital approaches with non monetary which does not seem right - for example see UK Natural Capital Committee framework approach which sets out assets, services, benefits, values. This might be the language employed and the approach in the UK ecosystem accounts is both to describe and quantify the assets as well as value the flow of services.	The section has been extensively rewritten to higlight the differenecs in monetary and non-monetary assessments of capital. In particular, although not explicitly state, the use of capital is
UK Government	4	36	920	36	920	In mentioning InVest - this made me wonder if the chapter could usefully point to any user friendly tools that make use of the valuation approaches discussed earlier? For example, could InVest be described as using a simplified production function approach?	Available tools for integrating valuation into decision making are covered between section 6 of this chapter and
UK Government	4	40	991	53	1365	This section would benefit from a conclusion/summary which discusses policy implications, or linked it to section 8	See Section 8
UK Government	4	54	1378	60	1585	Section would benefit from a conclusion/summary which discusses policy implications, or linked it to section 8	A summary should be done on the section 8
UK Government	4	61	1586	69	1839	Section would benefit from a conclusion/summary which discusses policy implications, or linked it to section 8	This has been done in Section 8
UK Government	4	70	1841	73	1935	This section stops particularly abruptly – what are the policy implications? What are the implications for our understanding of the case studies reviewed in the next section?	We will add some example of economic valiuation in the policy process into section 7
UK Government	4	74	1936	89	2272	No reflective conclusion provided for this section	This is now covered in section 8
UK Government	4	90	2274	93	2387	Section 8 of Chapter 4 is considered to be weakened by all other sections in this chapter lacking a conclusion and therefore seeming to end on a cliff-edge – so it is considered that each of the brief section summaries in section 8 would be better placed at the end of the relevant section. It is also considered that Section 8 itself would benefit from a well thought out reflection on the case studies reviewed in section 7, combined with the assessment on knowledge gaps in section 5, to produce a prioritised set of recommendations for improving understanding of the economic benefits of pollinator services	This section has been entirely rewritten to better reflect the suggestions of this and numerous other reviewers, the co-chairs and Bureau
UK Government	4	90	2286	90	2296	does not seem to include all the market value methods discussed earlier?	This section has been entirely rewritten to better reflect the suggestions of this and numerous other

UK Government	4	93	2374	93	2374	discusses gaining consensus on economic valuation methods as part of IPBES scope - is this something that will come out in other sections as seems to be more of a straight descriptions with some of the pros and cons but would be helpful to see strengthened views.	This section has been entirely rewritten to better reflect the suggestions of this and numerous other reviewers, the co-chairs
USA government	General Comment	0	0			I was impressed with the scope & depth of the assessment. Although I devoted most of my time to the Preface and the Summary for Policy Makers, I did look at all chapters and I believe that each provides a very useful global scale synthesis. I think that the Assessment will be very useful in framing discussions going forward.	Thanks!
USA government	4	5	1	8	1	Suggest removing all of the conditional references including "(well established)"; "(Established but incomplete)"; "(unresolved)" either say why a statement is not inclusive or let it stand on its own merits	This format is mandatory for all the chapters.
USA government	4	5	1			It seems that a section on economic impact analysis could make a nice addition to this chapter on economic value, but it is not a stand alone section in the TOC	The reviewer is correct, as such we have developed a subsection within sections 1 and 6 to refelect this: i.e What is an economic
USA government	4	7	83	7	85	Randy Rucker and Wally Thurmans work, using a model of demand for pollination services, addresses the consumer wellbeing question very well-in fact they have won a number of award for their work; I would argue that their efforts are concensus "accurately estimated"	The phrase does not intend to make an absolute quantification of the accuracy but explain the factors that influence, such
USA government	4	8	102	8	110	I believe this question pertains primarily to native pollinator populations, in the States, there is-arguably-stability in managed pollinator populations-at least in terms of availability to crop producers. There are no report of producers not being able to source hives for pollination services-simply reports about increased costs of pollination. That to me implies a stable supply or at least a sufficient supply.	Crop pollination depends not only on managed pollinators but also on properties of the pollinator assemblages (including both wild and managed pollinators)
USA government	4	9	114	9	116	"evidence of pollinator declines" is stated but I'd like to see some citations that support this. In the States, the number of hives have actually been increasing over time per the NASS official estiamtes; I do not know of any comprehensive studies of non-managed pollinator population counts that would support a broad statement about declines in native pollinator populations. Selective declines, possibily.	In fact, this statement arrive after chapter 2 and 3 where it is explained clearly the decline. However the reviewer is right and some references will be added

USA government	4	9	160	9	162	Indeed, valuation methods are context dependent, in particular, the timing of the valuation matters and it may be prudent to repeat valuations regularily to get a sense of how the value changes over time. I'd like to see a more detailed discussion on the subjectivity/sensativity of valuations-in addition to the Spangenberg and Settele 2010 reference	These factors are discussed in greater detail in Section 3 and to some extent in Section 7.
USA government	4	12	182	12	191	The notion of the indirect value of pollinators seems limited to ecosystem services, and not inclusive of the value that provision of pollination services and co-products, like honey, beeswax, and their procurement create in surrounding economics. The concept of economic impact and multiplier effects is missing from the discussion. This concept is widely used to value other industries and sectors-it seems incomplete to not include a discussion of this type of valuation in the present work	The reviewer is right, we will add a discussion on economic impact analysis in sections 1 and section 6.
USA government	4	20	416	20	416	"…of the result to other issue…" issue seems to be missing an "s"	Corrected
USA government	4	20	418	20	418	I take issue with the statement that the "first interest" is to convince policy-makers of anything; our jobs as researchers is to provide clear and objective, facts-based research that can then be used to inform policy. It need not always be "simple" either; the key to to be factual and avoid advocacy as the expense of accuracy	We agree and made an alternative proposal
USA government	4	21	437	35	901	The authors summarize a good bit of the literature; however, there are a few additions I suggest including and/or highlighting to a greater degree: Mburu et al (2006); Burgett et al. 2010; Daberkow et al 2009; Bauer and Wing 2010; Allsop et al 2008, Kasina et al 2009; Gordon and Davis 2003;	With the exception of Daberkow et al (2009) which was not available to the authours, the other papers are cited either
USA government	4	21	441	21	441	The method is not acurately described, typically the value of crops is weighted by their proportion of dependency on pollinator or honey bee pollination-often using the Morse and Calderone dependency ratios. No study that I know of simply aggregates the value of pollinated crops without doing and adjustment to account for this.	The reviewer is not correct in this instance, see the cited examples which take the total market value of pollinated crops as the value of pollination
USA government	4	21	455	21	455	There are a number of variations on this method that have been used over time and evolved; modern valuation studies have used this technique as well so I think to describe it for "historical reference" is slightly inaccurate. Examples: M.D. Levin (1984); Robinson et all 1989; Morse and Calderone, 2000; Calderone 2012;	These methods are covered in depth over subsequent methodologies.

USA government	4	24	541	24	570	It is not clear to me why this section is separate from the crop price discussion-these concept are integral. Also, several seminal pieces of work in this area are not mentioned-see above.	As explained above, this is a distinct method for estimating the economic impacts of pollinator losses. The authors would also contend that only Robinson et al could be considered seminal from a historic standpoint, however it is not the objective of this work to provide a complete history of the economic value of pollination services. Emphasis has instead been given to Lonsdorf et al (2012) as is is the most complete assessment to date and the one that is cited the most throughout the chapter and summery
USA government	4	37	949	37	957	For the non-market valuation section, I would like to see greater mention of valuing ecosystem services; the recreation and tourism literature as a lot to say about amenity valuation-see much of the work of John Loomis-there are several appropriate references that could be included in an expanded section	It is not possible to estimate meaningful value of pollination services from the use of non-market instruments because they
USA government	4	52	1352	52	1353	I would take out the statement "despite it's well recognized importance" in reference to the inclusion of pollination into marketing schemes; It soulds like an opinion and that tone should be avoided. The sentence would be fine if you dropped the the statement altogether.	Done

USA government	4	52	1359	53	1361	To my knowledge, very few people publicly critcize the payment or transfers to support ecosystem services-perhaps eco-ethicists do-but the recreation and tourism literature has many examples of wtp for amenities and the main criticism of these approaches is not the commodiciation of nature. I disagree with the authors statement and would remove it.	It is not true that few people publicly criticize PES, there's a large body of literature on the subject. We increased the number of citations in this part of the text aiming to reflect that. The statement that the main criticism is the
USA government	4	68	1789	70	1842	It bears repeating in multiple spots in this chapter, that there is limited information on pollinator populations and health-while the authors note there is limited economic information in these pages-I would argue that much of this is relatively plentiful compared to the dirth of detailed, longitudinal data on pollinator populations and health. Also, information about site-specific environmental amentities and eco system services would be especially valued and that gap in the data could be emphasized to a greater degree than it is at present.	These issues are largely covered in Section 3. The Reviewers comment is somewhat ambiguous and seems more intended for Chapter 3?
USA government	4	92	2355	92	2356	The wording in this sentence seems a little off, I think commodities appears after the word "export" in error, suggest removing.	This section has been entirely rewritten to better reflect the suggestions of this and numerous other
USA government	4	92	2371	92	2373	The first proposal "Through the IPBES platform, raise awareness…" sounds like advocacy and it seems inappropriate. Other proposals are similar in spirit with the exception of "Gaining concensus...". What the authors do in the previous pages of the chapter is to largely summarize the literature and explain where there are gaps in our understanding and approaches. Doing research, gathering data, and coordinating activities such that these gaps are overcome are appropriate goals and are supported by the earlier material in the chapter. Going from a science-relm into advocacy seems like a poor use of researchers skills and will not direcly address the gaps and needs identified herein. I suggested a revisions of the recommendations and that aligns with a rethinking about how we can answer questions about the economic value of the stability of pollinators as opposed to advocating for more awareness	This section has been entirely rewritten to better reflect the suggestions of this and numerous other reviewers, the co-chairs and Bureau
USA government	General Co		0			All chapter headings should be placed at the beginning of each heading. For example, Chapter 1, Background, 1.1 should be at the start of line 4. For example, Chapter 2, Line 3 page 5 should have 2.2.1 at the start.	Formatting will be handled seperately once the report is complete.

USA government	General Comment		0			As with many group drafted documents, this draft is in need of a good editorial review, for both grammar and style consistencies. In particular, our reviewers have noted many scientific names are lacking, the need for proper use of italics for scientific names and *et al*., consistent serial commas and citation notations, and section / heading styles.	The entire report has been extesively checked for grammar and spelling throughout, although we cannot guarantee that no mistakes remain
USA government	General Comment		0			There are sections of the document which speak directly about trying to convince policy makers of something, or to take some action. Our government scientists do not advocate, but strive to provide unbiased science without directed outcomes. Some more specific comments are made in Chapter 4.	We agree and have removed explicit recommendations from all the chapter
Voahangy Raharimalala	4	28	687	29	733	Can you give example of general equilibrium model?	Bauer and Wing (2014) has been stated as an explicit example
Voahangy Raharimalala	4	29	735	31	795	Can you give example of production function?	To date there is no example of this study, this has been made explicit with Ricketts and Lonsdorf
Voahangy Raharimalala	4	45	1115	45	1119	(ii) should be "the consequences of calculating the farmer gains or losses due to pollination in agricultural production"?	Right
Voahangy Raharimalala	4	46	1150	46	1150	Should be 3224 instead of 3223	Done
Voahangy Raharimalala	4	52	1334	52	1338	I don't really understand the meaning of the sentence	Small changes were performed to improve readability
Voahangy Raharimalala	4	62	1616	62	1625	the two methods are not well explained, the shape of the landscape as well	This does not appear to relate to our chapter as the text referred to is part of two paragraphs that are
Voahangy Raharimalala	4	66	1724			Where would you range tree pollinated by bird for instance which is an isolated case?	We do not understand this comment, it may have been intended for another chapter

Yann Kervinio	4	9	121	9	121	"... and pollination service can (and must) be evaluated in economic terms..." Why **must** it be? Instead of this controversial statement, some reasons about why there is an interest of doing so could be given here.	We removed "(and must) and extended the sentence to 1) reflect that this is not always necessary/appropriate (as
Yann Kervinio	4	11	174	11	175	As the total value is presented as "the sum" of these value (line 124), I have doubts regarding the relevance of the values presented in this chart. More precisely, it is not clear how the indirect use values constitute a distinct and additive part of the value. For example, the value of wild flora and fauna production could be the value of the aesthetic value, that would already be included in the box on the left of it. Besides, the TEEB defines the indirect use value as the values derived from the regulation services provided by species and ecosystems, including pollination (TEEB, 2010, p. 195), which is already assessed by the contribution of pollinators to crop production. Two recommendations 1) drop the indirect economic values from this chart 2) include the insurance value in this chart as this constitutes part of the following discussion.	First, we disagree with the reviewer on the to simplistic classification of pollination as a regulation service. Indeed the TEEB definition of ecosystem services comes from the MEA definition (MEA,2005). More recent publication considers pollination not as a regulating service but as an intermediate service
Yann Kervinio	4	13	231	13	231	Be more precise, for instance "by providing confidence intervals" instead of "providing range of values"	Confidence intervals are not the only way to express uncertainty
Yann Kervinio	4	14	257	14	266	Pollination was formerly described as an "intermediate service" (l.191) and this question focuses on whether its economic value corresponds to its actual contribution to a specific end good or service. I am not sure this replies to the question. I suggest to precise the question. For instance, "Is the value of an intermediate ecosystem service such a pollination, the market value of the loss of a given end good or service in its absence?" The answer may also be adapted.	We rephrased the title and the paragraph to improve clarity.

Yann Kervinio	4	15	297	15	299	This is too restrictive. Another possible purpose of the economic valuation is to come as close as possible as the willingness to pay of a given decision maker or group for preserving or developing the ecosystem service. The evaluation may be adapted to specific ends if necessary and go beyond the mere information on scarcity. For instance, if a decision maker is inequality averse and trades-off inequality against the efficiency in an explicit way, the evaluation could perfectly adjust the values obtained by the wealth of the beneficiaries to get a value that would be closer to the willingness to pay of such a decision-maker. All this goes beyond the mere information on scarcity as it may further informs about the beneficiaries and allows for assessments based on distributive considerations. Rather say “an important purpose of the evaluation is to offer...”	The comment is quite right, and the sentence has been modified accordingly. Considering that the evaluation is related to one decision maker perspective is certainly an important question which is discussed in more detail in section 6. The capacity of economic valuation to weigh value according to
Yann Kervinio	4	18	358	18	358	Excludability does not imply that the good is traded on a market and there is a price for it. More fundamentally, excludability depends on "whether or not it is possible to exclude a person from benefiting for a good given existing technologies and laws.". It is important not to blur the distinction between having the possibility to exclude and actually excluding and organizing a market. In the next paragraph, it would be more precise to say “non-excludable (once they are provided, no-one can be prevented from benefiting from them)”.	The reviewer is correct and the text has been modified accordingly
Yann Kervinio	4	18	379	18	380	“..., will not be affected or responsible for their choices and behaviors.” is not clear. Is the issue here to incentivize the relevant agents to take measure to provide pollination services, or to hold them responsible of their choice ? These are two distinct ends which could be kept clearly distinguished	We tried to make it clearer and more correct
Yann Kervinio	4	19	398	19	398	The use of “utilitarian analysis” is confusing here. For instance, a utilitarian social welfare function was used to derive welfare weight in CBA in order to account for distributional impacts of policies in the UK Treasury Green book (2008, Appendix 5). The possibilities to reconcile CBA with social justice by accounting for the distributional impacts in the assessment could be mentioned and the term “utilitarian” could be withdrawn here.	Agreed, a number of brief references have been added
Yann Kervinio	4	20	419	20	420	Why should alternatives be “technical”? “technical alternatives” may be replaced by “measures” or any other neutral term.	Corrected

Yann Kervinio	4	21	437	35	874	This is a nice overview. Still, it is not clear how these methods relate to the different “values” of the service. While some of the methods measure a different benefit (the crop production or the contribution to lower the production costs), some could be considered as the assessments of the same benefit (the contribution of pollination to the total value of crops net of their production cost). Each method may be feasible and valid in specific conditions (scale, whether replacement is more beneficial than substituting crops) and some all would have to be performed simultaneously to be able to assess the relevant one. This section would benefit from articulating these methods in a unified framework rather than just presenting them separately. This could be done in an introductory paragraph or as a conclusion	The values header has been changed to a more simple "measures". We attempted to develop a typology in the initial draft but this was rejected as most methods are too similar in what they measure.
Yann Kervinio	4	27	649	27	649	Replace “by showing how much available income consumers and producers would lose or gain...” by the "by estimating the willingness to pay of all consumers and all producers for avoiding a given drop in pollinated crop availability"	The authours disagree with the reviewers phrasing. Surplus represents a difference between the overall **estimated** willingess to pay and the actual price
Yann Kervinio	4	31	782	31	787	Actually, the production function approach could be seen as the most advanced estimation, which by estimating the production frontier, also informs about the producers' possibilities (substitution of crops, replacement of pollination) and allows to choose the most relevant method. While no study achieved this, it would be interesting to to sketch this as an objective and under which assumption the different methods contribute to it.	The text makes it explicit that this is a more accurate method, however we are required not to make recommendations so would rather avoid placing too strong an emphasis on
Yann Kervinio	4	44	1081	44	1081	Aren’t the variable used there the crop price and the price of beehive location rather than their variation?	The reviewer is right. We will remove "variation"

Yann Kervinio	4	46	1139	46	1149	This presentation of the discount rate may be improved. 1) Replace “focus only on the future generation” by “focus more on the future generation”. 2) “the NPV increases as a function of time” does not make sense. It could be the weight attached to the welfare of individuals that increases but I am not sure that negative discount rates should be emphasized that much. 3) “most of the economists assumes that the discount rate is positive”. This sentence is correct, still it may delude the reader into thinking that the discount rate is an objective parameter. It may rather be emphasized that it is a normative parameter (TEEB, 2010, chap 7). 4) It may be interesting to present sustainability criteria as a complement or an alternative to discounting (see e.g. Arrow, K., Dasgupta, P., Goulder, L., Daily, G., Ehrlich, P., Heal, G., ... & Walker, B. (2004). Are we consuming too much?. Journal of Economic Perspectives, 147-172.).	We agree on points 1, 2 and 3. Regarding the point 4, we are focusing on the maximized present value criterion, where the discount rate is essential because the notion of time is determinant. The sustainability criterion raised by the reviewer is interesting but should not be introduce here, rather on the section 1.
Yann Kervinio	4	52	1345	52	1365	Is it the place here to speak of payment for ecosystem services. This suggests that the main purpose of valuation is to design payments, which is not true. It may also be used to feed in CBA or any evaluation process.	The intention of this section is not to provide an in-depth discussion on PES, which is discussed in more detail in Chapter 6. The issue is addressed here because landscape spatial configuration affects valuation, and
Yann Kervinio	4	55	1439	55	1581	For each part, it would be interesting to get a formal expression of how the value is computed each time.	We are deliberately avoiding the use of economic modelling
Yann Kervinio	4	60	1579	60	1579	Where is the uncertainty in this data?	Expand

Yann Kervinio	4	69	1828	69	1830	I do not see why the welfare of consumer “is likely to be additive to the value of initial buyers”, nor why the neglect of the secondary market is “underestimating the total benefits of pollination services by neglecting a large proportion of beneficiaries”. It seems that what is meant here is that the total welfare is the sum of the intermediary and consumer welfare. Still, it is not because the consumer welfare is not assessed that the impact on consumers is neglected. If the initial buyer buys the crop at a high price because of lack of pollination, but sells it at a high price to the consumers, the increase in cost is simply transferred from the intermediary to the consumers. It seems that this information is most important to assess the distributive impacts of the loss of pollination but not to the total value. This point should be clarified (a chart could represent the consumer, producer and intermediary welfares).	The value is additive because it is an additional group of beneficiaries with a separate willingness to pay and therefore a separate consumer surplus.
Yann Kervinio	4	70	1862	70	1864	“the payment amounts need to be set according to the value of the service provided” is a strong normative and controversial statement as such. This could be weakened to “the value of the service provided could constitute one basis for justifying the payment amounts”. Other basis could be the opportunity cost to the producer, which is actually most often used.	Corrected
Yann Kervinio	4	72	1908	72	1917	This section could be more precise about how the values obtained could be used.	We modified the figure and some text in this way