

Compilation of comments on draft Natural Capital reference document, Febr. 2015:

1) Anton Steurer, Eurostat :

Firstly congratulations to this draft - it says the right things. In terms of structure it is also fine. Please find attached a number of suggested corrections in TC.

I suffered a bit from the relatively long descriptive part at the beginning (the first 30 pages or so) which provides a lot of information about context and related activities but could provide more guidance to readers what they should actually do or read. As a minimum, at least the pages or chapters of the SEEA CF and EEA that are a "must read" should be indicated. I suspect there is not enough time left to edit this first part and streamline it a bit towards what is really most essential for MAES and for ecosystem accounts.

Major points to consider:

- too much summarising SEEA bits that are not really relevant for the paper
- some repetition (esp. of SEEA descriptions)
- a bit too general in the beginning (the first 30 pages are only preparing the ground, they do not say what countries should or could do)
- a bit too scientific and descriptive. Not enough direction and advice for countries. Only chapter 5 is really about next steps and what could be done.
- Chapter 5 is really of good quality and very useful!

2) Laure Ledoux, DG ENV :

[.....]

First of all many thanks for the report, as it is very clear a lot of work went in it. We would have two different levels of comments as outlined below, which overlap to some extent: (1) on the substance of the report independently of its format/nature (2) on what to expect from the report if it is to be labelled as a MAES report (on the latter I copy also JRC as they would need to be in the loop).

I realise one of the key challenges on the next steps is to find a solution that allows to produce a draft in time for discussion in the MAES WG on 6 March. Should we schedule a conference call to agree on how to move forward?

Many thanks,
Laure.

(1) on the substance of the report.

Given that the overall context of this work is MAES, the report does not sufficiently focus on ecosystem accounting. A large part (more than a third) is about defining natural capital, and describing natural capital accounting in a very general way. In addition to distracting from the core focus of the pilot, a lot of it is not in sync with the way natural capital is described in the 7EAP. Even if you can argue that you can read priority 1 of 7EAP in a wide way, it is clear that the core focus is on ecosystems. Whereas the accent you give in your definition is on 'exploitable natural resources'. It would not make sense if the main output of the MAES NCA pilot is to provide a new definition of natural capital which puts the emphasis on exploitable resources, when the purpose of MAES is exactly the opposite, given that a lot of work already exists on exploitable natural resources. At the

very minimum, the perspective of 7EAP and the EU biodiversity strategy should be recalled upfront, and not only on page 8. By the way on the website of WAVES, the accent is also on ecosystems: 'The other major limitation of GDP is the poor representation of natural capital. The full contribution of natural capital like forests, wetlands, and agricultural land does not show up. Forestry is an example - timber resources are counted in national accounts but the other services of forests, like carbon sequestration and air filtration are ignored. So, GDP can give misleading signals about the economic performance and well-being of a country. As a result, ecosystems are deteriorating worldwide, and with them, the capacity to support human wellbeing and sustainable economic growth.'

Given the long discussions we have already had on this, and the short time available, it might be that a simple expedient would be to rebaptise the pilot 'ecosystem accounting'. This would avoid long theoretical discussions about what is NCA, and would help focus the pilot on what is immediately useful for MAES members. An alternative (if it is feasible to get quick consensus on this) would be to recognise different definitions/perspectives in a brief introductory section and quickly move on to ecosystem accounting. The focus should be clearly on this in the main contents of the report. At the moment, most of the text throughout the report refers to NCA, when in fact it should refer to ecosystem accounting.

Other points in more detail:

- when referring to policy areas for which NCA/ecosystem accounting is relevant, please put EU biodiversity policy upfront. This is after all the main context in which this work is undertaken. I would then highlight that ecosystem accounting is also useful for other policy areas such as water, cohesion, agriculture and climate (not clear why the latter two are left out).
- the focus is on 'simplified' or 'cross-cutting accounts'. I am missing the link with the MAES ecosystem categories. MS will want to know how to move from the ecosystem assessments to ecosystem accounts.
- the valuation section largely ignores the issue of welfare vs exchange values. We should be able to defend both approaches depending on what the objective is (compare to other GDP components vs project/policy evaluation).
- The EU TEEB synthesis report could be referenced more prominently in the valuation section.
- on the UK work, and in particular the work of the Natural Capital Committee: the 3rd State of Natural Capital report was published last week: <https://nebula.wsimg.com/17ce16211194bfe53215bb754444686d?AccessKeyId=68F83A8E994328D64D3D&disposition=0&alloworigin=1> . Perhaps worth mentioning that a guidance document on NCA in the private sector was published with 4 pilot cases from companies: <https://www.naturalcapitalcommittee.org/corporate-natural-capital-accounting.html>

I/we would have more detailed TC suggestions, but perhaps best to agree first on the broad lines/main angle.

(2) what to expect from a MAEs report (based on Anne and Joachim's experience of the first 2 MAES reports).

The draft represents a good basis for a MAES Report. However, if we want to produce a third MAES Technical Report, it should follow some strict format and process.

NCA was the 5th pilot and was initially intended to contribute to the second MAES report. http://ec.europa.eu/environment/nature/knowledge/ecosystem_assessment/pdf/2ndMAESWorkingPaper.pdf

It should follow the same logic and include:

- A proper Executive Summary;
- An Introduction providing the policy context (EU2020BDS, Target 2, Action 5, other policies)
- A brief description of the pilot
- The outcomes of the pilot work
- Conclusions and next steps
- A list of references
- Abbreviations
- A Glossary of terms in Annex that will contribute to the MAES glossary on BISE.

The process for the previous reports was for the reports to be edited by the MAES core team (Markus, Joachim and Anne), then shared with pilot members and then with MAES WG members. The contributing authors were the members of the Pilot + MAES core team. There should be some consistency in terms of process for this report. Reference can be made to relevant work outsourced to consultants but they would not normally be acknowledged as authors since they are not part of MAES.

MAES reports are not scientific reports but technical and should provide clear guidance to MS who want to start working on NCA.

3) Belgian MAES working group :

Dear Jan-Erik,

In general the Belgian reviewers (Sander Jacobs, Jeroen Panis, Gilles Bertrand, Lieven Desmet, Hans Keune) consider this to be a thorough document with quite some inspiration for member states.

Nevertheless, there are some concerns:

1. We fear that there may be some conflict in focus between on the one hand original aims of NC accounting, ecosystem assessment and the rather broad view which was also present in the first MAES report, with on the other the rather limited focus of the second MAES report, which seems to focus on mapping without soundly distinguishing supply, demand and flow, depletability, and no real reflections on data quality or organization for accounting purposes. With the pragmatic focus of the second MAES report on almost exclusively quantitative mapping of supply of ecosystem services, we wonder if this really serves the goal of the accounts as put forward in the document under review here. The pragmatic but limited focus may result in 'accountable' datasets, but, it risks to leave out quantitative non-mapped economic data, other economic data, any data on depletion status or risk, etc.
2. Though the report is a very useful document, we still miss more concrete steps forward towards implementation in practice: how can this report, or a more practical follow-up, result in good quality practical policy implementation?
3. The abiotic services from CICES are left out without any explanation; the use of abiotic (depletable) resources would be something of prior interest to accounting, and opportunities to merge with many existing accounting datasets are lost; not accounting for the use of (non-renewable) abiotic resources risks to miss out on one of the most important drivers of ecosystem degradation. There is concern about the assimilation of the 'ecosystem capital' to the 'biotic part' of the 'natural capital' as ecosystem includes both biotic and abiotic compounds. So, 'ecosystem capital' should not be opposed to the (full) 'abiotic capital' within the natural capital. Authors seems to explain that this assimilation had been operated in the first MAES report but it doesn't appear so clear (cf.p.31, doc 2013).
4. Furthermore, does 'ecosystem capital' cover all the biotic part of natural capital ? Authors suggest themselves to add a 'biodiversity accounts' (p.25).

4) Nancy Steinbach, Statistics, Sweden :

Thank you for this opportunity to look through the draft report!

I think you have done a good job, thank you for taking my comments onboard :-)

Good luck with the MAES working group meeting!!

Kind regards,
Nancy

5) French comments by : *Olivier Kurtek (French Ministry of Ecology), Valéry Morard (French Ministry of Ecology), Philippe Puydarrieux (French Ministry of Ecology), Laura Recuero-Virto (French Ministry of Foreign Affairs)*

This is a useful and well-referenced document. Nevertheless, we have the following remarks:

A. General remarks (GR)

(GR) R1

The title of document is « *EU reference document on Natural Capital Accounting* » and the given purpose of the document is to “*support EU Member States in developing their own natural capital accounting approaches [;] focuse[d] on developing accounts for ecosystems and their services*”.

We argue the document title is unclear and there is not an exact matching between title and content.

The paper is more dealing with:

- The definition of a general methodology on concepts linked to Natural capital accounting;
- “How to start NCA”;

Than defining clearly the objects and the practical methods.

No clear practical methodology is given in this document.

So a more accurate title would be:

“EU reference document on Natural Capital Accounting concepts and general methodology”

(GR) R2

We prefer the use of « ecosystem goods and services » word to « ecosystem services » when provisioning services are included (p.4 §4, p.7 §1 ; p. 10 §1 and §10 ; p.11§1 ; See title 3,5,2.

From an accounting perspective it is important to distinguish « flows of goods » and « flows of services ». Many ecosystem goods (e.g. : food, timber) are already taken into account in national accounts. The difference between goods and services doesn't appear clearly (p.11), and it could be a problem to operationalize the accounts. This is said p.17 (§1) and it is a crucial point to developing natural capital accounts.

CICES is an essential tool to clarify the list of ecosystem services (p.14). It is important to reduce the risk of « double counting ». But this risk still exist because maintenance services remain in the list. Most of these « maintenance services » can be considered as « intermediate services » and are at the basis of one or more final services.

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(GR) R3

The difference between the ecosystem assets accounts and ecosystem flows accounts does not appear clearly and seems to be treated as a whole.

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(GR) R4

The difference between natural capital accounting and environmental accounting doesn't appear clearly in the report (see p.7 and annexes). It could be usefull to mention at the beginning of the document the value added of accounts compared to statistics, and also theirs complementarity (according to their scale and their analysis).

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(GR) R5

The document gives lots of arguments about why taking care of spatial scale resolution. It could be achieved by satellite imagery but it's not sufficient:

- we also need physical inventory to get more information;
- we also need a good precision by aggregating / disaggregating datas.

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(GR) R6

We agree with the fact that the spatial resolution is really important for economical-environmental accounts and it has to be adapted to the final user e.g. decision makers. But we have to mention that:

- The finer necessary mesh might be unavailable;
- Datas may not be available for all necessary scales;
- We argue that time scale is also important.

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(GR) R7

Should be emphasized the need for methodologies that can be aggregated and what it means for the European Union.

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(GR) R8

About the use of accounts for allocation of funding : it could be usefull to give some examples or to include some nuances about the difficulties to face (e.g. : protests of the losers in the allocation of funding).

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B. Other remarks (OR)

(OR) R1

1. Chapter 2

2.1 *What is natural capital?*

Pg 10-11 : As announced in the first sentence of 2.1, the first step is two get a clear definition of the meaning of what is “natural capital”.

We notice that these term and definition are not internationally recognized standards and that the links between all the definitions have still to be drawn.

First, the definitions given (bottom of page 10, top of page 11 and figure 2.1) are not exactly the same. Second, in Annex 1, we find other definitions related to “natural capital” without clear mapping with the definitions from 2.1.

We mention and confirm that the only current international standard (SEEA-CF) does not use “the natural capital” word. That implies the SEEA-CF environmental assets have to be embedded in the NC definition. It's unclear.

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(OR) R2

Pg 12: In the second section, examples are given but a reference document should give also a more extensive list of what NCA covers.

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(OR) R3

Chapter 3, p.17. §6

« (...) that is transferred to other countries or future generations, (..) » could be more complete and we suggest this formulation : « (...) that is transferred to other countries or future generations, even present generations (...) ». The consequences of the degradation of natural capital could impact present generations, and not only future ones.

*

(OR) R4

3.5 *Monetary accounts and valuation approaches*

3.5.1 *Monetary measurements in the SEEA-CF*

Last section, we read: “*the SEEA-CF is limited in scope since generally only assets that have a market price are included*”. This is not complete. Indeed, a more accurate sentence would be “*The SEEA-CF limits the monetary scope to assets for which a market price is known or for which monetary benefits or flows are generated*”.

*

(OR) R5

3.5.2 Last section, we read: “Overall, there is not yet an agreed method for integrating monetary measurements across different types of accounts and considerable methodological challenges remain. Further national experimentation is crucial to identify potential ways forward.”

Please recall that SEEA-CF provides some agreed methods for environmental assets monetary accounts.

*

(OR) R6

3.7, p.27 §5. Complete with an example :

« A key conclusion to emerge from ongoing work is that future efforts to develop natural capital accounting should be targeted and purpose-driven (e.g. : need to develop investment in natural capital). »

*

(OR) R7

Chapter 4, Introduction :

More accurate sentence would be (see emphasis):

“Natural capital accounting using **adapted time and spatial scales** are a potentially useful tool for policy-makers across the policy cycle and also at different governance levels – from EU to national to regional level.”

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Last section of 4.1

(OR) R8

In” *If structured appropriately, such a framework allows cross-linkages to be made between different uses and components of natural capital, and to consider trade-offs in managing and exploiting this capital and the service flows it provides*”, the word “capital” should be replaced by “asset” for the sake of internal consistency.

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(OR) R9

Give examples of the use of accounts (other than Norway-nature index)

6) Swedish Environmental Protection Agency :

General comments:

The document is very comprehensive, well written and provides a very good overview of the field and key documents in ecosystem service accounting. The chapter on *The role of Natural Capital Accounts in Policy* is especially appreciated.

We think, however, that it needs to be clear, when references are made to the SEEA document on experimental ecosystem accounting (SEEA-EEA) that this document is not yet a standardized document. The SEEA-EEA is a high quality document but as indicated in the SEEA-EEA, *while important steps have been taken, a number of conceptual and practical issues remain to be addressed before more definitive guidelines can be provided.* The MAES document could alert the reader on this.

Specific comments

Especially section 3.5 could be improved. To start with, at least twice it is stated that monetary valuation of ecosystem services is in an early stage. Possibly monetary valuation of ecosystem services *for accounting purposes* is in an early stage but not monetary valuation of ecosystem services as such. What we find to be more important to mention, but which is not elaborated on at all, is the requirement to focus on estimating valuations that permit consistent comparison with, or augmentation of, valuations reflected in the SNA. The fact that welfare estimates that are commonly estimated by economists are not aligned with accounting principles is therefore an important aspect to consider in monetary valuation of ecosystem services for the purpose of incorporating them in the accounting system. This is also explicitly expressed and developed in SEEA- EEA.

p. 24, section 5: "If different methodologies are used for monetary valuation, then the values obtained for different ecosystem services are difficult to aggregate because they are not directly comparable." It is correct that methods still need to be further developed and refined in order to integrate the monetary value of ecosystem services into SNA. However, the use *per se* of different methods is not necessarily a problem. In this regard, it is important to acknowledge that even the calculation of standard GDP has substantial challenges and weaknesses. For example, regarding the different methods used to compute different economic sectors (e.g. the informal economy, weather illegal or consisting of domestic house hold work). In that regard the use of different methods *per se* in ecosystem services valuation need not be a comparably greater problem, as long as there is reason to assume (which there often is) that the different methods generate sufficiently comparable values.

The 3.5 section could further provide a better understanding of the benefits of developing monetary accounts for ecosystem services. This would improve the general understanding of the purpose of aligning the accounts to the rest of the SNA and contribute to enhance decision-making. The document has a surprisingly negative attitude towards the potential to use monetarised ecosystem accounts. This could be better balanced.

The section could also be clearer in the distinction between monetary valuation (including market prices) and non monetary valuation. Sometimes the two issues seems to be confounded in the text.

p. 23, under heading 3.5.2 Enlarging the scope to value ecosystem goods and services, states “Analysis for the European Commission identifies three main methodologies (Brouwer, *et al.*, 2013):”. Production function method is omitted from the set of potential valuation methods, in spite of being addressed in the document referred to (Brouwer *et al.* 2013). We suggest to include it in the list of potential valuation methods, as an additional potential valuation method, which can be combined with value transfer to generate values to NCA.

Jessica Alvsilver och Per Strömberg

7) Robert Smith, Midsummer Analytics (ex-Statistics Canda)

As promised, I’ve taken a look at your PPT on the definitions of natural capital. Personally, I am comfortable with the final choice with the principal comment that I would have included “space” as another category of natural capital. By “space” I mean the surface area in which human activities take place. The reason I view space as a separate category is that I find it necessary to explain why some land can have value well above and beyond its apparent value from an ecological standpoint. A hectare of land in downtown Manhattan is worth billions of dollars in exchange value. A hectare of land in the middle of the Sahara will have no value at all in exchange (and little, if any value in welfare terms either). For me, this can only be explained by the fact that humans value space for its own sake and not for the attributes of the land that underlies the space (indeed - often in spite of those attributes, which - such as a propensity for flooding - can make its use as space less attractive).

I have seen others in the literature that have included this concept of space in their definitions, or something close to it. Though I don’t have a reference at hand to recommend to you.

A few other comments on your approach:

- In the green rectangle on the top left, I would put “Ecosystem assets” in place of “Ecosystem capital”
- I would call ecosystem assets “conditionally renewable” rather than strictly depletable. Same thing for their corresponding flows.
- I don’t agree that solar radiation is an asset but rather a permanent flow. So I would put it under abiotic flows.
- That said, I find it a bit problematic to include flows in the scheme, since there is a risk of confusing readers as to what the capital is. They may conclude that the capital comprises both the stocks and the flows, whereas it is only the former.

For your interest, I attach here a paper that I wrote on a natural capital approach to environmental statistics when I was still with Statistics Canada. Starting on about p. 3 you will find our conceptual discussion of natural capital. In it you will see that we include the “atmosphere” as a category of ecosystem. This differs from your approach where you consider the elements of atmosphere to be abiotic assets. I think either is fine so long as they are included.

8) Lars Hein, University of Wageningen :

.. (very) brief review NCA-MAES reference document.

Having read and reviewed the NCA-MAES reference document I find that it provides an excellent overview of the main concepts and the methodological frameworks as currently developed for NCA. It also presents an overview of how NCA links to, and can support various EU environmental and resource management policies. A main challenge will be to implement natural capital accounting in the EU at a scale, and with an accuracy, commensurate to the information needs required to support biodiversity, environmental and resource (including water) management policies in the EU and its member states.

9) Maya Todorova, WWF Bulgaria:

[...] I have reviewed the EU reference document prepared under the NCA pilot. I think that the document provides detailed information on the meaning, nature and existing methodologies of developing NCA. I could also see the reference to the intrinsic values of ecosystems. I can imagine how difficult it has been to deal with the technical language of NCA and translate it in a language understood by both experts and policy makers.

I may agree to a certain extent that some of the parts in the beginning could be shorter but cutting contents could lead to not being able to present clearly the complex issue of NCA. One option that I could propose is to revise the content of the text in the blue boxes - editing/ shortening them would influence the least the quality of the report.

I think that you have succeeded to provide an overall review of the issue, and that content is presented in a balanced way. I liked very much the part on potential use for policy purposes.

In the same time, if I may, I could recommend the following:

- strengthen the part describing the importance of NCA for long-term planning in the conditions of limited resources and changing climate;
- in point 5.4, emphasize the need to assess and build capacity for carrying out NCA, and encourage the cross-institutional cooperation at the national level. I could see these mentioned in table 5.1. in the Annex but still it is important to have it in the main text.

I hope this helps,

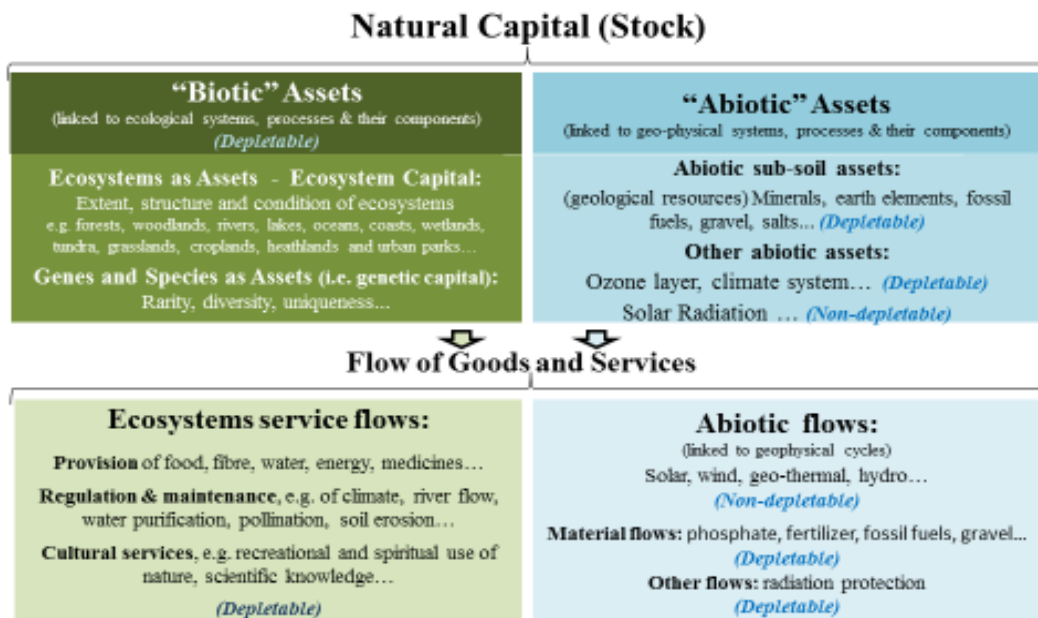
All the best,

Maya

10) Patrick ten Brink, IEEP:

Thank you for the draft MAES reference document for review. If I may, I'll submit review comments in two stages - a proposal for a nuanced figure on natural capital now (see attached) and comments on the doc, just in time with your stated deadline.

Components of Natural Capital and Flows of Goods and Services



Source: Patrick ten Brink, adapted from MAES analytical framework, European Commission (2013)

11) Markus Erhard, EEA :

Jan-Erik,

Here some additional reflections for NCA report.

As mentioned the document provides good overview on approaches and Chap 5 is also nicely written, but I have some issues with application chapter 4.2.1 onwards – 4.3.

1. Thematically its too narrow. Minimum requirements would be at least drivers and pressures as listed in Millenium Assessment (see also EEA technical report ecosystem assessment) or at least overview what accounting can contribute using MA as benchmark and what not. Key drivers such as agricultural and forest policies are completely missing but most relevant in using and depleting natural capital.
2. Marine (> 50% of European area) is missing
3. The application is just replacing assessment by accounting and as such doesn't create significant added value. We could test it by using “replace” in word and see what the differences are.... I don't think water accounts (monthly) provide the appropriate temporal and spatial scale for flood assessments (daily to weekly locally) – this seems to be an overselling of the accounting approach.
4. The principal problem with NCA approach is that it is too much focussed on quantitative ecosystem assessment and doesn't address the demand side for human well being – the same problem we have with ecosystem service assessment in general and especially in MAES.

As such the application is missing the service perspective (demand side → use of natural capital for human well being and its impact on ecosystem capital). Box 4.2 is a good example demonstrating the deficit of the current approaches. It shows the ecosystem service capacities (not the real use) and doesn't address the demand of people covered by services somewhere else (import) as well as the demand from outside the ecosystems provide (export) This problem is independent from scale but of course more relevant on national scale and even more for European boundaries.

5. The key added value of accounting at least in the context of MAES would be to create knowledge about demand / use of ecosystem services for “living well in the limits of the planet” as described in 7th EAP. This would show how much of our demand is covered by ecosystem services within Europe /MS and how much of the natural capital we are using and depleting elsewhere also for protecting our own resources. Important would also be to create knowledge about the service flows within Europe. This is also important for valuation because it puts the use of natural capital in the context of total demand and is policy relevant (CBD, territorial cohesion and all environmental related policies)....

12) Jean-Louis Weber, EEA Scientific Committee:

I have quickly read the report on NCA for EU. [...] Then, the natural capital, the central point. I have been all these years in conflict with UNSD about the use of the word capital (until they decided to use it for their own ANCA project...) and I am surprised to read in the NCA report that there is no definition of the natural capital in the ENCA-QSP report. The first two chapters plus chapter 8 are about that. (please when you quote the CBD-ENCA-QSP report, give the correct name.) ENCA stands for Ecosystem Natural Capital accounts. The difference with the SEEA (where capital is not mentioned, the term used being assets) is that the approach to capital/assets is in ENCA-QSP (following SECA...) the description of a system (size, productivity, health...) while the SEEA approach is a transposition of that of the neo-classical standard model of the capital where capital = NPV of its expected benefits. On this point, I am in broad agreement with Walter Radermacher that the standard capital model is inappropriate for ecosystem accounting - although I do think that it is useful to use the capital metaphor when we come to natural resources.

13) Leon Braat, Wageningen University :

The document is well written and I expect it to be generally supportive of the MAES process.

You have explained very well the definitions and chosen structure of the Natural Capital concept (pages 10-12 and Figure 2.1) .

In spite of that, I have (as you may have expected) still a problem with the rather pragmatic choice to include the (ecosystem service, and abiotic) flows in the concept / definition of Natural Capital. I see you have made a nice effort to show the different components.

At the top of page 12 you write that “for ecosystem capital in particular, the same natural processes govern ecosystem assets and ecosystem services, so it is often difficult to draw a line between the two”. I agree that the same natural processes build assets (stock, structure) as are contributing to the services. That in itself is not a logical reason to combine two different entities (stocks and flows) into the concept of Natural Capital.

You list the other forms of Capital on page 10 with clear stock examples, and nobody would include Payments in Financial Capital or see Health as a flow. The simple convention to describe stocks in terms of Quantity (per unit area if you like) and flow in terms of Quantity per unit Time (and area if you like), would make it quite clear you are dealing with quite different measures of ecosystems.

In thermodynamic terms, Stocks are of course dynamic, they change over time, by depreciation or use, and flows are very small stocks (in quantum mechanics terms) which move through a space/time continuum. All this is still not a reason to combine stocks/assets and flows into 1 concept Natural Capital.

Ecosystem Services are coproducts from Ecosystems, which are complexes of biotic and abiotic stocks and their (flow)relationships. The stocks are also denoted as Structure, the flows and associated changes in stocks are defined as the Processes. If we just define the (relatively) unchanging part of the Ecosystem (the structure/stocks) as Natural Capital the logic is clear. Ecosystem services are the flows of biomass, water and information which are flowing (and mostly purposefully channeled) to human society. Ecosystem functions were in TEEB already redefined as the processes which are internal to ecosystems.

Anyway, you seem to know all this, and write in the same paragraph on p12: For all these reasons, Figure 2.1 shows ecosystem and abiotic assets and flows in the same colour but with different background shading. Which shows you have made a pragmatic choice.

By the way, I am not trying to be obnoxious, but as Editor-in-Chief of the Ecosystem Services journal I have to be very clear about this, I would not be a very credible editor otherwise. I am becoming more and more strict in my editing role and will therefore not accept in the journal the Natural Capital concept as you have chosen to define it.

So, I am not happy with it, but since it is not a paper submitted to the journal, I can live with it.

14) Hannah Hamilton, Secretary, Irish Forum on Natural Capital:

I am writing on behalf of the Irish Forum on Natural Capital (IFNC) with regards to the EU Reference Document on Natural Capital Accounting. I apologise that this communication is arriving later than your February 6th deadline.

The Steering Committee of the IFNC would like to congratulate you and your colleagues on producing this informative and readable document. We found the roadmap in Chapter 5 to be particularly useful.

We note that you mention the UK's Natural Capital Committee in the report, so would like to take this opportunity to draw your attention to our organisation, which will be formally launched on March 1st 2015. You can visit our website here www.naturalcapitalireland.com.

We hope to be in a better position to contribute more fully next year when we are properly established. In the meantime, we would appreciate it if you would add us to your mailing list and keep us informed of any events or workshops that you are putting together.

Uwe Fritsche, IINAS :

The text reads well and rightfully mentions the "utilitarian perspective", but fails to mention a key problem of SNA:

Imports are "measured" by using the national sector data ("mirroring") so that e.g. oil imports to the EU are "measured" by domestic oil data. Same is true for e.g. food/feed imports, timber... and **this is surely wrong!** You may refer to the extensive discussion of that issue with regard to "imported land" (virtual land), and especially the interesting approaches of Helmut Haberl and his team.

It is relevant only to the extent that imports are considered, though. In GDP that is the case, but for NCA it would be desirable to stay off.

re roadmap: It reads a bit fuzzy, especially the near-term. Are there no concrete suggestions, e.g. to establish a group at EEA working together with EUROSTAT, and taking into account the JRC-

Seville work? Shouldn't there be clear targets, e.g. by 2020 reports from MS are available and reviewed? Just thoughts...

Oliver Zwirner, DG ENV :

On Executive Summary

Next to the EU Biodiversity Strategy also the 7EAP could be mentioned as policy reference already here as done also later in the document (§1).

Maybe change order of sentences in §2 so that the § starts with "As a reference document ..."

Consider using "produced capital" as term instead of the longer and more scientific "manufactured capital".

The term "abiotic" resources is rather new. It might be worth contrasting it with the more common term "sub-soil assets" and terms of the SNA/economic theory to link from the outset to economic policy makers and analysts, as done in box at the beginning of Ch.2 (also relevant for 1st § of Introduction).

Might be worth starting the 2nd § with a sentence that point to the fact that NCA aims to cover comprehensively all relevant natural wealth.

In the first § on the role of NCA it would be good to clearly point to the double role of NCA in showing both the contribution of nature to production and the influence of production on nature, and highlighting the feedback on production via nature. There are throughout the document occasions to point out that NCA has this kind of two-/threefold aim or analytical possibility.

The 2nd § mixes general properties of accounting, environmental accounting and NCA. E.g. all accounting bridges the gap between detailed data/statistics and economic decision making, but not re sustainability (only NCA?). Could be worth adding "environmental" before "accounting" at several occasions and making clear that NCA is a part of environmental accounting, the latter complementing standard economic SNA.

From the last § on page 4 one could get the impression that SEEA 2012 covers NCA quite comprehensively. I wonder whether this is the right message. The relation/difference between the SEEA-CF and EEA frameworks and the various guidance documents mentioned later could become clearer.

When mentioning EU-environmental account statistical legislation could be worth mentioning that it covers MFA an important tool to measure flows of natural resources.

The four steps of the road map read very convincing.

It would be good and perhaps more convincing too, if already the ES would say something about the kind of numbers or the headline indicators that have or are likely to come out of NCA.

Honestly, the ES mixes kind of Intro and summary, when it says e.g. "This document reviews opportunities in key EU policy areas: water policy, biodiversity policy and Cohesion Policy." it does not summaries the findings of the reference document.

On 1 Introduction (box)

For the not-knowing reader it is at first glance surprising that "eco-system services" are part of "Natural Capital". It could be worth explaining why the analogy re produced capital has changed (where the flows from the capital, i.e. products, are not part of the capital). If this was the reasoning

behind it could be said that while ESS are strictly speaking not capital, NCA does still cover them – out of practical reasons?

On 2.1 What is natural capital

I'd support stay away of listing financial capital as own category.

On the social capital, I suggest to put more examples that are relevant for economic actors such as an independent jurisdiction, absence of corruption, ...

On formatting and references

Table of contents should not include "Table of contents".

Sans-serif fonts like the used Arial are harder to read than classical Antiqua fonts like Times New Roman. Consider a font with serifs for the body of the text.

It would make the document more user-friendly if full references including weblinks if available would be given in footnotes.

Tonnes for metric tonnes, tons for British or American.