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DOI:

[10.1016/j.envsci.2015.05.009](https://doi.org/10.1016/j.envsci.2015.05.009)

Document Version

Early version, also known as pre-print

[Link to publication record in King's Research Portal](#)

Citation for published version (APA):

Borie, M., & Hulme, M. (2015). Framing global biodiversity: IPBES between Mother Earth and ecosystem services. *Environmental science & policy*, 54, 487-496. <https://doi.org/10.1016/j.envsci.2015.05.009>

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1 **FRAMING GLOBAL BIODIVERSITY: IPBES BETWEEN MOTHER EARTH AND ECOSYSTEM**
2 **SERVICES**

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7 The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) is an
8 emerging expert advisory institution that aims at tackling the loss of biodiversity and the
9 degradation of ecosystem services. Building on the experience of the Intergovernmental
10 Panel on Climate Change and on previous biodiversity-related assessments, IPBES aspires to
11 create a new type of science-policy interface: achieving balance between developed and
12 developing countries, and being inclusive of different disciplines and knowledge-systems.
13 While competing framings and discourses about biodiversity are expressed in these global
14 settings, IPBES has also adopted a single conceptual framework to support its work. Yet, this
15 process was punctuated by many debates and the notion of 'ecosystem services' was
16 contested. This paper uses Sciences and Technology Studies (STS) concepts and methods to
17 investigate the development of the IPBES conceptual framework during the period 2012-
18 2014. In particular we ask whether, and how, debates amongst participants about the nature
19 of knowledge, the relationship between humans and nature, and about the meaning of
20 'ecosystem services' were reconciled through this process. We discuss what is achieved by
21 the IPBES conceptual framework and whether it could prove itself a boundary object. Our
22 findings serve to highlight the multiple ways in which the science-policy interface is being
23 imagined and to reveal some of the challenges awaiting biodiversity governance as
24 ontological and epistemic plurality is embraced at a global scale.

25 Keywords: IPBES, Ecosystem services, Mother Earth, Science-policy interface, Boundary
26 object, Expertise

27 **1. Introduction**

28

29 Over the past 30 years, the institutional landscape of global environmental governance has
30 been marked by the multiplication of expert organizations whose aim is to provide policy-
31 relevant knowledge. In the field of biodiversity governance, the Intergovernmental Platform
32 on Biodiversity and Ecosystem Services (IPBES), formally established in 2012, is the most
33 recent example of such mechanisms. In seeking to provide policy-relevant knowledge to
34 tackle the loss of biodiversity and degradation of ecosystem services, IPBES builds on
35 previous initiatives carried out in the field of biodiversity, outstanding examples of which
36 include the Global Biodiversity Assessment (GBA, 1995) and the Millennium Ecosystem
37 Assessment (MA, 2005).

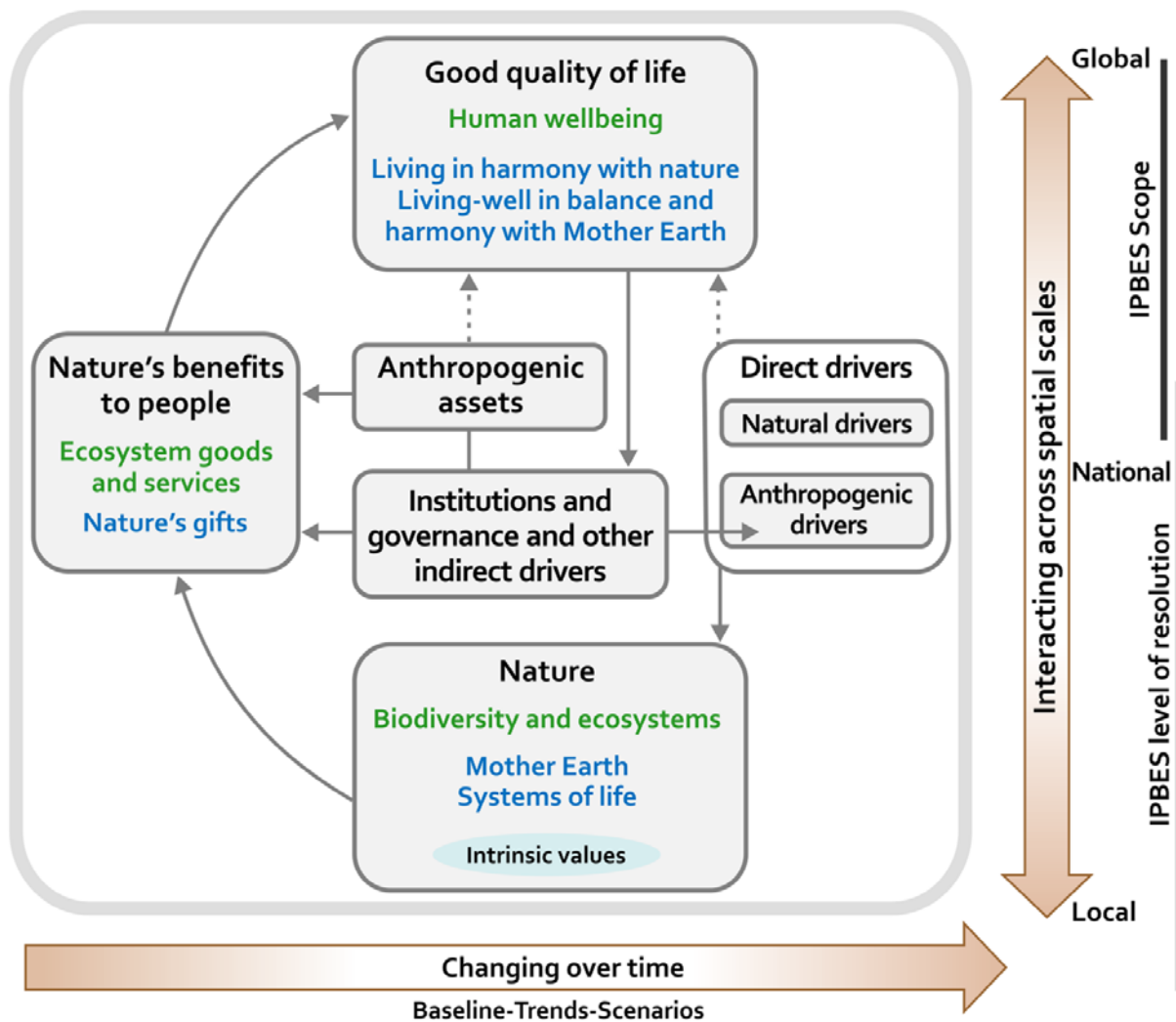
38 While becoming increasingly in demand, the design and execution of global expert
39 organizations have also been contested (e.g. Scoones 2009). IPBES seeks to build on previous
40 experience by designing a new type of science-policy interface, tailored for biodiversity
41 issues, but also with a good balance between developed and developing countries and build
42 on a broad knowledge-base: inclusive of natural science, social sciences, and traditional and
43 indigenous knowledge (IPBES 2012). This call to adopt an innovative institutional design, and
44 more inclusive processes, has been formulated by both practitioners and academics (Koetz
45 et al. 2011; Hulme et al. 2011; Turnhout et al. 2012). To draw on Stirling’s metaphor (2008),
46 in many respects IPBES aspires to “open-up” science-policy interfaces and to encompass a
47 broad range of actors and knowledges. In analysing the development of the IPBES
48 conceptual framework, this study seeks to build on social science and STS studies scrutinizing
49 the governance of global environmental expertise (Scoones 2009; Hulme & Mahony 2010;
50 Beck et al. 2014). In light of its ambition to provide a global overarching vision, the
51 construction of this framework enables us to examine how IPBES attempts to accommodate
52 multiple, and often divergent, perspectives on biodiversity and ecosystems in practice.

53
54 The IPBES conceptual framework was officially adopted in December 2013 during the second
55 plenary session of IPBES (known as IPBES-2). State delegations as well as observers (e.g.
56 representatives of NGOs, research institutes, representatives of Indigenous People) gathered
57 for a week in a vast conference centre in Antalya, Turkey. The development of the
58 framework was one of the first tasks initiated by IPBES in 2012 and it has been described as:

59
60 “A concise summary in words or pictures of relationships between people and
61 nature. (...) [It] provides common terminology and structure for the variables that are
62 of interest in the system of interest.” (UNEP 2013a:11)

63
64 According to the IPBES website¹, the purpose of this framework is to “support the
65 implementation of all four functions of the Platform – knowledge generation, assessment,
66 policy support tools and capacity-building. [It] helps to ensure coherence and coordination
67 among these four functions”. When it was presented during IPBES-2, three distinctive
68 features of this framework were highlighted: (1) in the process leading to its adoption efforts
69 were made to be inclusive of different voices in order ensure credibility and legitimacy; (2)
70 the IPBES framework placed “institutions” and not “nature” at the centre stage, hence
71 highlighting the importance of socio-political aspects to adequately manage biodiversity and
72 ecosystem services; and (3) the framework embraced different knowledge-systems by
73 means of a colour code. For this reason, it has been referred to as a ‘Rosetta Stone’: “the
74 conceptual framework can be thought of as a kind of Rosetta Stone that highlights
75 commonalities between diverse value sets and seeks to facilitate crossdisciplinary and
76 crosscultural understanding”(Díaz et al. 2015a:1).

¹ <http://ipbes.net> (last accessed, March 2nd, 2015)



77

78 **Fig 1.** Conceptual Framework of the Intergovernmental Platform on Biodiversity and Ecosystem
 79 Services (Reproduced after Diaz et al. 2015a; 2015b, with permission from the authors).

80

81 The adopted framework is summarized in a diagram (figure 1) representing the relationship
 82 between humans and nature by means of six boxes connected with arrows. A colour code is
 83 used to represent different perspectives on biodiversity: black is used for the categories that
 84 are consensual (e.g. Nature, Nature's benefit to people, good quality of life); green is used to
 85 represent the view of actors framing biodiversity in terms of ecosystem services (e.g.
 86 Biodiversity and ecosystem, Ecosystem goods and services, Human well-being); and blue is
 87 used to represent the view of actors framing biodiversity through the concept of Mother
 88 Earth (e.g. Mother Earth, Systems of Life, Nature's gifts, Living in harmony with nature).
 89 More details on these two framings will be given in sections 3 and 4 of this paper.

90

91 Previous initiatives in the field of biodiversity and ecosystem services assessments have also
 92 adopted a common conceptual framework. The most prominent example of these is the
 93 conceptual framework of the Millennium Ecosystem Assessment (MA). This was organized
 94 around different categories of ecosystem services - i.e., supporting services, regulating
 95 services, provisioning services and cultural services (MA 2003; Carpenter et al. 2009) - and it

96 acted as an important reference point for many participants involved in the IPBES process. In
97 contrast to this initiative, IPBES operates in intergovernmental settings. In this respect it
98 shares numerous similarities with the Intergovernmental Panel on Climate Change (IPCC)
99 and has often been referred to as an “IPCC-like mechanism for biodiversity”(Larigauderie &
100 Mooney 2010). The plenary - the Assembly of States’ delegates² - is the main decision-
101 making part of IPBES governance structure and its work is supported by two subsidiary
102 bodies: a Bureau in charge of performing administrative functions as defined by the plenary,
103 and a Multidisciplinary Expert Panel (MEP) in charge of performing scientific and technical
104 tasks.

105
106 Yet, the process leading to the adoption of the IPBES conceptual framework was far from
107 easy and the diagram underwent numerous changes and was the centre of heated debates,
108 in particular around the notion of “ecosystem services”. In this paper, we approach the
109 IPBES conceptual framework both as a process and as a product and our objective is twofold.
110 First, by focusing on the process that led to the framework’s adoption, we seek to reveal the
111 debates and difficulties that surrounded its conception and, second, considering the
112 framework as a product, we ask: what ontological, epistemic or political settlement does this
113 framework achieve? The remainder of the paper is organized as follows: in Section 2 we
114 summarize our concepts, methods, and materials. Section 3 presents the main events and
115 participants involved in the development of the IPBES conceptual framework. Section 4
116 focuses on the content of the debates and in particular on a controversy between
117 participants framing biodiversity in terms of “ecosystem services” and those framing
118 biodiversity in terms of “Mother Earth”. Finally in Section 5 we discuss how different
119 perspectives were accommodated in the IPBES conceptual framework and whether it might
120 be understood as a boundary object. We offer some concluding remarks in Section 6.

121

122 **2. Concepts, methods, and materials**

123

124 Conceptually, this paper builds on the co-productionist idiom which suggests that science
125 and policy, rather than being understood as two distinct realms, should be understood as
126 mutually co-produced. That is to say, the understanding that: “the ways in which we know
127 and represent the world (both nature and society) are inseparable from the ways in which
128 we choose to live in it” (Jasanoff 2004a:2). This also implies that in seeking to understand the
129 development of the IPBES framework process and outcome cannot be separated. Although
130 framed as a scientific task, the making of the IPBES framework was a collaborative process
131 inclusive of heterogeneous groups: natural scientists, social scientists, MEP experts, IPBES
132 Bureau members, representatives of indigenous and local knowledge, United Nations
133 officers, States delegates.

134

² In March 2015, IPBES gathers 124 States.

135 While not explicitly associated with the co-productionist idiom, the social worlds framework
136 (Clarke 2005) is an approach particularly used amongst STS scholars and is theoretically
137 consistent with Jasanoff's approach in that they share a constructivist stance. In particular,
138 Clarke's situational analysis, drawing together elements from the social world framework
139 and Actor-Network Theory (ANT) provides useful conceptual resources to explore collective
140 process of meaning-making while being attentive to the importance of non-humans and
141 materials in social interactions (Clarke & Star 2008). This is particularly valuable for tracing
142 the origins, circulation, and evolution of the IPBES conceptual framework.

143
144 In this respect, the IPBES framework is much more than a flat or static diagram: each
145 category and its relationships to the other boxes were carefully crafted. Therefore to
146 understand how this framework was formed it is important to consider the process that led
147 to its adoption and the dynamics animating its production. As Fyfe and Law (1988:1) explain:

148
149 "A depiction is never just an illustration. It is the material representation, the
150 apparently stabilised product of a process of work. And it is the site for the
151 construction and depiction of social difference. To understand a visualisation is thus
152 to inquire into its provenance and into the social work that it does. It is to note its
153 principles of exclusion and inclusion, to detect the roles that it makes available, to
154 understand the ways in which they are distributed, and to decode the hierarchies and
155 differences that it naturalises."

156
157 Drawing on ANT, each inscription in the IPBES framework can be understood as resulting
158 from a successful attempt by an actor, or group of actors, to convey their view and convince
159 other groups. This suggests an understanding of translation not in a linguistic sense but
160 rather as:

161
162 "All the negotiations, intrigues, calculations, acts of persuasion and violence thanks
163 to which an actor or force takes, or causes to be conferred on itself authority to
164 speak or act on behalf of another actor of force" (Callon & Latour 1981:279)

165
166 This entails understanding the IPBES diagram as representing, by means of these
167 inscriptions, several successful translations. Throughout the process, the choice of the
168 categories to be used, as well as the terminology and the direction of arrows, was at the
169 core of endless debates. The controversy around the notion of ecosystem services is only the
170 most visible aspect of the numerous debates that animated the construction of the
171 conceptual framework. Finally, in asking what is achieved by this framework we discuss
172 whether it could itself function as a 'boundary object' (Star & Griesemer 1989) facilitating
173 the inclusion of different forms of knowledges. This concept will be further explained and
174 developed in Section 5.

175

176 Empirical materials for this study come from 10 semi-structured interviews conducted
 177 between December 2013 and February 2014 with experts who were all involved in the
 178 conception of the framework and had substantial roles in this process (Table 1). Some of
 179 these experts were interviewed twice (A, C, I). In addition to these interviews we also rely on
 180 participant observation of two IPBES plenary session: IPBES-1 held in Bonn, Germany (21-26
 181 January 2013), during which an initial framework was presented; and IPBES-2 held in
 182 Antalya, Turkey (9-14 December 2013), during which the framework was adopted. A corpus
 183 of texts including official IPBES documents, workshop reports, and all the comments
 184 received on the framework (made available online) provides the basis for document analysis.
 185 Interviews and all relevant documents have been analysed using an interpretivist approach
 186 inspired by grounded theory (Charmaz 2006).
 187

Interviewee	Disciplinary background	Geographic location	Relation with IPBES
A	Natural scientist	Europe	IPBES interim Secretariat
B	Natural scientist	Europe	Contributing expert
C	Economist	Europe	Contributing expert
D	Natural scientist	Africa	Contributing expert
E	Social scientist	North America	Contributing expert
F	Social scientist	South America	Member of IPBES delegation
G	Natural scientist	Africa	Member of the MEP
H	Social scientist	Africa	Member of the MEP
I	Natural scientist	North America	Member of the Bureau
J	Social scientist	South America	Member of IPBES delegation

188 **Table 1:** Overview of experts 'profiles interviewed on the IPBES conceptual framework.

189 **3. Following the IPBES conceptual framework**

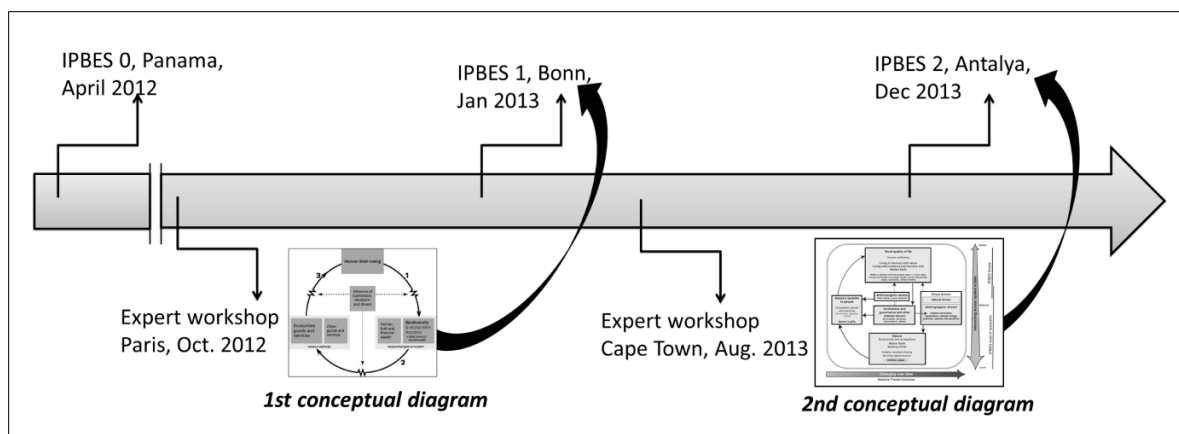
190

191 **3.1. From Panama to Antalya: overview of the process**

192

193 Following the decision to establish IPBES, made in Panama in April 2012 (Fig. 2),
 194 representatives of Member States gave the United Nations Educational, Scientific and
 195 Cultural Organization (UNESCO) the mandate to start reflecting on the conceptual
 196 framework for the Platform in collaboration with the International Human Dimension
 197 Programme (IHDP), DIVERSITAS³ and the Institute for Sustainability and Peace of the United
 198 Nations University. At that time IPBES was at a very early stage in its development and while
 199 it had been agreed that IPBES would have two subsidiary bodies (the Bureau and MEP),
 200 members of these bodies had not yet been nominated.

³ DIVERSITAS is an international programme focused on biodiversity science, see Larigauderie et al. 2012.

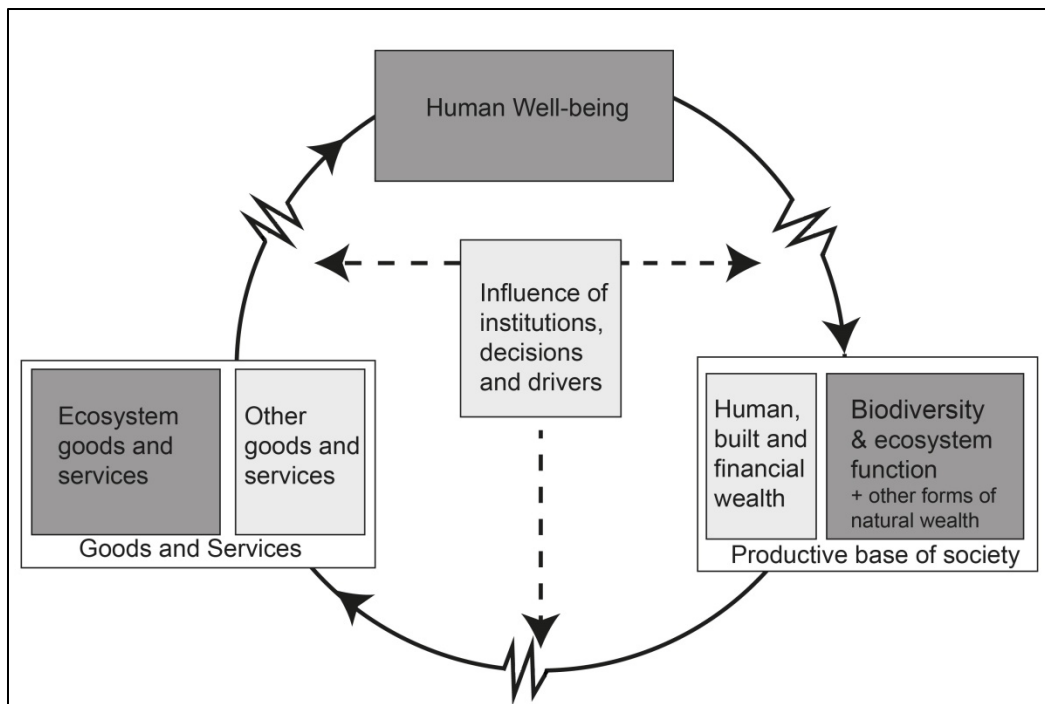


201
 202 **Fig. 2** Chronology of main events punctuating the development of the IPBES conceptual framework,
 203 April 2012 to December 2013.

204 Under the auspices of UNESCO, an expert workshop gathering of around 30 participants was
 205 convened in Paris in October 2012. Following this event, the first conceptual diagram (fig.3)
 206 was presented in Bonn, in January 2013, during a side-event of the first official plenary
 207 session of IPBES (UNEP 2013a). The second major workshop took place in Cape Town, South
 208 Africa, in August 2013 (UNEP 2013b).

209 **3.2 The Paris workshop**

210 Under the leadership of UNESCO a small organizing committee was created, comprising
 211 Salvatore Arico (ecologist, UNESCO), Neville Ash (ecologist, UNEP), Eduardo Brondizio
 212 (anthropologist, Indiana University, USA), Anne Larigauderie (ecologist, Executive director of
 213 the International Council for Science), Georgina Mace (ecologist at University College
 214 London, head of DIVERSITAS), Kazuhiko Takeuchi (geographer, Vice-rector of the United
 215 Nations University, Tokyo) and Pierre Commenville (ecologist, International Union for
 216 Conservation of Nature). The selection of experts for the workshop was rather informal: a
 217 list of invited experts was established by the organizing team, in association with the IPBES
 218 interim Secretariat. These experts were chosen to be representative of a broad range of
 219 geographical locations (namely to have a North/South balance), of disciplines (ecologists,
 220 economists, anthropologists were invited), and also of different areas of expertise (including
 221 marine sciences, forestry, genetic resources). It was an academic workshop: almost all of
 222 these experts had a PhD and most were still working either in a research institute or in
 223 academia. A fair number of them also had experience with global change research
 224 programmes such as DIVERSITAS and IHDP.



225
 226 **Fig. 3** First conceptual diagram, outcome of the Paris workshop in October 2012 (Adapted
 227 from UNEP 2013a:9 with permission)
 228

229 Some exchanges took place before the workshop and a framing paper outlining some ideas
 230 for a potential framework was circulated. This document was written beforehand by five
 231 experts, who were also at the Paris workshop, all of them having wide-ranging experience of
 232 global change research and of global biodiversity assessments (particularly the MA). It also
 233 presented a sample of conceptual frameworks used in other initiatives such as the MA, the
 234 Inclusive Wealth Report, the United Kingdom National Ecosystem Assessment and TEEB (the
 235 Economics of Ecosystem and Biodiversity). The drafting of the framework was overseen by
 236 Anne Larigauderie and Anantha Duraiappah (economist, IHDP). During the process,
 237 participants were also encouraged to pursue their work online by means of a virtual
 238 platform, set up to encourage discussion in a transparent manner. The idea was to limit
 239 private emails and to encourage collective thinking.

240 **3.3 The inter-sessional process and Mother Earth**

241 After the Paris workshop, the proposed conceptual framework was made available online
 242 and open for comments to IPBES Members States and to civil society organizations. This
 243 process allowed several positions to be made visible – some delegations welcomed the
 244 suggested framework (e.g. India), some expressed moderate criticisms, many remained
 245 silent – and the delegation of Bolivia, supported by other South American delegations from
 246 the ALBA⁴, strongly advocated against it. The Bolivian delegation rejected the suggested

⁴ ALBA (Alianza Bolivariana para los Pueblos de Nuestra América) is an intergovernmental organization including Antigua and Barbuda, Bolivia, Cuba, Dominica, Ecuador, Nicaragua, Saint Lucia, Saint Vincent and the Grenadines and Venezuela.

247 framework and put forward an alternative proposal based on the idea of “Mother Earth”.
248 After the IPBES Plenary in Bonn in January 2013, arguments arose between participants
249 supporting the initial Paris framework and those advocating for an alternative proposal. As
250 emphasized by some participants in the Paris workshop:

251 “There was a clear divide between what we drafted as a conceptual framework for
252 discussion at the Bonn plenary meeting and there were many comments especially
253 coming from countries like Bolivia that really clashed with the conceptual framework
254 that we were proposing” (Interviewee C)

255 “It is a completely different framing and they were very concerned and they raised
256 this at the Bonn meeting, we missed out on Mother Nature completely” (Interviewee
257 B)

258 In Bonn, the experts of the Multidisciplinary Expert Panel (MEP) and members of the Bureau
259 were nominated. For the MEP, five experts were selected for each United Nations region
260 (Western Europe and Others Group, Eastern Europe Group, Latin American and Caribbean
261 Group, Asia-Pacific Group, African Group). The task of continuing the work on the conceptual
262 framework was then formally handed over to these freshly nominated MEP members who
263 had to address the comments and deal in particular with the Bolivian contestation. Two MEP
264 members, Sandra Diaz (Argentina) and Sebsebe Demissew (Ethiopia) played a particularly
265 significant role in the process and acted as co-chairs in the Cape Town workshop, in August
266 2013. This second major workshop can then be seen as an attempt to find an agreement
267 between these diverging voices. In the context of IPBES governance, States have the
268 executive power and consensus is generally the rule for decision-making (see IPBES 2012).
269 This means that for the process to move forward an agreement needed to be found
270 between all States’ delegates, and in this case more particularly with Bolivia.

271 **3.4 The Cape Town workshop**

272 Both the Paris and the Cape Town workshops were landmark events in the process leading
273 to the IPBES framework and they share some similarities. Both were framed as *expert*
274 workshops and approached the making of the framework as a *scientific* task; in other words
275 participants were not intended to represent anything but their scientific skills. In both cases
276 much emphasis was put on the importance of having an inclusive process and to bring
277 together different (geographical, cultural, disciplinary, gendered) perspectives. Beyond the
278 physical settings of the workshop venues there were also numerous online exchanges
279 throughout the process.

280 However, the characteristics and dynamics of the two events were very different (Table 2).
281 To access the Cape Town workshop participants had to be nominated by a government and
282 the selection process was more formal and less flexible than for the Paris workshop. Only a
283 small number of experts were present at both workshops. In addition to these experts, a

284 significant number of MEP and Bureau members of IPBES were also present at the Cape
 285 Town workshop:

286 “One of the problems at this meeting was that there was 30 experts plus a lot of MEP
 287 members plus a lot of Bureau members so it was a very big meeting and the roles of
 288 these different groups were not entirely clear” (Interviewee B)

289 Moreover, the Cape Town workshop took place after the contestation by Bolivia and this
 290 affected its agenda as well as the list of participants: for example, the head of the Bolivian
 291 delegation, who was not in Paris, was present at the Cape Town workshop. Between the two
 292 events, the framework underwent numerous changes and there was a countless number of
 293 intermediary drafts.

	PARIS WORKSHOP	CAPE TOWN WORKSHOP
Official name	Informal expert workshop on main issues relating to the development of a conceptual framework for the IPBES	Expert workshop on the conceptual framework for IPBES
Date & Place	29-31 st , October 2012 Paris, France	25-26 th , August 2013 Cape Town, South Africa
Main convenor	UNESCO	IPBES Multidisciplinary Expert Panel
Supported by	Government of Japan, IUCN, DIVERSITAS, IHDP	Governments of South Africa, Japan and United Kingdom
Access to the workshop	Following IPBES Plenary-1 in Panama (April 2012) a steering committee was formed and invited participants to the workshop based on their scientific expertise.	IPBES members and observers were invited to nominate experts to the workshop, more than 100 nominations were received and the MEP members selected 5 members per UN region.
Participants (number)	<ul style="list-style-type: none"> • Experts (31) • Observers (8) 	<ul style="list-style-type: none"> • Experts selected by the MEP (23) • Representatives of the IPBES workshop on Indigenous and Local Knowledge Systems (3) • Representative of MEA Scientific Subsidiary Body (1) • Representatives of UN Agencies (5) • IPBES Bureau and MEP members (29)
Chairs of the workshop	Eduardo Brondizio (anthropologist); Georgina Mace (ecologist)	Sandra Diaz (ecologist, MEP member, Argentina); Sebsebe Demissew (botanist, MEP member, Ethiopia)

294 **Table 2:** Main characteristics of two landmark workshops (*Information compiled in this table comes*
 295 *from the official reports of each workshop, both available online, see UNEP2013a, 2013b*)

296 This points towards a key difference between the two events: while the Paris workshop was
 297 mostly framed as a conventional scientific workshop gathering mostly academics, in the
 298 Cape Town workshop, political and epistemic concerns could not easily be distinguished.
 299 Participants were more heterogeneous, in terms of their affiliations and backgrounds, and
 300 often acted both as experts and national, or sectoral, representatives.

301 4. Developing the IPBES conceptual framework

4.1. A successful translation: social scientists and ‘institutions’

A similarity between the Paris and the final Cape Town diagrams lies in the fact that they both place “institutions” centre stage. Initially, several participants thought that, given that the focus of IPBES is biodiversity and ecosystem services, then “nature” ought to be at the core of the framework. However, recent discussions taking place under the Convention on Biological Diversity, with the adoption of the new 2020 Aichi Biodiversity Targets, have recognized the importance of institutional settings (‘indirect drivers’) to address biodiversity issues (CBD 2010) and since the beginning of the IPBES process much emphasis has been placed on the need to be inclusive of social scientists (e.g. Mooney et al. 2013).

This move also echoes a broader pattern in global change research where several scholars have called for the participation of social sciences in the framing of global change issues in order to favour more pluralist approaches (Hulme 2011; Palsson et al. 2013; Sörlin 2013). This contrasts, for example, with the approach adopted by the IPCC where the framing of climate change is predominantly based on natural sciences (Bjurström & Polk 2011; Hulme & Mahony 2010). Some social science experts were present at both workshops. They argued that to appropriately tackle biodiversity and ecosystem services degradation, institutional settings should be taken into consideration:

“I believe, as a social scientist, that if IPBES was going to have, to make, any impact whatsoever it would need to put that understanding of the relevance of social interactions and institutions at the centre, at the core of the conceptual framework, which is something that, for example, the Millennium Ecosystem Assessment did not do” (Interviewee C)

Underlying this view is the conviction that in tackling biodiversity issues the need is not only scientific knowledge on the state of ecosystems, but also alertness to the way ecosystems are governed, for example by analysing public subsidies that may have harmful effects on ecosystems. This argument was successful and most of the experts already involved in the Millennium Ecosystem Assessment regarded this as an important improvement in contrast to this previous initiative.

Following the debates between “ecosystem services” and “Mother Earth” it was also argued that having “institutions” as the centre of the conceptual framework was appropriate since it could serve to convey the view that value-systems are socially constructed and result from complex socio-cultural processes. In this respect, “institutions” serve not only to convey an understanding of biodiversity issues as related to governance settings, but also appear as a way to articulate different value-systems. It puts in equivalence two different systems: a utilitarian one focused on ecosystem services and a holistic one based on the idea of Mother Earth.

343 **4.2 A contested category: ecosystem services**

344 In the Paris diagram there is no mention of the intrinsic value of biodiversity – that is the
345 idea that biodiversity has value in itself, independently of people’s use or perception of it.
346 The rationale for this choice lies in the fact that, although sympathetic to the idea of intrinsic
347 value, many participants in the Paris workshop thought that it was not relevant to the work
348 of IPBES and this choice was deliberate:

349 “There is a philosophical discussion about whether ecosystem service is an
350 anthropocentric idea as opposed to a pancentric idea and some of these indigenous
351 knowledges are very much based on a pancentric view, in other words the value is
352 intrinsic in nature and not in the human use of nature. (...) I agree that this can be
353 believed, but we are humans and the only possible way we can perceive is through
354 our humanness. In other words, if there is value in nature outside of human
355 perceptions, by definition we cannot engage with it because the only way to engage
356 is through human perception. So to some extent this debate is displaced, it is not a
357 practical way.”(Interviewee D)

358 Nevertheless, the Paris diagram was perceived as too utilitarian by a wide range of actors,
359 not just those from South America, but also some from European countries (e.g. Germany,
360 the United Kingdom) and Asia-Pacific (e.g. New Zealand, Japan). Their comments
361 emphasized that it did not adequately reflect the plurality of values that can be attributed to
362 biodiversity. There was a wide array of positions among participants and the notion of
363 ecosystem services served as a site of controversy between the two extreme ends of the
364 spectrum.

365 **4.1.1. The Bolivian critique**

366
367 The major criticism of the Paris diagram was articulated by the Bolivian delegation, led by
368 Diego Pacheco, an anthropologist by training. The Government of Bolivia has been
369 questioning the concept of ecosystem services since the beginning of the IPBES process and
370 advocating similar positions in other forums of environmental governance (e.g. IPCC,
371 Convention on Biological Diversity). Other South American delegations were supportive of
372 this view, but it was the Bolivian delegation who formulated and advocated most
373 vehemently for an alternative, more holistic, framing:

374 “The Plurinational State of Bolivia disagrees with the content of the proposed
375 conceptual framework because it only represents the views, visions and approaches
376 of the Western modern society and it is completely biased towards a particular vision
377 of biodiversity which is the one related to the commodification of nature.”
378 (Alternative Bolivian proposal, 2013, p2)

379

380 As suggested in the quote above, the Paris diagram was rejected on the basis that it was
381 representative of a western vision of biodiversity, framed in terms of ecosystem services,
382 and the suggestion that such a notion was synonymous with the commodification of nature.
383 The Bolivian critique also depicts “western modern society” and “non-western, indigenous
384 people and local communities” as two blocks differing in every possible aspect including
385 ethical values, economy, policy, environment and religion.

386
387 In response to the “western view”, Bolivia proposed an alternative framework that of living-
388 well in balance and harmony with Mother Earth. This position mirrors a law which has been
389 adopted in Bolivia, the “Law of the Rights of Mother Earth” which attributes rights to nature
390 (Bolivia, Law 071, 2010). As outlined in the Bolivian proposal:

391
392 “The concept of Mother Earth is completely different than nature. Mother Earth is a
393 living system or living being. This would imply saying that nature is considered as a
394 living being with specific “rights”, paralleling “human rights”. In conclusion, Mother is
395 “our mother and therefore is not an object to be exploited by human beings”.
396 (Alternative Bolivian proposal, 2013, p7)

397
398 In addition to this key entity of Andean cosmology, the Bolivian framework is based
399 extensively on the work of Elinor Oström (whom the head of the Bolivian delegation studied
400 with for his PhD at Indiana University) and argues that environmental goods and functions
401 should not be delivered by private markets but rather by public entities (e.g. Ostrom 1990).
402 In particular, the framework builds on the idea of polycentric governance “characterized by
403 multiple governing authorities at differing scales rather than a monocentric unit” (Ostrom
404 2010:552) and advocates for the adoption of multi-level institutional arrangements.

405
406 In rejecting the notion of ecosystem services, the Bolivian proposal also underlines the
407 importance of traditional and indigenous knowledge. The promotion of Mother Earth
408 appears as a way to open a space for other ways of knowing that do not necessarily fall into
409 the ecosystem services paradigm. In this view, the conceptual framework is:

410
411 “An instrument to guide the relationship between human beings, biodiversity and
412 environmental functions, and help to create linkages for the articulation between
413 indigenous knowledge systems of indigenous people and the modern science.”
414 (Alternative Bolivian proposal, 2013, p15)

415
416 While criticizing ecosystem services on the basis of its utilitarian grounding is common –
417 many States including in the western world thought that the Paris diagram was too
418 utilitarian, Mother Earth’s advocates immediately connected it with a particular global
419 imaginary, that of hegemonic capitalism. Concurrently, ecosystem services appear here to be
420 a way to hand western science a predominant role in IPBES.

421 **4.2.2 Preserving ecosystem services**

422 For experts among the ecosystem services community, the adoption of the notion is based
423 on several concerns. First, to a large extent IPBES is perceived by many natural scientists as
424 an opportunity to build on previous initiatives in the field of biodiversity sciences. For this
425 reason, there was a strong pressure to maintain some epistemic consistency, most
426 particularly with the classification of ecosystem services promoted in the MA. In this respect,
427 many natural scientists saw the development of the framework as an opportunity to
428 improve and clarify the definition of the different types of ecosystem services, as well as
429 their relations with biodiversity and human well-being.

430 For example, many thought that the way in which ‘supporting services’ was defined in the
431 MA was not entirely satisfying:

432 “Supporting services ends up being a bit of a problem because this is really just
433 fundamental ecological things, this is what ecosystems will do even if people were
434 not here (nutrient cycling, water cycling,...), they do that all by themselves, so in a
435 way it’s part of nature itself, it’s part of biodiversity, so they were always slightly
436 awkward [in the MA]. You had to make it the underpinning and then when you do
437 valuation it is difficult. Now, they are hidden in here somewhere: ‘life support
438 systems’, and that is where supporting services have gone and there is generally
439 agreement amongst ecosystem services people (...).” (Interviewee B)

440 In this perspective, rather than giving up the notion of ecosystem services what is needed is
441 to build on the existing categories in order to strengthen their analytical robustness, with the
442 underlying assumption that this will facilitate the development of better ways to quantify
443 and assess these ecosystem services and the benefits they provide to society. A similar
444 concern animated the notion of ‘cultural services’:

445 “The problem with cultural services is that they end up being the same thing as
446 intrinsic value if you are not really careful. So the way this works is, intrinsic value in
447 theory is the value of something irrespective of the human use of it, so pigeons for
448 themselves, or nature for itself, what that means is that you can’t make any decisions
449 about it.” (Interviewee B)

450 Second, the notion of ecosystem services is often regarded as the most effective, or
451 pragmatic way, to convey biodiversity-issues to decision-makers. In this respect, ecosystem
452 services are often defended as an ideologically-neutral notion:

453 “This notion that ecosystem services are the benefits that people get from nature is
454 fairly independent of any ideology. The opponents of that tend to argue that it is a
455 capitalist notion but I don’t see it as a capitalist notion, I think there are things that
456 you get and some come from nature, that does not make it a capitalist view or an
457 exploitationist view.”(Interviewee D)

458 Although some ecosystem services experts had sympathy with the idea of Mother Earth,
459 many perceived its adoption and promotion as a political position, not analytical enough to
460 be workable.

461 “I understand where it is coming from but the key drivers of this are political and
462 have a lot to do with the emergence of the promotion of indigenous knowledge
463 systems particularly in parts of South America as a counter to what is seen as a
464 western ideology. (...)

465 When you start trying to unpack that at the level of the conceptual framework it
466 typically emerges that the conceptual framework that emerges is just the one that is
467 actually provided in the scientific circles but with different words attached.”
468 (Interviewee D)

469 This points towards key differences between the two groups regarding the meanings given
470 to the ‘ecosystem services’ concept. For the ecosystem services community, ecosystem
471 services appear predominantly as an epistemic notion, but which is also a pragmatic way to
472 frame biodiversity-issues. There is nothing intrinsically suspect about ecosystem services. It
473 is a concept for linking scientific knowledge on biodiversity with policy-making processes.
474 Clarifying the definition of the different types of ecosystem services, and their relation with
475 biodiversity and human well-being, is important to facilitate better ecosystem management
476 (e.g. Mace et al 2012) and valuation practices. Similarly, having “institutions” at the core of
477 the diagram was generally regarded as an improvement in contrast to the MA conceptual
478 framework – a necessary improvement for IPBES to have any policy-relevant impact.

479 For Mother Earth’s advocates, however, ecosystem services is understood as performing a
480 certain ordering of the world, one which they deeply contest. It is not an ideology-free, or
481 value-free, notion. The rejection of ecosystem services reflects an understanding of the
482 concept as anything *but* a neutral vehicle. It is rather perceived as the manifestation of
483 nature’s commodification. In light of this understanding of ecosystem services, not only
484 would the notion not solve the biodiversity crisis, it would make it worse. This view
485 resonates to a certain extent with the academic critique which questions the notion of
486 ecosystem services – what does this framing mean in practice? - and is alert to its
487 performative effects (Ernstson & Sörlin, 2013; Turnhout et al. 2013; Turnhout et al 2014).

488 **4.3 Mediating experts: ‘No one wants to commodify nature’**

489 The controversy over the Paris diagram triggered many debates and interactions between
490 different groups of participants. In this context, some experts played a particularly important
491 role by being able to connect with different groups and encourage dialogue, in particular
492 between the community of ecosystem services experts and delegates of South American
493 countries.

494 “I was playing some sort of bridge, bridging between Bolivia and other scientists, so that
495 other scientists could understand that the Bolivian delegation wanted to be very
496 constructive but they also wanted to show that their view and IPBES and the conceptual
497 framework was developing in a different way. I was acting as a diplomat trying to broker
498 a deal between the scientific community and delegations like the Bolivian one and at the
499 end it worked really well” (Interviewee C)

500 As highlighted in this quote, the process of producing the diagram allowed fruitful
501 interactions to take place. Some experts acted as mediators, using their interactional
502 capacities to find solutions between diverging views and were key in building trust to allow
503 the process to move forward. Behind the scenes, there was also a real effort to understand
504 how the view of ‘Mother Earth participants’ differed from the ‘ecosystem services view’. In
505 this respect UNESCO, having convened the Paris workshop, acted as a mediator and
506 facilitated interactions between the Bolivian delegation and other groups.

507 Many participants, including among ecosystem services experts, noted that their vision was
508 not that different from the one of Mother Earth advocates. They also recognize that
509 biodiversity has non-utilitarian values. However, they believed that, as highlighted above “it
510 is not a practical way”; the ecosystem services approach provides a more pragmatic,
511 framing. Experts among the ecosystem services community tried to convey this message:
512 “no one wants to commodify nature”. They often expressed some frustration over the
513 refusal to adopt a common lexicon or terminology:

514 “There is quite a lot of refusal to understand the meaning of the words. You can go
515 through that explanation over and over again and people still oppose and revert to
516 their former positions, even though they have agreed that their position is not that
517 different. (...) You can’t call them ecosystem services but you have to call them
518 “nature’s benefits”, and you know, what are nature’s benefits to humans if not
519 ecosystem services?” (Interviewee D)

520 Despite numerous attempts to agree on a shared terminology, such convergence was not
521 possible and participants had to revert to using a colour coding as explained below.

522 **5. Discussion: what does the framework achieve?**

523

524 **5.1. Articulating multiple perspectives**

525

526 This absence of convergence – the lack of an agreement over a singular framing – is
527 illustrated by the very fact that a colour coding device was deemed necessary. The
528 controversy between Mother Earth and ecosystem services experts can be understood as
529 resulting from efforts by these two groups to constitute their own framing with what
530 perhaps bears some similarity with an *obligatory passage point* (Callon 1986). Each group
531 refuses to give up its framing for the same reason: they are each perceived as too political by

532 the other group. In this respect, the colour coding device – blue for Mother Earth, green for
533 ecosystem services – appears as a solution to create an agreement out of disagreement, to
534 create a consensus out of dissensus:

535 “Text in green denotes the concepts of science; and text in blue denotes those of
536 other knowledge-systems” (IPBES-2 Final report, p3)

537 The clever use of this colour code allows these two perspectives to coexist on the same
538 diagram, to fit in the same boxes, thereby rendering them visually commensurable. By the
539 use of this colour code, the IPBES conceptual framework recognizes both perspectives
540 equally and legitimizes them.

541 In doing so, it also essentializes the distinction between science and indigenous and local
542 knowledge (ILK), as if they were two clearly demarcated monolithic blocks:

543 “Nature” in the context of the Platform refers to the natural world with an emphasis
544 on biodiversity. *Within the context of science*, it includes categories such as
545 biodiversity, ecosystems, ecosystem functioning, evolution, the biosphere, human
546 kind, shared evolutionary heritage and biocultural diversity. *Within the context of*
547 *other knowledge-systems*, it includes categories such as Mother Earth and systems of
548 life” (UNEP 2014, p41; italics ours).

549 However such a clear discontinuity between science and ILK has been questioned, and from
550 a STS standpoint all knowledge is unavoidably *situated* (e.g. Haraway 1988). The search for a
551 demarcation criterion between scientific knowledge and traditional knowledge is still
552 unresolved, or highly contested (Agrawal 1995; Turnbull 1997; Cruikshank 2005). According
553 to these scholars there is no substantial difference between these knowledge-systems, both
554 ILK and science can be approached as cultural practices first emerging in local settings, and
555 “a characteristic [different knowledge-systems] all share is localness” (Watson-Verran &
556 Turnbull 1995:116). The reification of these two distinct categories then raises questions
557 regarding what this means for the kinds of knowledges recognized by IPBES in practice.

558 **5.2 A boundary object?**

559 If the distinction between ILK and scientific knowledge can be questioned, it is however true
560 that the circulation of different knowledges is uneven. Some forms of knowledge are more
561 easily decontextualized and travel better than others in global settings (Hulme 2010;
562 Jasanoff 2010). In a recent paper Turnhout and colleagues develop the idea of
563 “measurementality”. Drawing on the Foucauldian idea of governmentality they suggest that
564 underlying IPBES is a logic that tends to marginalize those forms of knowledge that cannot
565 easily be translated into the ecosystem services approach (Turnhout et al. 2014). For this
566 reason, an important question concerns whether the IPBES conceptual framework could act
567 as a ‘boundary object’, facilitating such ontological manipulation and allowing different
568 knowledges to enter into policy deliberation. According to Star and Griesemer, ‘boundary

569 objects' are: "objects which are both plastic enough to adapt to local needs and constraints
570 of the several parties employing them, yet robust enough to maintain a common identity
571 across sites. (...) They have different meanings in different social worlds but their structure is
572 common enough to more than one world to make them recognizable, a means of
573 translation. The creation and management of boundary objects is key in developing and
574 maintaining coherence across intersecting social worlds" (Star & Griesemer 1989:393).

575

576 As outlined in this definition, one of the key dimensions of boundary objects is that they
577 allow interpretive flexibility. They can be embedded with different meanings by distinct
578 groups of actors. At the same time, they are necessary to ensure collaboration despite
579 heterogeneity. The IPBES framework aligns with these criteria; while no consensus could be
580 found at the inception of the process, the colour code allows different interpretations to co-
581 exist. It also makes possible the continuation of IPBES work by providing a common framing
582 for different groups of actors with multiple concerns. In this respect it stabilizes interactions
583 between these groups and ensures that they can still work together:

584

585 "The process of getting there was not easy, it was a very interesting process of
586 negotiation between scientists who wanted to make very relevant points but who
587 also had to compromise to be able to maintain a coherent and unified vision by many
588 different types of scientists and people with very different understandings."

589 (Interviewee C)

590

591 Star also points out that boundary objects must satisfy the informational requirements of
592 the different groups of actors (Star 2010). In this respect, the framework was consciously
593 designed as a device whose objective is to provide a common overarching vision for IPBES
594 while being used to implement its programme of work (Díaz et al. 2015a; 2015b). The
595 ambition is that this framework should serve as an articulation device – between theory and
596 practice, between science and policy – and facilitate the implementation of common
597 standards. IPBES is global in scope and there is a willingness to make its findings, or data,
598 commensurable across regions. The conceptual framework was explicitly designed to shape
599 the knowledge infrastructure of IPBES and is currently being used by the different groups of
600 experts participating in IPBES (see UNEP 2015a; 2015b).

601

602 Yet, the resulting framework appears largely to be a negotiated outcome: a solution needed
603 to be found and the colour code was an acceptable device to articulate different
604 perspectives that could not easily have been articulated otherwise. Among participants, it is
605 also widely acknowledged that the IPBES framework was a compromise:

606

607 "To some degree it was a political solution because of, say, Bolivia, but actually now I
608 quite like it. I think it talks to some degree to indigenous people, I think there is some
609 people in Japan that think much the same – 'harmony with nature', it certainly hopes

610 to talk to Bolivia and a few other countries, not just Bolivia, and I don't think it
611 sacrifices intellectual rigor at all. So I actually rather like it and to be honest it was an
612 evolutionary process." (Interviewee I)

613
614 For this reason, while the IPBES framework may act as a stabilizing device, it is also a political
615 solution which makes it unlikely that conflicts and contestations have completely
616 disappeared – the coding device could be a 'magic trick'. If it is true that "in a biodiverse
617 world we need to be able to manipulate ontologically different data" (Bowker 2000: 677),
618 there remains some ambiguity about whether and how this is possible within the IPBES
619 knowledge infrastructure and conflicts may have been displaced elsewhere. Yet, for now,
620 some innovative, experimental, practices are being developed in IPBES: for example a task
621 force on 'Indigenous & Local Knowledge' has been set up (Díaz et al. 2015a).

622

623 **6. Conclusion**

624

625 IPBES is an emerging institution of expertise, positioning itself at the science-policy interface.
626 However, as the debates around the conception of the IPBES conceptual framework
627 illustrate, this interface is being imagined in multiple ways and embedded with different
628 meanings and concerns. This illustrates the difficulty of reconciling in the context of a single
629 framework "all disciplined ways of knowing nature, as well as conceptualizing human-nature
630 relationships" (Jasanoff 2004b:348). Overall, the debates that emerged in Paris, Bonn and
631 Cape Town reflected competing interpretations of ecosystem services and what this
632 approach to biodiversity entails in policy practice. But, even wider, they reflect
633 disagreements about the nature of the IPBES conceptual framework and the form of science-
634 policy relations that IPBES will endorse, the nature of science and its cultural authority, and
635 who controls imaginaries of global planetary futures.

636

637 In the process leading to the adoption of the framework, efforts were made to be inclusive
638 of a broad range of actors and to consider different perspectives on biodiversity. Two major
639 expert workshops were organized, both of which convened fascinating debates regarding
640 how to frame human-nature relations in the context of biodiversity issues. These have
641 allowed interactions and dialogue to occur between groups of actors who are unused to
642 working together. A major controversy arose between participants framing biodiversity
643 through the utilitarian notion of "ecosystem services" and those framing biodiversity
644 through the holistic notion of "Mother Earth". In this context, the role of mediating experts
645 became critical: positioning themselves at the intersection between different social worlds
646 these experts have built some bridges - for example between South American delegations
647 and the community of ecosystem services scientists.

648

649 However, during this process there were important tensions between the willingness to
650 adopt a single, consensual, framework and to overcome contestation and accommodate

651 different perspectives on the same diagram, a colour coding system was used. This clever
652 device allows both perspectives to be made equally visible and legitimize them both. In
653 doing so, the IPBES conceptual framework performs two important roles: (1) it acts as a
654 stabilizing device, rather than an epistemic one, between groups of actors – while potentially
655 hiding conflicts and dissent ‘under the carpet’; (2) it recognizes explicitly multiple
656 knowledge-systems (scientific knowledge and traditional and indigenous knowledge) and
657 their equivalence – while essentializing their differences. If the framework proves itself to be
658 a ‘boundary object’, it should facilitate the inclusion of different forms of knowledge,
659 although as discussed in section 5, some ambiguity remains as to how this can be achieved.

660

661 This study of the making of the IPBES framework also suggests that the ecosystem services
662 approach is not uncontested and resonates more strongly in some places and transnational
663 scientific networks, than in others - South America and in parts of Asia (e.g. Japan). Similarly,
664 Mother Earth may find an audience in South America while being contested or subtly
665 resisted elsewhere. While the approved framework recognizes both perspectives
666 symmetrically, an outstanding question concerns their potential asymmetry in practice: is
667 “Mother Earth” a marginal position, a site of friction on the fringes of a vast “technological
668 zone” (Barry 2006) constituted by ecosystem services? Or is “Mother Earth” a powerful
669 counter-narrative to the assumed hegemony and utility of ecosystem services? IPBES is still
670 at an early stage of development and it remains to be seen how these different perspectives
671 will be enacted in epistemic and policy practices. Preserving this plurality of knowledge,
672 captured in the IPBES conceptual framework, may well be the most important challenge for
673 a democratic governance of global biodiversity

674

675 **ACKNOWLEDGEMENTS**

676 The authors wish to thank all those who were interviewed as part of this research as well as
677 Helen Pallett, Irene Lorenzoni, Rodela Romina, Anne Larigauderie, and Peter Simmons for
678 helpful comments and discussions. We would also like to thank the reviewers for their
679 insightful comments. Borie acknowledges the support of a PhD studentship funded by the
680 University of East Anglia’s School of Environmental Sciences, Norwich (UK).

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