Between Nowhere and Everywhere:

The Challenges of Placing the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)

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Abstract

Global Environmental Assessments (GEAs) have become influential processes in environmental governance, with the objective to gather policy-relevant knowledge on environmental issues for decision-makers. This thesis offers the first ethnographic account of the nascent Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) which, in contrast to earlier GEAs, aims to implement an inclusive model of expertise. Underlying this move are concerns regarding both the effectiveness of GEAs and their democratization. GEAs have also faced numerous criticisms for being dominated by the global North and for failing to consider the diversity of ways of making sense of global environmental change. Drawing on Science and Technology Studies and on the emerging literature on geographies of science, I view science and policy as being mutually entangled, rather than as two separate domains, and conceptualise GEAs as sites of co-production. It is important therefore to study how categories such as 'science', 'policy', 'local' and 'global' are produced and to investigate the practices and places through which knowledge is constructed as policy-relevant. I argue that, despite the aspiration to be global institutions that transcend specific national and cultural contexts and interests, GEAs themselves are situated initiatives which produce a 'view from somewhere'. Using qualitative methods, I examine three processes within IPBES: (1) the choice of location for its Secretariat; (2) the development of its conceptual framework; and (3) the constitution of the Multidisciplinary Expert Panel. Results confirm that IPBES presents a number of innovative features but also reveal significant ambiguities as to whether IPBES is actually 'opening-up' its frame of reference and embracing multiple forms of knowledges and expertise. While IPBES aspires to provide the inclusive 'view from everywhere', the narrative of science as providing the disinterested 'view from nowhere' and the interest-riven context in which it operates undermines its ambitions.

‘The universal is at the heart of contemporary humanist project: scientists, economic reformers, and social justice advocates all appeal to the universal. Yet universals, taken at their face value, erase the making of global connections. This raises a disturbing question: How can universals be so effective in forging global connections if they posit an already united world in which the work of connection is unnecessary? (…) Neither those who place their ideas inside the universal nor those who discredit it as false pause to consider how universals work in a practical sense. To move beyond this it is important to see generalization to the universal as an aspiration, an always unfinished achievement, rather than the confirmation of a pre-formed law. Then it is possible to notice that universal aspirations must travel across distances and differences, and we can take this travel as an ethnographic object.’ (Tsing 2004:7)

‘Scientific knowledge is made in lots of different places. Does it matter where? Can the location of scientific endeavour make any difference to the conduct of science? And even more important, can it affect the content of science? In my view the answer to these questions is yes.’ (Livingstone 2003: xiii)

Contents

Acronyms

ALBA	Alianza Bolivariana Para los Pueblos de Nuestra America (Bolivarian Alliance for the Peoples of Our America)
ANT	Actor-Network Theory
BION	Biodiversity Network Bonn
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species
CMS	Convention on Migratory Species
CoP	Conference of the Parties
EEA	Eastern European Group (one the United Nations Regional Groups)
ENB	Earth Negotiation Bulletin
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GBA	Global Biodiversity Assessment
GBO	Global Biodiversity Outlook
GEO-BON	Group on Earth Observation – Biodiversity Observation Network
GBIF	Global Biodiversity Information Facility
GRULAC	Latin American and Caribbean States (one the United Nations Regional Groups)
IAASTD	International Assessment of Agricultural knowledge, Science and Technology for Development
ICSU	International Council of Scientific Unions
ILK	Indigenous and Local Knowledge
IMoSEB	International Mechanism of Scientific Expertise on Biodiversity
IPCC	Intergovernmental Panel on Climate Change
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservation Committee
LMMCs	Like-Minded Megadiverse Countries
MA	Millennium Ecosystem Assessment
MDG	Millennium Development Goals
MEA	Multilateral Environmental Agreement
MEP	Multidisciplinary Expert Panel (scientific and technical subsidiary body of IPBES)
NGO	Non-Governmental Organization
NBSAP	National Biodiversity Strategies and Action Plans

SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice (of the CBD)
SCB	Society for Conservation Biology
SBCD	Secretariat of the CBD
SDGs	Sustainable Development Goals
SPI	Science-Policy Interface
TEEB	The Economics of Ecosystems and Biodiversity
TEK	Traditional Ecological Knowledge
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations for Education, Science and Culture Organization
UNFCCC	United Nations Framework Convention on Climate Change
WCMC	World Conservation Monitoring Centre
WEOG	Western Europe and Other Groups (one the United Nations Regional Groups)
WMO	World Meteorological Organization
WRI	World Resources Institutes
WWF	World Wide Fund for Nature

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Chapter 1 - Overview

Our geological era may soon be constituted as the Anthropocene – a denomination put forward by natural scientists to characterize an era in which human societies have acquired the ability to alter significantly geophysical and biogeochemical processes (Bonneuil & Fressoz 2013; Lövbrand et al. 2015). While a decision over the official denomination of this proposed new era will be taken in 2016, awareness of human impacts on the planetary environment is nothing new and over the past decades science and scientists have played a key role in documenting the diverse damages caused by human societies on their environment by identifying, for example, the role of chlorofluorocarbons in causing ozone depletion, or rising emissions of greenhouse gases as one of the main drivers of anthropogenic climate change.

In this context, since the early 1980s, with the inception of the International Ozone Assessment, global environmental assessments (GEAs) have become prominent processes in the governance of global environmental change. According to Scoones: 'GEAs have become all the rage' (2009:547). Underlying GEAs is the assumption that they can help address environmental issues by providing usable knowledge to policy and decision makers (Watson & Gitay 2004). They have become increasingly relied upon to organize the provision of scientific knowledge and advice to governments and for multilateral environmental agreements (MEAs). In particular following a series of events such as the publication of the Bruntdland report ('Our Common Future', 1987) and the Rio Conference on Sustainable Development (1992), the institutional landscape of environmental governance has been marked by the multiplication of numerous MEAs which have increasingly relied on scientific expert advice stemming partly from GEAs.

One particular area in which these scientific efforts have been directed relates to concerns over the state of biological diversity (abbreviated as *biodiversity*) which has been defined in the Convention on Biological Diversity (CBD 1992) as:

> 'The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.' (CBD, Article 2)

The term *biodiversity* was coined in the 1980s by US conservation biologist E.O Wilson (Wilson & Peter 1988). As underlined by Takacs, the idea of biodiversity can be seen as a lens through which concerns over nature are being expressed most particularly by conservation biologists:

> 'Conservation biologists have generated and disseminated the term *biodiversity* specifically to change the terrain of your mental map, reasoning that if you were to conceive of nature differently, you would view and value it differently. As a result of determined and vigorous campaign by a cadre of ecologists and biologists, biodiversity has become a focal point for the environmental movement.' (Takacs 1996:1)

A wide-ranging number of ecological studies have been published, aimed at documenting and monitoring the diverse impacts of human activities on biodiversity and ecosystems (Pereira et al. 2010; Scholes et al. 2012). Many argue that a 'sixth mass extinction' is happening – this one having anthropogenic origins (Pimm & Raven 2000; Brooks et al. 2002; Butchart et al. 2010). For example the International Union for the Conservation of Nature (IUCN) identified five main sources of threats on biodiversity: habitat loss and degradation, invasive alien species, over-exploitation of natural resources, pollution and diseases, and human-induced climate change[1].

While the concept of biodiversity has acquired broad resonance, another concept is becoming hegemonic: the notion of ecosystem services that has been defined in the Millennium Ecosystem Assessment (MA) as 'the benefits that humans gain from ecosystems'. An increasing number of ecological studies now focuses on documenting

[1] https://www.iucn.org/iyb/about/biodiversity_crisis/ (last accessed November 18th, 2015)

the relations between biodiversity and ecosystem services (Mace et al. 2012). Yet, as outlined by Takacs and other scholars (Escobar 1998; Turnhout et al. 2013), both of these concepts are constructed and represent particular ways of knowing and of making sense of nature.

Alongside these scientific efforts, a range of policy objectives to address threats on biodiversity and ecosystems have also been adopted in the context of MEAs. For example the objectives of the CBD are to ensure (1) the conservation of biological diversity; (2) the sustainable use of its components, and (3) the fair and equitable sharing arising out of the utilization of genetic resources (CBD, Article 1). 2010 was the 'International Year of Biodiversity' and its objective was to reduce the rate of biodiversity loss. However, there is also a broad recognition that so far these efforts have been largely inconclusive and that these ambitious objectives have not been met (Walpole et al. 2009). Against this background, several GEAs have been carried out in the field of biodiversity and ecosystems services, in particular the Global Biodiversity Assessment (1995) and the Millennium Ecosystem Assessment (2005).

In this research I draw attention to an emerging organization of expert advice that aims at tackling the loss of biodiversity and the degradation of ecosystem services: the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), officially established in 2012. Building on the experience of the Intergovernmental Panel on Climate Change (IPCC) and on previous biodiversity-related assessments, IPBES aspires to create a new type of GEA: achieving balance between developed and developing countries, and being inclusive of different disciplines and knowledge-systems (IPBES 2012). The purpose of this study is therefore to examine the emerging form and practice of IPBES and to contrast it with other, prior, GEAs. As will be explained in Chapter 2, as GEAs have been developed in a number of ways and been increasingly demanded, they have also been contested. Following a first generation of 'top-down', science-driven GEAs, most recent GEAs have attempted to respond to earlier critiques by developing more pluralist approaches.

In order to study the development of IPBES I draw more particularly on Science and Technology Studies (STS) concepts and methods. A major contribution of STS studies has been to approach science as a cultural practice and to document the political, cultural and social factors surrounding scientific inquiry and explaining why science and expertise are often contested (Bjiker et al. 2009). Most specifically, these studies have contributed to demonstrate that science is not a neutral (apolitical) activity – it is never the 'view from nowhere' (Shapin 1998) – and that universal knowledge is constructed:

> 'STS starts from an assumption that science and technology are thoroughly social activities. They are social in that scientists and engineers are always members of communities, trained into the practices of those communities and necessarily working with them. (…) STS takes a variety of anti-essentialist positions with respect to science and technology. Neither science nor technology is a natural kind, having simple properties that define it once and for all.' (Sismondo 2010:11)

Numerous studies have also underlined that the credibility of knowledge is relational. As GEAs aspires to provide knowledge which is globally authoritative, developing an STS approach proves particularly relevant. IPBES is still 'in the making' and STS methods are well-suited to follow an organization as it happens. As will be developed in Chapter 3, the constructivist stance of the co-productionist idiom provides a useful starting point for approaching this research, offering some analytical repertoires (such as those provided by Actor-Network Theory and the social worlds framework) to study an organization which is multi-sited and in the making. These allow to study the ways in which boundaries between science and policy, and local and global knowledges, are made in practice as well as how contestations and conflicts are progressively rendered invisible. In this PhD research I address more specifically the following research questions:

(1) How is IPBES being constituted? How is IPBES constituting biodiversity expertise and knowledge?
(2) Is IPBES actually 'opening-up' and providing an inclusive model of expertise, in keeping with its self-description and own ambitions?
(3) How does IPBES compare to previous Global Environmental Assessments (GEAs)?

I first approach GEAs as organizations of global expert advice as they attribute a key role to science and expertise. From a STS standpoint, GEAs can qualify as sites of co-production. By delineating whose knowledge and expertise counts they simultaneously enact some forms of science-policy interactions while delineating ways of framing what is global environmental change and acting upon it. In studying IPBES in a 'constitutional moment' (Jasanoff 2003b), I set out to explore more particularly three ways in which this emerging organization is placed by looking at: the location of the IPBES Secretariat in Bonn (Chapter 6), the development of the IPBES conceptual framework (Chapter 7), and the constitution of the IPBES Multidisciplinary Expert Panel (Chapter 8). I deliberately use the term 'placing' and not 'situating' in order to make a reference to the concept 'place' and to emphasize that such global environmental organizations which aspire to transcend political and cultural particularities are in fact not placeless. They inescapably have a geography and are made in some particular, privileged, places. Before presenting the empirical chapters, I outline in Chapter 4 the methodological approach and the research design used in this study.

In Chapter 5 ('Setting the stage for IPBES'), I turn my attention to the early stages of IPBES. While IPBES is now firmly established as an intergovernmental organization whose Secretariat is anchored in Bonn (Germany), the process leading to its establishment was neither linear nor straightforward. The idea of an IPBES was contested. Drawing on Granjou et al (2013), the process leading to the establishment of IPBES can be separated into three phases: (1) a consultative phase (2005-2008); (2) a negotiation phase (2008-2010) and (3) an implementation phase (2010 – onwards). The purpose of Chapter 5 is to give an account of the origins of IPBES and of the debates that took place during the consultative phase. Most specifically, I outline the diverse ways in which an IPBES was imagined: as an 'IPCC for biodiversity', a 'network of networks', and a 'wiki for biodiversity'. I suggest that these were underpinned by different ways of framing 'biodiversity issues' as well as of perceiving science-policy relations. Having its roots in two scientific and multi-stakeholder initiatives, IPBES was finally established as an intergovernmental body owned by States and operating through consensus-dominated processes.

Having explained the historical context leading to the establishment of IPBES, in Chapter 6 I draw on STS and geographies of science studies and turn my attention to the location of the IPBES Secretariat – a place which has so far been largely overlooked in the literature. While some studies have paid attention to the diverse, formal and informal, roles played by the Secretariats of global organizations (Jinnah 2010; Jinnah 2011; Jinnah 2012; Siebenhüner 2007), to date no study has explored whether their geographical location matters and, if so, how. Beyond the setting of the lab, or the field, this chapter sets out to explore how this choice – i.e. hosting IPBES in Bonn – was made and whether this location matters. In particular I suggest that the location of the Secretariat of IPBES in Bonn can be approached as a case of co-production between 'local' and 'global': the localization of IPBES in Bonn simultaneously contributes to the constitution of Bonn as the 'global' United Nations (UN) city of Germany and this, in turn, has effects for the production of 'global' biodiversity knowledge. I argue that the ability of Bonn to become such a place relates to its own history, and to a particular socio-technical imaginary (Jasanoff & Kim 2013) developed in post-reunification Germany and has now consequences for the ways in which both Bonn and IPBES are being mutually constituted.

In the following chapters (7 and 8), I turn my attention to the particular forms of expertise and knowledges rendered authoritative within IPBES. In doing so, in Chapter 7 I use STS concepts and methods to follow the development of the IPBES conceptual framework during the period 2012-2014. While competing framings and discourses about biodiversity are expressed in these global settings, IPBES has also adopted a single conceptual framework to support its work. Yet this process was punctuated by many debates and the notion of 'ecosystem services' was vigorously contested. In particular I ask whether, and how, debates amongst participants about the nature of knowledge, the relationship between humans and nature, and about the meaning of 'ecosystem services' were reconciled through this process. This serves to discuss what is achieved by this framework and whether it could prove itself a boundary object, stabilizing relations between heterogeneous participants. Findings serve to highlight the multiple ways in which the science-policy interface is being imagined and to reveal some of the challenges awaiting biodiversity governance as ontological and epistemic plurality is embraced at a global scale.

IPBES has adopted principles ostensibly acknowledging that addressing biodiversity loss and ecosystem services degradation requires diverse forms of knowledges and expertise. It aims at encompassing not only scientific knowledge but also indigenous and local knowledge while achieving a geographical balance among experts. In light of these aspirations, Chapter 8 studies the constitution of the first IPBES Multidisciplinary Expert Panel (MEP), the scientific and technical body of IPBES, for which experts were selected for a 2-year period in January 2013. I focus in particular on the early debates surrounding the design of the MEP and on the contentions and boundary work animating the nomination and selection of these experts: whose expertise is rendered authoritative within IPBES? How? Contrasting the composition of the first interim MEP with the principles of inclusivity and diversity advocated by IPBES I find that there is a significant gap between the ambitions of IPBES and the forms of knowledge and expertise actually included in the MEP.

Finally, in Chapter 9, I summarize and discuss the main findings presented in the empirical chapters so as to answer the research questions introduced above. Contrasting IPBES with previous GEAs, I show that the organization presents a number of innovative features but that numerous ambiguities remain as to whether IPBES is actually managing to 'open-up' and implement a new model of expertise. More specifically, I argue that while IPBES aspires to be the 'view from everywhere', recognizing multiples ways of knowing nature and diverse forms of expertise, the narrative of science as the 'view from nowhere', associated with a dualist ontology and with some particular ways of establishing scientific authority contradicts this aspiration. Moreover, while aspiring to be globally authoritative, IPBES inevitably offers a 'view from somewhere' marked by the views of those having a voice in its decision-making processes and connected to these global science-policy settings. IPBES operates in an intergovernmental context and is owned by nation-states and this has consequences for the forms of knowledge and expertise recognized in practice. I suggest that developing the concept of 'institutional epistemology' may be useful to further characterize this 'view from somewhere'. Finally, contrasting IPBES with the normative recommendations offered by STS scholars advocating for a reflexive turn in the governance of global expert advice, I find that there are numerous reservations regarding what can realistically be expected from IPBES for the governance of global biodiversity and suggest future research paths.

Chapter 2 - From Ozone to Biodiversity: 35 Years of Global Environmental Assessments

2.1. Global environmental change and the multiplication of GEAs

In first approximation GEAs all share some similarities. They seek to operate at the articulation between science and policy and have explicit societal goals. Their main purpose is to provide regulatory scientific knowledge. In contrast to Polanyi's vision of science, who argued that science should not aim at being oriented towards public welfare and that scientists should self-organize freely (nothing should hamper this 'Society of Explorers' (Polanyi 1962:72)[2], there is a particular configuration and role attributed to science in the context of GEAs. In this sense, the role of science in GEAs corresponds to what has been termed 'mandated science' (Jasanoff 1987; Salter 1988). This is made explicit here where GEAs are defined as:

> 'Formal efforts to assemble selected knowledge with a view towards making it publicly available in a form intended to be useful for decision-making.'(Clark et al. 2006:3)

Reflecting on the 'global' dimension of GEAs, these authors also suggest three main circumstances under which they can qualify as such:

> '*Global* or transnational assessments can differ from local or national assessments in at least three senses. They may address environmental problems caused by actors in more than one country; they may address problems that have implications for

[2] Polanyi explains: 'The Republic of Science is a Society of Explorers. Such a society strives towards an unknown future, which it believes to be accessible and worth achieving. In the case of scientists, the explorers strive towards a hidden reality, for the sake of intellectual satisfaction. And as they satisfy themselves, they enlighten all men and are thus helping society to fulfil its obligation towards intellectual self-improvement.' (Polanyi 1962: 72).

> decision makers in more than one country; or they may simply involve participants from more than one country in the assessment. Such assessments are usually undertaken with at least the nominal goal of constructing a science-based account of what the problem is in a way that decision makers in multiple countries will view as useful.'(Clark et al. 2006:4)

In a complementary definition, Miller points out three main functions for GEAs:

> 'Assessment is a tool for accomplishing three tasks: first, identifying, synthetizing, and evaluating a wide range of claims to knowledge; second, certifying a particular set of knowledge claims as relevant to policy decision-making; and third, fostering necessary communication among scientists of many disciplines, other with relevant knowledge, and policy and public audiences.'(Miller 2009b:754)

The International Ozone Assessment, initiated in 1981 under the auspices of the World Meteorological Organization (WMO), is generally recognized as the first major GEA and has been key in triggering the development of an international regulatory regime for the stratosphere, leading to the reinforcement of the Vienna Convention for the Protection of the Ozone Layer and to the adoption of the Montreal Protocol on Substances that Deplete the Ozone Layer (1987)(Litkin 1995). Although sharing some similarities, GEAs have been developed under the leadership of diverse organizations and to serve different purposes (Table 2.1). GEAs can differ in the ways they relate to MEAs. Some GEAs are carried out directly under the oversight of a specific agreement – such as in the case of the Global Biodiversity Outlook – which is directly related to the Convention on Biological Diversity (CBD) while others operate more independently or under the oversight of several MEAs. Moreover, some are conducted just once, unlike others which are frequently repeated.

Table 2.1. **Examples of GEAs**

GEAs	Lead organization	Scope, scale, timetable
Global International Water Assessment	UNEP	International (transboundary) waters; global, regional; 1992-2002
Global Biodiversity Assessment	**UNEP**	**Biodiversity, global, 1995**
Global Environment Outlook	UNEP	Environment; global, biannual
Intergovernmental Panel on Climate Change	**IPCC**	**Climate change; global, 5th report 2014**
Millennium Ecosystem Assessment	**UNEP**	**Ecosystem; multiscale; 2001-2005**
World Resources Report	WRI	Environment (themes), multi-scale, biannual
World Water Assessment Programme	UNESCO	Freshwater, multiscale, first report 2003
State of the world's plant genetic resources	FAO	Plant genetic resources; multiscale; 1996 and 2007
International Assessment on Agricultural Knowledge, Science and Technology for Development	**SCBD, FAO, MA**	**Agriculture and development; multi-scale, 2005-2007**
State of the world traditional knowledge on biodiversity	CBD	Indigenous knowledge on biodiversity, global, 2003

Source: Adapted from Cash et al. (2006:5), after Convention on Biological Diversity (UNEP/CBD/SBSTTA/8/INF/2 2003). Bold indicates the GEAs which are reviewed more closely in this chapter; all acronyms are listed page 6.

While IPBES (section 2.4), which is the focus of this PhD, was formally established in 2012, other GEAs are currently in development such as the United Nations World Ocean Assessment, whose aim is to document the state of the marine environment. A number of negotiations regarding the establishment of similar expert organizations are currently on-going; possible options include an expert panel on land degradation that would serve the United Nations Convention to Combat Desertification (Thomas et al. 2012) and, in the field of public health, an intergovernmental panel on antimicrobial resistance:

> 'We believe that similar global approaches should be attempted to address problems in public health. There is a need for a powerful panel to marshal the data to inform and encourage implementation of policies that will forestall the loss of effective drugs to resistance, and to promote and facilitate the development of alternatives — a panel akin to the Intergovernmental Panel on Climate Change, and the analogous Intergovernmental Platform on Biodiversity and Ecosystem Services founded in 2012.' (Woolhouse & Farrar 2014:556)

This means that GEAs are increasingly in demand. Yet, their authority and credibility have also been challenged in a number of ways, both internally – by participants in these GEAs, and externally – by diverse publics including academics. While these organizations aspire to be globally credible, there are also sites of contestations were competing knowledge-claims and diverging views and interests are articulated.

Over the past 35 years much has been learned about GEAs and these have triggered a range of studies pointing out diverse challenges awaiting them. Before reviewing these lessons and challenges in more detail, I introduce four landmark GEAs with diverse trajectories that are useful to situate IPBES – the Intergovernmental Panel on Climate Change (IPCC), the Global Biodiversity Assessment (GBA), the Millennium Ecosystem Assessment (MA) and the International Assessment on Agricultural Knowledge, Science and Technology for Development (IAASTD), describing their origins, mandate and organization (section 2.2). The choice of these particular GEAs is guided by their relevance to situate IPBES and also by the fact that there was some available literature (although relatively scarce on the IAASTD) to draw upon. As GEAs have become prominent actors in the field of global environmental governance, they have also faced numerous critics. Although the IPCC is often regarded as a successful organization and has been jointly awarded the Nobel Prize in 2007, as will be discussed below (sections 2.2.1 and 2.3), it has also suffered several controversies and been through several reform processes (IAC 2010; Beck 2012). For that reason, I also outline the main controversies that have animated these processes as a mean to illustrate some of the particular problems they face.

Following what I would call a first generation of 'top-down' GEAs, dominated by elite scientific networks, conducted until the mid-1990s, most recent GEAs have attempted to respond to these critics and adopted different approaches. The IPCC and the GBA are two examples of 'top-down', predominantly science-driven GEAs; in contrast the MA and the IAASTD have attempted to engage with a broader range of actors and knowledges, developing several innovative features. While the IPCC acted as a reference point for IPBES, the GBA and the MA are also landmark previous global biodiversity assessments on which IPBES seeks to build upon. The IAASTD, being simultaneously intergovernmental and multi-stakeholder also shares a number of similarities with IPBES. The purpose is to situate IPBES in the landscape of GEAs while justifying it as a relevant object of inquiry. In many aspects IPBES aspires to build on these previous GEAs and to 'open-up' towards diverse knowledges and expertise: it seeks to be the 'view from everywhere'.

2.2. Four landmark GEAs

2.2.1. The IPCC and anthropogenic climate change (1988-nowadays)

Origins and objectives

The birth of the IPCC in 1988 signals the establishment of an organization which is, to date, the most prominent example of GEAs as it has been a role model in the development of other GEAs, including IPBES. Although other non-intergovernmental processes, in particular the Advisory Group on Greenhouse Gases, preceded the establishment of the IPCC it has been argued that it was under the influence of the US government that the IPCC was formally constituted as an intergovernmental organization, with the United Nations Environment Programme (UNEP), the International Council of Scientific Unions (ICSU) and the WMO also having key roles in its establishment (Agrawal 1998). The IPCC has been instrumental in putting the issue of anthropogenic climate change on the international agenda and the publication of the IPCC assessments reports (respectively in 1990, 1995, 2001, 2007 and 2014) have become important events punctuating the life of the international negotiations on climate change conducted under the United Nations Convention on Climate Change (UNFCCC, 1992)(e.g. Tol 2011).

Governance, organization and participation

Unlike other GEAs, the IPCC is an intergovernmental organization, meaning that decision-making power belongs to member states. These form what is known as 'the Plenary' through which member states own the process and are responsible for validating, line by line in the case of the summaries for policy-makers (SPM), the diverse documents produced by the organization. The IPCC has a small Secretariat, based in Geneva, and is managed by a large Bureau which oversees the work of the three IPCC working groups. Each of these groups is in charge of reviewing the research regarding a particular aspect of climate change: Working Group I is charged with the 'physical scientific aspects of the climate system', Working Group II focusses on the 'vulnerability of socio-economic and natural systems to climate change' and attempts to identify options for adaptation, while Working Group III focusses on 'options for mitigating climate change through limiting or preventing greenhouses gas emissions'.

These groups are marked by disciplinary distinctions: while WGI gathers mostly climate scientists, economists and social scientists are more involved in WGII (impacts) and WGIII (responses). Such distinctions have been criticized for creating a hierarchy between disciplines – with a domination of physical sciences – as well as disciplinary silos that hamper cross-disciplinary interactions (Godal 2003). Moreover, disciplinary imbalances are important and non-natural scientists are still under-represented (Bjurström & Polk 2011). This disciplinary approach contrasts markedly with modes of organization that have been developed in most recent GEAs such as the MA (section 2.2.3).

Hundreds of experts participate in the edition of the IPCC reports and their participation is voluntary (i.e. not compensated financially). These experts are nominated by governments and then selected by the IPCC Bureau. Different roles can be attributed to these experts and the IPCC differentiates between Coordinating Lead Authors, Lead Authors and contributing authors. The IPCC reports undergo different rounds of reviews: first there is an internal, informal, review made by the participating authors; second a more formal process involves the participation experts' reviewers which are charged with checking the content of the reports. Finally, governments are also given the possibility to review and formulate comments on these reports. Officially, the IPCC seeks to achieve an equal representation of countries from all around the world. However in practice this has proven difficult (as will be explained further in the sections below) and some controversies regarding why some experts have been selected, despite others, have also taken place[3].

[3] As reported in this blog post http://dotearth.blogs.nytimes.com/2010/02/24/signs-of-life-and-change-in-climate-inquiry/ (last accessed December 12th, 2015).

Main controversies

Since its establishment, the IPCC has been through several controversies (e.g. Detection Statement, 1996; Climategate, 2009; Himalayan glaciers, 2010) and consequently undertook several reforms, resulting in major changes in its procedures (in 1993, 1999 and 2010). In attempting to provide an authoritative representation of climate change, the IPCC has relied heavily on the construction of standardized indicators such as the global mean temperature index and the average atmospheric concentration of carbon dioxide (CO_2) (Miller & Edwards 2001). These indicators have given rise to emblematic representations of climate change such as the 'hockey stick' graph showing the rise in land temperature since the Industrial Revolution, and some have become guiding policy objectives orienting international climate negotiations, such as the 2°C target (e.g. Meinshausen et al. 2009).

However, within the organization, debates have been present since its inception regarding, for example, how to decide on the baseline to assess the rise of greenhouse gases emissions and how to make distinctions between emissions emanating from developing countries and those from developed countries (Agrawal 1998). At the core of these debates lie questions regarding how to assign responsibilities between different actors over climate change. The choices made by the IPCC have given rise to numerous tensions between developed and developing countries. For example, commenting on a report published by the US-based World Resources Institute (WRI), several authors (two originally) emphasized that failing to differentiate between 'luxury emissions' and 'subsistence emissions' would actually lead to the reinforcement of the North/South divide:

> 'The figures used by WRI to calculate the quantity of carbon dioxide and methane are extremely questionable. Heavy emphasis has been placed on carbon dioxide production due to deforestation and methane production from rice fields and livestock as compared to fuels like oil and coal. Since developing countries are more responsible for the former, the heavy emphasis on deforestation and methane generations tends to overplay their contribution while underplaying that of developed countries. (…) The methane issue raises further questions of justice and morality. Can we really equate the carbon

dioxide contributions of gas guzzling automobiles in Europe and North America or, for that matter, anywhere in the Third World with the methane emissions of draught cattle and rice fields of substance farmers in West Bengal or Thailand? Do these people have a right to live?'(Agarwal & Narain 1991:2-3)

These contestations reflect what is perceived as a 'Western' representation of climate change, made to preserve the interests of developed countries. Similar concerns were raised as one of the IPCC Working Groups, in assessing the costs associated with climate change, suggested valuing a human life in OECD countries at 1,5 million US dollars but only at 150,000 US dollars for a life in developing countries (reported in Biermann 2001:299). These practices have been highly contested and related to the lack of participation of experts from developing countries (Ho-Lem et al. 2011).

Many authors have reflected on the particular representation of climate change as constructed by the IPCC (Oels 2005; Hulme 2008; Jasanoff 2010), emphasizing for example that despite being once perceived as a local phenomenon, through global models the IPCC had contributed to reframe climate change as a global scientific issue, decontextualized from local circumstances (Miller 2009a). As the evidence for anthropogenic climate change is now well-established – many would argue that at least in part due to the work of the IPCC – unless it undertook a major reform, was maybe not necessary anymore. Authors advocating for a radical reform of the IPCC emphasize that its on-going structure is now unfit for purpose and needs a complete reordering to better take into consideration the multiple meanings and impacts of climate change in diverse regions. They also argue that the time needed to produce each IPCC report (6 years in average) is too long and needs shortening (Hulme et al. 2010; Stocker & Plattner 2014) and that the IPCC reports are too complex and not accessible enough (Barkemeyer et al. 2015).

2.2.2. The Global Biodiversity Assessment and biodiversity loss (1993-1995)

Origins and objectives

Unlike the IPCC, which was established before the creation of the UNFCCC, the Global Biodiversity Assessment was developed after the establishment of the Convention on

Biological Diversity (CBD, 1992), but did not have a formal link with this agreement. It was a one-shot global assessment, conducted over 1993-1995, initiated by the WRI and coordinated by UNEP. Its objective was to provide a comprehensive assessment of the state of ecosystems and to provide answers to the following questions:

> 'What are the values associated with biodiversity? How can benefits be shared in a fair and equitable manner? How do humans influence biodiversity? What are the underlying causes for this influence and what are their ecological consequences? How do the natural dynamics of biodiversity and the human-induced changes in biodiversity affect the values of goods and services provided by biodiversity to society?' (GBA 1995: vii)

Also underlined in the GBA is the fact that it was a 'science-driven' initiative:

> 'Underlying this endeavour was an attempt to mobilize the global scientific community to analyse the present state-of-the-art knowledge and understanding of biodiversity and the nature of our interactions with it.' (GBA 1995: vii)

Governance, organization, and participation

Although the GBA was conducted under the oversight of UNEP, scientists involved in its organization were largely self-organized. The GBA was organized around 13 scientific groups, gathering around 300 authors from 80 countries. It resulted in the production of a voluminous report (1140 pages) which was peer-reviewed by scientists only and not by governments as occurs for the IPCC. This report included a synthesis of available knowledge on biodiversity with an emphasis on natural science knowledge and did not focus on formulating detailed policy recommendations:

> 'The GBA is an independent critical, peer-reviewed scientific analysis of the current issues, theories and views regarding the main aspects of biodiversity. The assessment does not concern itself with the assessment of the state of country-level or regional biodiversity. This was the fear expressed by some constituencies when this project was initiated. Its perspective is global with a

> focus on general concepts and principles. It does not present any policy recommendations.' (GBA 1995: vii)

Once the report was produced it was formally presented by Robert Watson to the Conference of the Parties participating in the CBD in 1995 (Jakarta, Indonesia)[4].

Main controversies

According to several commentators, the GBA's report was scientifically excellent but had no political mandate, no one had asked for it, and hence was not perceived as legitimate and there was little reaction when it was presented (Kaiser 2000; Watson & Gitay 2004; Leemans 2008):

> 'The GBA, for example, was initiated by an international group of scientists soon after the success of the IPCC's first Assessment report that strongly contributed to the formulation and rapid ratification of the UN Framework Convention on Climate Change. When completed after a rigorous scientific review, the GBA was presented to the CBD, but unfortunately ignored because the CBD had been excluded from the assessment process from the beginning.' (Leemans 2008:12)

Moreover, the geography of participating experts in the GBA also shows a strong bias towards developed countries, a factor identified as hampering the credibility and reception of the report especially in developing countries. According to several authors, the framing of biodiversity adopted in the GBA is illustrative of this Northern bias. For example:

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[4] In a personal communication (from December 2015), Robert Watson commented: 'I presented the GBA to the CBD plenary of SBSTTA three times. The first presentation was to outline the scope, structure, timetable and approach of the assessment - the Malaysian and Swedish delegates both argued it was not needed given it was top- down driven by the scientific community and not demand driven by the CBD. They also argued that it was likely to take a hot spot approach, which I totally rejected. The second presentation gave a progress report. Again the Malaysian and Swedish delegates attacked, with the same arguments. The third presentation gave the key findings - the first two delegates to speak were the Malaysian and Swedish delegates - and to my complete astonishment they were both totally supportive and applauded the work of the scientists. I learnt an invaluable lesson. A scientific assessment must be demand-driven, not supply-driven. Before initiating the Millennium Ecosystem Assessment we ensured that the biologically-related conventions, CBD, CCD, Ramsar, CMS and Cites were all engaged in scoping the assessment, as well as the WBCSD. We also ensured the UN system was on-board, with seven agencies co-sponsoring it. I also learnt another lesson, an assessment should intergovernmental, not non- governmental.'

> 'From the outset the GBA is viewed in India as framed too strongly in the flora-and-fauna protection paradigm, without paying sufficient attention to the situation of people living in the centres of biodiversity.'(Biermann 2006:92)

This means that the GBA was perceived as focusing mostly on biodiversity issues with a strict conservationist perspective that is opposing human actions to biodiversity loss. In doing so it overlooked the 'social dimension', in particular the poverty and development dimensions, of biodiversity problems. This conservationist framing excluded issues of critical importance for developing countries.

2.2.3. The Millennium Ecosystem Assessment (MA) and ecosystem services (2001-2005)

Origins and objectives

The MA was also inspired by the IPCC (e.g. Mooney et al. 2004). It was being discussed already in the mid-1990s but it was only officially launched in 2000 at the request of the Secretary-General of the United Nations (Kofi Annan), in collaboration with WRI, UNEP, UNDP and the World Bank:

> 'The specific proposal for the MA arose during a brainstorming meeting held at the WRI on May 17, 1998 (…). Building on a proposal by Dr. Walter Reid (WRI Vice President through July 1998), the meeting concluded with a proposal to undertake a set of activities to create a new international assessment process. These activities included: a) conducting a 'Pilot Analysis of Global Ecosystems', b) focusing World Resources 2000-2001 on the condition of global ecosystems; and c) establishing a consultative process that could lead to the creation of a full international science assessment.' (MA Website)[5]

In its own terms, the objective of the MA was to:

> 'Assess the consequences of ecosystem change for human well-being and the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being.' (MA Website)

[5] http://www.millenniumassessment.org/en/index.htm (last accessed May 25th, 2015).

The MA can be read as largely constructed in reaction to the GBA, which, as outlined above, is largely recognized as an example of assessment whose reception was not successful (e.g. Leemans 2008). While recognized as 'scientifically excellent', the GBA contributed to show that GEAs are not just about science and that the assessment design and processes (i.e. who participates? how?) matter as much as the final report(s). In terms of framing, participants in the MA articulated a common conceptual framework, released in 2003, and instead of focusing on biodiversity as a conservation problem, explicitly sought to conceptualize biodiversity issues in relation to the Millennium Development Goals[6] (Watson 2005). The overall objective of the MA was 'human well-being' and the MA conceptual framework showed the relations between different types of services provided by ecosystems and different components of human well-being (MA 2003 ; Carpenter et al. 2009). As the MA contributed to the redefinition of biodiversity issues, conceptualizing them not only as a scientific problem but also as a development problem (Mooney et al. 2004), it also created other types of contestations. As will be explained below the notion of ecosystem services, largely promoted by and disseminated through the MA, is also being disputed.

Governance, organization, and participation

Although also convened under the leadership of UNEP, in contrast to the GBA, the MA attempted to have a clear authorizing mandate and much attention was dedicated to design and processes used to conduct the assessment (Kaiser 2000). The idea was that 'target audiences' should be involved early on instead of being placed in an end-of-pipe position. This idea translated in the composition of a multi-stakeholder governance structure and the MA emphasizes that 'the MA Board represents the users'. This Board included representatives of different institutions and sectors (e.g. governments, NGOs, private sector, etc.) and the MA was closely related to several MEAs (CBD, UNCCD, CMS, Ramsar Convention on Wetlands). The Assessment panel of the MA was co-chaired by

[6] The Millennium Development Goals are a set of eight objectives (1. Eradicate extreme poverty and hunger, 2. Achieve universal primary education, 3. Promote gender equality, 4. Reduce child mortality, 5. Improve maternal health, 6. Combat HIV, malaria and other diseases, 7. Ensure environmental sustainability, 8. Develop a global partnership for development) that were adopted in 2000 by the member states of the United Nations. In 2015, a new set of 17 objectives (the Sustainable Development Goals - SDGs) were adopted and are meant to be achieved by 2030. Among these new SDGs, objective 17 explicitly aims at halting biodiversity loss.
(*Source*: http://www.undp.org/content/undp/en/home/mdgoverview/mdg_goals.html, last accessed November 2nd, 2015).

US ecologist Harold Mooney and Angela Cropper, a Senator from Trinidad and Tobago, while the Board was chaired by Walter Reid, from the US based think-tank WRI, and by US-based scientist Robert Watson.

In all aspects of its work, the leaders of the MA tried to achieve a balance between experts from developed and developing countries, for example each report was led jointly by an expert from the 'Global North' and one from the 'Global South', and to foster multidisciplinary interactions between participants. In total around 1360 experts contributed to the MA, who were grouped into four working groups whose organization, in contrast to the IPCC, did not follow disciplinary delineations. Three working groups (on 'Conditions & Trends'; 'Scenarios' and 'Responses') were dedicated to the conduct of a global assessment while a fourth working group was charged with coordinating a number of sub-global assessments. In terms of expertise, the MA attempted to mobilize both natural and social scientists, while taking into consideration gender and geographical balance in the selection of participants.

Some viewed the MA as a very fruitful initiative to stimulate cross-disciplinary interactions, for example through the construction of scenarios on the future of biodiversity and ecosystems in collaboration with diverse stakeholders (Carpenter et al. 2006). In this respect, the MA was a first major attempt at bringing together so many diverse perspectives on biodiversity and ecosystems, as emphasized here:

> 'The MA demonstrates that at least scientists can adapt deliberative and democratic approaches in order to learn together and develop a shared understanding of complex systems. The process of assessment across disciplines is a part of science just as it is within the disciplines. Accepting this broadens our understanding of the nature of science, the role of judgement in science and the nature of the boundary between science and democratic choice. Thus, the MA also serves as an existence proof, albeit a highly select one, for the possibilities of deliberative democracy for reaching shared understanding on a larger scale, for developing an informed electorate capable of providing the political will to sustain humanity and life.'(Norgaard 2008:7)

In contrast to the GBA, the MA reports produced not a single global report but a series of syntheses, including thematic ones, targeting different audiences, all of which were peer-reviewed both by scientists and governments[7]. Another major innovation of this initiative is that it undertook assessments at multiple scales. In addition to a single global assessment, several sub-global assessments were conducted. Several rationales were mobilized to downscale assessments, in particular the willingness to take into consideration the multi-scalar dimension of biodiversity issues and to provide findings particularly adapted to some geographical contexts. There was also the idea that conducting sub-global assessments would facilitate the inclusion of diverse types of knowledges (Miller & Erickson 2006). In this respect, the MA is the first global biodiversity assessment that attempted to include 'traditional and ecological knowledge' (TEK)[8].

The strategy adopted to incorporate other forms of knowledge – labelled as 'local' or 'indigenous' consisted in developing a common conceptual framework that could then be used to perform sub-global assessments (Biggs et al. 2008). It was thought that working with different knowledge-systems would be easier if there was some regionalization and that it would also make the findings of the assessments more relevant locally (Miller & Erickson 2006). However, as the MA brought together participants with heterogeneous backgrounds, such organization, as well as the willingness to agree on a common conceptual framework, proved difficult. Working as an anthropologist in the sub-global assessment working group, Filer reported on some of the problems that arose when the experts tried to 'bridge the gap' between these different epistemologies. According to him, it was difficult to accommodate other worldviews in the conceptual framework developed by the MA and these were not really reflected in the final global report of the assessment. Filer also pointed out the limits of the multidisciplinary dialogue that occurred in the MA, suggesting that it was

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[7] 'The MA's four technical volumes underwent two rounds of review by experts and governments. Together with 44 governments and 9 affiliated scientific organizations, over 600 individual reviewers worldwide provided around 18,000 individual comments. The review process was overseen by an independent Board of Review Editors, composed of Chapter Review Editors who ensured that all review comments were adequately handled and responded to by MA authors.'(Wells et al. 2006:30)

[8] Definitions and reflections on the differences between TEK and conventional scientific knowledge are provided in Chapter 3 (Section 3.4).

mostly a conversation between ecologists and environmental economists and that anthropologists and other social scientists were little represented (Filer 2009).

Main controversies

One of the most influential conceptual innovations of the MA is the notion of 'ecosystem services' defined in the assessment as 'the benefits that humans get from ecosystem' (MA 2005). Although the notion had emerged before, in the field of environmental economics, and had already acquired some visibility (Costanza et al. 1997; Gómez-Baggethun et al. 2010), the MA largely contributed to its promotion. Drawing on this concept, participants in the MA proposed a categorization between different types of ecosystem services including (MA 2005:54):

- Supporting services: 'necessary for the production of all other ecosystem services' (e.g. flood regulation, water purification, soil formation)
- Provisioning services: 'Products obtained from ecosystems' (e.g. food, crops)
- Regulating services: 'Benefits obtained from the regulation of ecosystem processes' (e.g. carbon sequestration, purification of water)
- Cultural services: 'Non-material benefits that people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experiences' (e.g. outdoor sport, sense of place)

The move towards ecosystem services was a major shift in the framing of human-nature relations. This conceptualization was driven, at least partly, by the willingness to overcome the opposition between human and nature: it is clearly anthropocentric (the finality being 'human well-being'). In 2005, the final report of the MA was published and the notion of ecosystem services was widely circulated, being used in a number of national and international assessments (e.g. The United Kingdom National Ecosystem Assessment, 2009-2011; The Economics of Ecosystem and Biodiversity (TEEB) initiative, 2007-2008; the European Union 'Mapping and Assessment of Ecosystem Services' project, 2014-2020) and integrated into the name of the emerging IPBES. It has arguably become the most widespread, or rather hegemonic (Robertson 2012), way to talk about nature and is increasingly institutionalized (Chaudhary et al. 2015).

The concept of ecosystem services is perceived as important to make biodiversity visible in a language that will be convincing to policy and decision-makers. Many authors argue that identifying, quantifying and valuing ecosystem services will have more incidence on decision-making (De Groot et al. 2002; Perrings et al. 2011; Bateman et al. 2013). However, the notion has also been extensively criticized, including by natural scientists, with critics ranging from concerns over the vagueness of the notion and its lack of analytical clarity to more philosophical reasons relating to environmental ethics: being an anthropocentric concept the notion fails to consider the intrinsic value of nature and is very utilitarian (Schröter et al. 2014). Several critical social science studies have pointed out the fact that reducing biodiversity to ecosystem services has numerous performative effects: it may actually narrow down the multiple ways of knowing biodiversity, excluding forms of knowledge that do not fall into this paradigm (Turnhout et al. 2013), or, by translating it into economic indicators lead to the commodification of nature (McCauley 2006; Robertson 2006). The notion of performativity entails that the production of knowledge is associated with particular knowledge-practices and suggests that 'representing the environment at the same time constitutes it' (Turnhout et al. 2016:66). It therefore challenges the assumed neutrality of science and knowledge.

2.2.4. The IAASTD and food security (2005-2007)

Origins and objectives

The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) was a one-shot assessment set up under the leadership of different UN organizations (FAO, UNEP, UNDP, UNESCO, WHO) and largely funded by the Global Environment Facility and the World Bank. The idea of the assessment emerged in 2002 as the World Bank, along with the partners mentioned above, were interested in the future of biotechnologies, including genetically modified organisms (GMOs), and the potential of these to address food scarcity. The objectives of the IAASTD were to provide knowledge relevant to (1) reduce hunger and poverty, (2) improve nutrition, health and rural livelihoods and (3) facilitate social and environmental sustainability (IAASTD 2009a:vi). It attempted to address the question:

> 'How can we reduce hunger and poverty, improve rural livelihoods, and facilitate equitable, environmentally, socially and economically sustainable development through the generation, access to, and use of agricultural knowledge, science and technology?' (IAASTD 2009a: 17)

In contrast to other GEAs such as the IPCC, the IAASTD has been little publicized and is little known. Yet, similarly to the MA, it can be read as an attempt to learn from previous 'top-down' GEAs and presented several innovative features.

Governance, organization, and participation

First, the IAASTD operated in an intergovernmental context, bringing together 110 countries, but with a hybrid governance structure, different to the IPCC. Similar to the MA, much attention was devoted to the design of the assessment and efforts were made to achieve geographical balance, as well as pay attention to gender representation in its membership. The IAASTD had a multi-stakeholder component with a Bureau including government representatives as well as representatives from civil society (e.g. NGOs). Having an intergovernmental component was perceived as necessary to ensure that governments have ownership of the process 'while the integrated Bureau allow[ed] the full range of stakeholders to meet as a single body creating opportunities for constructive exchanges and building consensus'. In this respect, members of the IAASTD governance structure (Bureau) were selected by the Plenary 'with each region selecting its own members, taking into account areas of expertise and gender balance' (IAASTD 2009b). Overall about 900 scientists were involved in the process and contributed to the diverse IAASTD reports.

Second, the IAASTD attempted to provide a space for civil society actors and voices which are not often heard in global science-policy settings usually dominated by 'elite' scientific actors. In this respect, the IAASTD was less 'science-driven' than the IPCC:

> 'As a multi-stakeholder process involving everyone from grassroots groups to scientists and representatives of large corporations with the final product being signed by governments, there has to date been no parallel. As such it provides fascinating insights into processes of participation and global engagement, and the implication this has for the contestation of global knowledge and the

> construction of global citizenship. (…) [The IAASTD] is a major departure from previous models of global expert decision-making, where attempts at dialogue and debate were largely absent and processes were open only to an exclusive expert elite. In this way, the IAASTD chimes with a central theme of the more optimistic strands of the literature on globalisation and civil society.' (Scoones 2009:550-551)

This means that the IAASTD was innovative in that it attempted to stimulate the participation of a wide range of actors:

> 'With this opening-up, processes become more complex and require increasingly sophisticated forms of mobilisation by activists and movements in order to engage. But the net result is a pluralisation of knowledges, claims, and inputs into cosmopolitan global contexts resulting, it is argued, in a more democratic and accountable system of governance and policy-making.'(Scoones 2009: 551)

Finally, as in the MA, the IAASTD also adopted a multi-scale approach with assessments conducted both at global and regional scales. It also produced thematic synthesis (e.g. on Bioenergy and biofuels, Human Health and Nutrition). In doing so the IAASTD attempted to integrate diverse types of knowledge including TEK as well as 'institutional knowledge'.

Main controversies

In scrutinizing the development of the IAASTD, Scoones analysed some of the controversies illustrative of the politics of knowledge animating GEAs. He identified most specifically a controversy over the use of scenarios and a controversy about the ways in which the politically sensitive topic of GMOs should be addressed by participants (see also Feldman & Biggs 2012). About the use of scenarios it is not the tool itself that was contested but rather the fact that some elite scientific actors already had a pre-established idea of which and how scenarios should be used. Therefore, more marginalized actors, with less expertise in this area, ended up being dependent upon these experts to develop their scenarios, while not necessarily seeing them as relevant for their purposes. As a result the work on scenarios was excluded from the final IAASTD report:

> 'The failure to achieve agreement on the scenarios work highlights the tensions inherent in the process – both between different knowledge framings and different practices of knowledge-making. The hope had been that scenarios work would offer a focus, bringing diverse contributions together[9]. The intensely contested knowledge politics meant that this convergence did not happen. The end result is, as many have commented, a bit of fudge: what someone described as a 'lowest common denominator' analysis, with bits of everything mixed up in an 'unsavoury cocktail'. For some this is the consequence of attempts at consensus when the politics of the process are not made explicit and controversies, dissent, and debate are not surfaced and explicitly addressed – or even identified.' (Scoones 2006:555)

This example is illustrative of the contestations over which knowledge-making practices are perceived as relevant in GEAs, and can also be read as a reflecting the resistance of more marginalized actors, perhaps less connected to global science-policy settings, to accept and adopt uncritically some epistemic practices made elsewhere. Similar frictions have been documented, for example, with the case of PRECIS, a climate model made in the UK and intended to be used in developing countries to improve their capacities to predict regional impacts of climate change. While recognizing that such ambition is noteworthy it has also been argued that focussing on prediction only could hamper other knowledge-practices such as the search for adaptation options (Mahony & Hulme 2011).

Having introduced four GEAs which are useful to situate IPBES in what follows I introduce three particular approaches which have been developed to study GEAs as well as the main criticisms that have been formulated to these organizations.

2.3. Looking back and looking forward: 35 years of GEAs

Since the early 1980s, much has been learned about GEAs and both practitioners and academics have reflected on the challenges facing these organizations. Underlying GEAs is the assumption that the body of knowledge provided on a particular environmental issue will be useful for policy making and trigger the development of new regulations.

[9] This is what happened with the IPCC and the MA (see Borie et al. 2015).

Yet, in contrast to the assessment panel on Ozone, many GEAs did not have as much policy impact as expected and failed to trigger policy responses. This observation has been formulated most particularly for biodiversity assessments (e.g. Larigauderie & Mooney 2010) and the creation of IPBES can also be understood as resulting from the limited success of these previous initiatives, but also as an opportunity to learn from them.

GEAs have been studied by academics in different ways and practitioners have also offered reflections on their participation in these initiatives. A first approach developed by social science scholars has been, echoing the concerns of many practitioners, to identify the conditions under which these initiatives can actually work, i.e. bear on policy-making (section 2.3.1). Exploring another line of inquiry, numerous scholars in STS and critical social sciences, whose work I seek to build upon, have focused on the role of science and knowledge in GEAs. These scholars have outlined some critical challenges for GEAs, drawing in particular on the idea that science is never neutral for policy and that the forms of knowledge produced in GEAs cannot be separated from the form of policy advice that are being formulated. These studies closely relate to the range of studies that have outlined the democratic challenges awaiting GEAs and their governance (sections 2.3.2 and 2.3.3).

2.3.1. A focus on the design and effectiveness of GEAs: credibility, relevance and legitimacy (CRELE)

Reflecting on the diverse GEAs that have been conducted, and the impacts they have had, a set of approaches stemming from diverse political science traditions, including in particular comparative policy analysis, has taken the observation of their heterogeneous outcomes as a starting point to identify the determinants and characteristics of a successful GEA (Siebenhüner 2002; Farrell & Jäger 2006). Practitioners have reflected on their participation in these initiatives and pointed out several factors likely to impact GEAs' effectiveness (e.g. Rothman et al. 2009). Most prominently, Robert Watson, who acted as the chair or co-chair of all the GEAs introduced above, suggested some characteristics of successful GEAs (Watson & Gitay 2004:4):

- Be demand-driven and involve experts and all relevant stakeholder groups in the scoping, preparation, peer-review, and outreach (communication);
- The process must be open, transparent, representative, and legitimate, with well-defined principles and procedures;
- The finding and analyses need to be technically accurate and evidence-based, not value-laden;
- Be policy-relevant but not policy-prescriptive, i.e. provide options rather than recommendations;
- Cover risk assessments and risk management; and
- Present different points of view that often exist, and whenever possible quantify the uncertainties involved

A key aspect repeatedly emphasized, both by practitioners and academics, is that GEAs are not just about science and about 'getting the facts right'. They first of all have to be understood as social processes – that is beyond the quality of the knowledge gathered by these organizations, the ways in which diverse actors are involved is key in ensuring legitimacy and credibility:

> 'Assessments should be viewed as a social process, by which expert knowledge related to a policy problem is organized, critically and objectively evaluated, integrated and presented, normally in documents, to inform or guide policy choice or other decision-makers. Assessment processes should be viewed to be as important as the final outputs.' (Watson & Gitay 2004: 11)

In practice, as illustrated in the examples in section 2.2, this observation has resulted in the inclusion of more actors and institutions in the design of most recent GEAs. Also drawing on a conception of GEAs as social processes, other scholars insist on the need to take into consideration other elements in the design of GEAs including context, form of science-policy interactions, participation and assessment capacity (Farrell et al. 2001).

In 1995 a major research project, the Global Environmental Assessment project, was initiated under the leadership of Harvard-based academics and scholars with different academic and disciplinary sensibilities were involved[10]. In particular, a group of scholars conducted a comparative analysis of several GEAs to identify key factors of success for GEAs. Echoing the factors listed above, these scholars have produced normative recommendations and emphasized that GEAs should (Clark et al. 2006:20):

- Focus on the process, not the report;
- Focus on saliency, legitimacy, as well as credibility;
- Assess with multiple audiences in mind;
- Involve stakeholders and connect with existing networks;
- Develop influence over time.

Most prominently, Clark and colleagues (2006) proposed a framework to understand the circumstances under which knowledge stemming from GEAs is actually used for policy-making. Drawing on several case studies and comparative analysis, a major conclusion of this work was that knowledge needs to be 'salient'/'relevant' that is 'relevant to potential users' (p314), 'credible' that is 'convincing actors that the facts theories, ideas, models, causal beliefs and options in assessments are true (p317) and 'legitimate'. Legitimacy was defined as involving 'the perception by relevant audience of an assessment process as 'fair', having considered the values, concerns and perspectives of that audience (…) central to legitimacy is the notion that if assessments are conducted in support of policy, then those affected by those policies should be involved in the assessment process' (p320).

Researchers have also suggested that achieving all these criteria simultaneously may be difficult and explored diverse trade-offs between the CRELE attributes (Sarkki et al.

[10] All documents related to this project are available online: http://www.ksg.harvard.edu/gea/geadescr.htm (last accessed October 15th, 2015). Another team of scholars approached GEAs with a co-productionist STS perspective, paying attention to whose perspectives are included in the mutual constitution of science and policy, and local and global knowledge (Jasanoff & Martello 2004)..

2013). It was recently suggested that 'iterativity'[11] should be added as an additional criterion:

> 'Credibility, relevance and legitimacy (CRELE) are extremely useful attributes to assess and explain the (potential) influence of SPIs on decision-making processes. (…) We argue, however, that this shift also requires the introduction of a fourth attribute: iterativity. Iterativity appears as a key to long-term sustainability and success of thriving science-policy processes, that ensure CRELE not only today but also in the future. For example, iterativity supports credibility by enabling various kinds of feedback and review mechanisms, relevance by building connections between science and policy, and legitimacy by increasing trust.' (Sarkki 2015:511)

The 'CRELE' characteristics have circulated widely and been used to guide the development of research intended useful for policy such as in the case of the UK climate scenarios (Hulme & Dessai 2008). They have increasingly been used as a framework to guide further research dedicated to science-policy interfaces and applied in particular to GEAs. In the context of several European research projects[12] scholars have focussed on further developing how biodiversity science-policy interfaces could be improved, including the nascent IPBES (Vohland et al. 2011; Young et al. 2014; Heink et al. 2015). More specifically, Koetz used the CRELE criteria to formulate normative advice to guide the development of IPBES and argued that to be successful the organization should move beyond an understanding of science and policy as two distinct realms and develop more collaborative forms of science-policy interactions (Koetz et al. 2012).

These criteria have therefore acquired a broad resonance and become objectives for GEAs themselves. They were adopted early on by the promoters of the MA, who

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[11] 'We defined iterativity as a continuous multi-directional interaction that goes beyond simple repetition, building on previous practices, learning from success and failure, and fostering evolution of constructive relationships and knowledge itself among all participants at the interface, and between SPIs and external audiences.' (Sarkki 2015: 506)

[12] These research projects funded by the European Union include for example 'SPIRAL' whose objective is to improve the links between research on biodiversity and policy-making (http://www.spiral-project.eu/content/about-spiral, last accessed December 4th, 2015) and 'KNEU' whose objective is to 'develop a Knowledge Network for European expertise on biodiversity and ecosystem services to inform policy making and economic sectors' (http://www.biodiversityknowledge.eu/project , last accessed December 4th, 2015).

designed the assessment with these criteria in mind. IPBES has also adopted a range of principles (section 2.4), one of them being ‘Be scientifically independent and ensure credibility, relevance and legitimacy through the peer review of its work and transparency in its decision-making processes’(UNEP 2010:6).

2.3.2. A focus on the forms of knowledge, knowledge-making practices and expertise rendered authoritative in GEAs

In contrast to the approach focussing on identifying criteria to guide the development of GEAs, which has been predominantly guided by *why* questions (why are some GEAs more effective than others?), STS and critical social science scholars, including human geographers, generally working in a constructivist approach have started to engage with GEAs by studying *how* knowledge is assessed in these organizations. They have started to scrutinize which representations of global change issues are enacted, and by whom. These approaches underline that it matters who produces knowledge, where, and how. Moreover, although scholars working on the CRELE attributes also acknowledge that science-policy relations are complex and non-linear, STS scholars go further by emphasizing that science and policy are mutually co-produced. That is, by legitimating some forms of knowledge and expertise, GEAs also render possible some particular forms of governance, while silencing others. These studies therefore pay attention to the effects of GEAs.

Here, a first major critique formulated by STS scholars relates to the fact that GEAs, in their functioning, often operate with a conception of science as ‘universal’ and ‘value-free’. This observation has been most particularly the case for the IPCC, but ambiguities between the aspirations and the practices of most recent GEAs have also been emphasized such as in the case of the IAASTD:

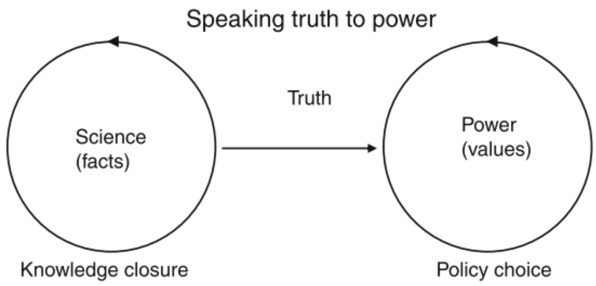
> ’There is an interesting contradiction in the simultaneous talk of engagement and involvement of diverse, multi-stakeholder perspectives and its confrontation with the ideal of consensus and an appeal to a universalised objectivity of science and expertise: the ultimate global vision.‘ (Scoones 2011: 563)

According to Beck, there is a strong view in the IPCC of the conception of science as a universal enterprise and the translation of this narrative in science-policy settings has come to be known in STS as the 'linear model of expertise' (Box 2.1) that can be summarised as the idea of science speaking 'truth to power'(Beck 2011a).

Box 2.1 - The IPCC and the linear model of expertise

Being one of the most long-standing GEAs, the IPCC is the one whose functioning has been the most widely studied by scholars. One of the main formulated criticisms against the IPCC relates to the way in which it frames relations between science and policy. Most specifically, Beck (2011a) suggested that underpinning the functioning of the IPCC is a linear representation of science-policy relations – based on the assumption that better and more objective science will solve policy-makers' dilemmas and mechanically lead to better policy-making (Fig 2.1). This vision of science preceding policy is often associated with the idea that mandated experts have to reach consensus and speak with one voice in order to be legitimate and credible in front of policy-makers: more consensual science will more easily trigger political action: 'Science is perceived as providing clear, 'hard' and objective facts, based on evidence and universal descriptions of reality, and policy is seen as the product of a rational, technically informed, instrumental decision process.' (Quoted from Koetz et al. 2012:5 after Hill 1997).

However, Beck, along with other scholars, points out that the very idea of speaking with one voice implies political choices, especially for issues associated with high uncertainties. The representation that experts have of policy-makers' expectations can lead them to frame their advice in a way that is anything but policy-neutral. In so doing, it can lead to scientific reductionism and fail to acknowledge that scientific expertise is not the only source of authority for democratic policy-making (e.g. Brown 2009; Fischer 2009; Kitcher 2011).



(*Source*: Graph used in Beck 2011:298, after Jasanoff & Wynne 1998)

While some scientists advocating for IPBES insisted that it was necessary to strengthen the quality of assessments and their scientific standards to improve the science-policy interface (Perrings et al. 2011), others responded stressing that 'science-policy formation does not depend solely on scientific facts' (Briggs & Knight 2011: 696). Hulme and colleagues also argued that 'we should move beyond conventional scientific knowledge assessments that legitimize, almost exclusively, only peer-reviewed materials' (2011: 697).

The drive of GEAs towards the production of global authoritative representations of environmental change has been criticized for different reasons. First, it gives more legitimacy to some disciplines and ways of knowing, over others and, as will be developed below, with consequences regarding the forms of governance that are made possible. In particular, several authors have suggested that as GEAs seek to speak consensually, with 'one voice', they tend to favour the selection and forms of knowledge that lends themselves more easily to decontextualization. That is, knowledge that can be enumerated and made portable, detachable, and often perceived as more authoritative than qualitative knowledge. Concretely, it has been suggested that these global aspirations translate into the production of 'global kinds of knowledge', that is:

> 'Knowledge about multi-scalar processes and globally-aggregated outcomes that is insensitive to the peculiarities of place and context [and] opens the way for unitary globalised explanations and predictions of environmental change.' (Hulme, 2010: 559)

Such kinds of knowledge are for example, in the case of climate change, global temperature indexes or global climate models (e.g. Demeritt 2001; Edwards 2001). Related to this dimension is the loss of meaning that can result from the production of global abstract framings:

> 'Scientific assessments such as the IPCC helped establish climate change as a global phenomenon but in the process they detached knowledge from meaning.' (Jasanoff, 2010:233)

Consistent with this observation, regarding the forms of knowledge rendered authoritative in GEAs, numerous studies have documented the case of the IPCC. These emphasize that to date, the organization has predominantly assessed natural science knowledge (88%), while social science disciplines remain marginal (Bjurström & Polk 2011), in particular constructivist, or interpretive, social sciences disciplines (Shackley & Skodvin 1995; Malone & Rayner 2001; Corbera et al. 2015). Regarding other knowledge-systems, the absence of indigenous knowledge in the IPCC reports has also been identified (Ford et al. 2012) and the inclusion of forms of knowledge qualified as local remains a persistent problem for GEAs (e.g. Filer 2009).

In contrast, STS and social science scholars emphasize that 'solving' global environmental issues requires engagement with multiple forms of knowledges which may not so easily be reduced to a consensus. Overly scientific framings of environmental change, such as the idea of planetary boundaries (Rockström et al. 2009) do not necessarily favour more political action because they deny possibilities for human agency – by being too abstract they can lead to an apolitical, or fallaciously neutral, representation of environmental change, nor make sense to people (Palsson et al. 2013). Instead of global 'placeless' knowledge, adapting to climate change requires knowledge that is sensitive to place and contextualized: what matters is not how much temperature changes globally but how weather changes locally (Beck 2011b). Moreover, rather than more physical science knowledge it has been argued that it is more social scientific knowledge that is needed to understand, for example, barriers to climate change adaptation (e.g. Hackmann et al. 2014; Lorenzoni & Whitmarsh 2014). In order to account for the culturally and geographically sensitive dimensions of environmental change, it has been suggested that GEAs should adopt a more cosmopolitan perspective (Hulme 2010; Beck 2011b):

> 'A cosmopolitan perspective [would] allows local and situated knowledge about multi-scale environmental changes to become globally visible, but does so without requiring it to conform to a single globally integrative framework.'(Hulme 2010:563)

Secondly, and related to this first critique, the aspiration of GEAs to provide global consensual representations of environmental change also favours or facilitates some particular forms of governance. For example framing climate change as an urgent global geophysical problem may give the impression that to solve climate change one 'just' needs to stabilize global temperature, thereby facilitating recourse to technologies of geo-engineering (Sillmann et al. 2015, and see also box 2.2 below). Similarly, the notion of 'ecosystem services' promoted by the MA may allow biodiversity to be made visible in terms of economic indicators, and favour ecosystem services valuation practices. But this may silence other ways of knowing biodiversity and hinder the development of alternative policy tools (Turnhout et al. 2014); or act as a 'technology of globalization' contributing to the diffusion and standardization of ecosystem services valuation practices while erasing place-based differences (Ernstson & Sörlin 2013). Such insights often build on a conception of knowledge as performative and suggest that the ways in which 'nature' is made visible, monitored and measured tend to encourage some ways of acting upon it (see also Porter 1995). In this sense, these scholars suggest that the distinction between 'policy-relevant' and 'policy-prescriptive', which is the motto of most GEAs, is also full of ambiguities as providing 'policy-relevant' knowledge is already rendering possible some forms of governance (which may include inaction as global knowledge does not necessarily responds to policy-needs) (Turnhout et al. 2016).

Box 2.2 - Framings in GEAs

'Frames organise central ideas, defining a controversy to resonate with core values and assumptions (…). They allow citizens to rapidly identify why an issue matters, who might be responsible and what should be done.' (Nisbet & Mooney 2007:56)

Whether implicitly or explicitly, all GEAs act with particular frames, which contribute to defining whose knowledge and expertise should be included/excluded. A key site of controversy in all the GEAs presented here relates to how, and by whom, the problems they are meant to tackle are defined. The examples outlined in section 2.2. suggest the importance of geographical and disciplinary pluralism in the adoption of framings able to secure legitimacy and credibility worldwide. Both the IPCC and the GBA were criticized for having adopted 'Western' framings in their respective work. As for the IPCC, the GBA also adopted an approach most particularly based on a natural science understanding of biodiversity issues: social scientists were little involved in the process. In contrast the MA adopted a very distinct conceptual framework organized around the concept of ecosystem services. Although this concept created other contestations, it encouraged the contribution of scientists beyond the natural sciences including economists, but also social scientists. The IPCC has not officially adopted an explicit conceptual framework but the Bretherton diagram, which is a representation of the different geophysical component of the Earth Systems (NASA 1986) is often recognized as having influenced the framing of climate change as adopted by the organization excluding, until recently, the 'human dimension' from the picture (Mooney et al. 2013). According to Hulme, three main elements are suggestive of the framing of climate change as adopted by the IPCC: (1) a globalised atmosphere (…) which offered the world a single depository for greenhouse gas emissions and which opened the way for predictive climate modelling; (2) the goal of a stabilised global climate measure by global temperature as the centrepiece of policy; and (3) the institutionalising of mitigation and adaptation as co-dependents in future global climate policy regimes' (Hulme 2008). Contesting this physical approach to climate, Hulme, along numerous others, advocated for a more culturally and geographically sensitive understanding of climate change (Hulme 2009; Chilvers et al. 2014; Hulme 2015).

Beyond these aspects, several studies have also explored who participate in GEAs and pointed out the uneven representation of experts from different disciplines and geographical backgrounds. In terms of participation, about 75% of all authors participating in the IPCC are from North America or Europe, while 45% of the world's countries never had a contributing author (Ho-Lem et al. 2011). In trying to explain this geographical bias several factors have been identified including the lack of resources, limited government interest, language barriers (with English being generally the main language used in these processes) and lack of 'scientific capacity' (Biermann 2001). Several authors have demonstrated that the uneven geography of expertise characterizing the IPCC was a factor affecting the framing of climate change (see also Box 2.2), hampering the IPCC's credibility, and leading to a lack of policy influence especially in many developing countries including for example India (Kandlikar & Sagar 1999; Biermann 2001) and Brazil (Lahsen 2004). Relations between this geographical bias and the impacts of the IPCC reports have been underlined: 'Disciplinary distribution and geographical distribution of the impact of the reports are skewed, the former towards geophysical sciences, the latter towards developed countries'(Vasileiadou et al. 2011:1052). Building on these observations, a number of scholars have advocated for the democratization of GEAs, insisting on the fact that such organizations should engage with a broad range of actors and knowledges (section 2.3.3).

2.3.3. A focus on the democratization of GEAs

In contrast to evaluating GEAs in terms of their effectiveness, interpretive social science scholars have pointed out other challenges awaiting these initiatives. While acknowledging that their effectiveness is crucial, these studies also underline that as GEAs have become prominent actors in the governance of environmental problems, more attention should be devoted to the governance of these organizations themselves and to the knowledge politics animating them. These insights expand and overlap to a large extent on the concerns expressed by STS scholars. They also build on a conception of knowledge as never neutral but rather co-produced with policy, and provide normative advice to guide the development of new GEAs, calling for more bottom-up approaches and participatory practices.

First, these insights often emphasize that GEAs have to operate in a context in which they are potentially under greater public scrutiny than ever before. This means that they have to be credible in front of multiple audiences, not only scientists and governments but also multiple publics including businesses, NGOs, bloggers (e.g. Schäfer 2012). This trend towards greater public engagement with organizations of global environmental governance has been made visible for example with the increasing number of side-events, organized by stakeholders, in international climate conferences (Schroeder & Lovell 2012). More generally, it also responds to an increasingly close relationship between science and society, with the multiplication of both 'invited' and 'non-invited' spaces of participation in multiple settings (Chilvers & Evans 2009). According to Miller:

> 'As international knowledge institutions [such as GEAs] have acquired new responsibilities to manage global processes, a growing disjuncture has opened between their power to shape world order and their lack of legitimacy in the eyes of sceptical publics.'(Miller 2007:326)

Here, the case of the Climategate controversy is particularly illustrative. Shortly before the Copenhagen Summit (in 2009), emails exchanged between climate scientists were hacked and released into the public domain, therefore making visible some content that could be interpreted as if climate scientists were manipulating their data to 'exaggerate' the seriousness of climate change. Following this event which eroded its scientific credibility, and closely relates to another controversy (known as 'Glaciergate', see Mahony 2013c)[13], the IPCC underwent a major crisis and the InterAcademy Council (IAC) reviewed its procedures. In contrast to authors who argued that science was under attack, other critical social scientists emphasized that this event just made public how science is routinely made: making visible the negotiations behind the construction of scientific facts (Ryghaug & Skjølsvold 2010). Several authors suggested that this event could also be read as resulting from the fact that the IPCC had, to date, failed to appropriately respond to multiple publics and sceptics (Ravetz 2011; Grundmann 2012). Instead of engaging more broadly with society, the IPCC has responded to critics by

[13] The Glaciergate refers to a controversy that emerged following the identification of a mistake in the 2007 IPCC report which stated that Himalayan glaciers could disappear by 2035.

strengthening its scientific procedures and sticking to the 'linear model of expertise' (Beck 2012). The deficit model of public understanding of science (e.g Wynne 1993) adopted by the IPCC in its communication strategy has also been criticized (Bowman 2010; Beck 2012). As underlined by Miller:

> 'The push toward conceptual and methodological pluralism is likely to spark resistance among those who see the current impasse on climate change and biodiversity loss primarily in terms of either a failure by scientists to communicate the true extent and consequences of global environmental risks effectively or the unwillingness of political leaders and public to undertake necessary economic, social and policy reforms.' (Miller 2006:310)

Underpinning calls to develop more pluralist GEAs is the assumption that these processes are not solely about science-policy but rather about science-policy-society relations and that GEAs should engage more broadly with diverse components of civil society and improve their public accountability. This assumption rests on deliberative democratic ideals and is also driven by the recognition that the credibility of GEAs, and therefore their effectiveness, depends on their ability to be trusted by multiple audiences and that 'trust' is a relational construct (Jasanoff 2007b).

A second dimension of relevance here deals with the fact that GEAs often attempt to address complex socio-ecological problems for which multiple framings exist and where knowledge is often uncertain. While the 'ozone problem' was relatively well-defined, climate change and, even more so, biodiversity issues are less structured, or wicked problems with no single solution. Such situations resonate with the characteristics of post-normal science settings where 'facts are uncertain, values in dispute, stakes high and decisions urgent' (Funtowicz & Ravetz 1991:138). In such instances, delineating whose expertise counts is always open to contestation. In order to ensure that decision-makers take responsibility for their actions it has been argued that experts should 'keep it complex', make uncertainties explicit, and avoid simplification. Otherwise it would put experts in the position of taking political decisions without being accountable for them (Stirling 2010). Scholars have also increasingly called, and been involved in, the development of participatory practices in knowledge assessments (Leach et al. 2005). While there are different rationales for public engagement, ranging from (often unacknowledged) instrumental reasons, to deliberative democratic ideals (Bäckstrand 2003; Chilvers 2009; Lövbrand et al. 2010), one of them is that scientific knowledge also has its limits and participatory practices may serve as 'technologies of humility' (Jasanoff 2007b:33).

Concerns over the limits of 'top-down', technocratic approaches to knowledge assessments have led scholars to call for the development of more flexible and bottom-up approaches in the implementation of GEAs, and in their governance designs (Esguerra 2014). This would entail recognizing that there is no 'one size fits all' way of providing expert advice. In particular, Beck and colleagues have advocated for a reflexive turn in the governance of global expert advice:

> 'This reflexive turn aims to generate a broad range of visions, pathways, and ways of responding that leave room for choice. For this reason we encourage experimentation with new forms and formats of governing expertise by bringing largely neglected sources of knowledge, voices and options. The more perspectives are available to political actors, the wider the range of policy options that will be conceivable. A more reflexive and inclusive form of governing environmental expertise, based upon a more plural and participatory normative and epistemic framework, can make knowledge about environmental change more useful and increase politicians and the general public's willingness to adopt new policies.' (Beck et al. 2014:86)

This reflexive turn therefore encourages the recognition of multiple ways of knowing human-nature relations so as to preserve a range of policy options to address environmental change and make visible different possible futures. An important assumption underlying this call is that this more pluralist approach will allow GEAs to be more meaningful and also improve their robustness and effectiveness. Concrete recommendations as to what such pluralist approaches would entail in practice for IPBES have also been provided (Box 2.3 in section 2.4).

2.4. Towards a new generation of GEAs: Introducing IPBES

IPBES was formally established in 2012, following a long process of consultations and negotiations that lasted seven years (Granjou et al. 2013). IPBES is then an emergent institution of global expert advice whose objective is to tackle the loss of biodiversity and the degradation of ecosystem services. In many aspects, IPBES seeks to build on previous biodiversity assessment initiatives, as well as on the experience of the IPCC. However, according to its own ambitions, IPBES differs markedly from any previous GEAs and does not limit itself to providing assessments (Table 2.2). IPBES aims to fulfil four functions (UNEP 2010):

- To identify and prioritize key scientific information needed for policy-makers and to catalyze efforts to generate new knowledge;
- To perform regular and timely assessments of knowledge on biodiversity and ecosystem services and their interlinkages;
- To support policy formulation and implementation by identifying policy-relevant tools and methodologies;
- To prioritize key capacity building needs to improve the science-policy interface, as well as to provide and call for financial and other support for the highest priority needs related directly to its activities.

Table 2.2 Main features of three biodiversity-related GEAs

	GBA (1995)	MA (2005)	IPBES (2012-…)
Overarching concept(s)	Biodiversity	Ecosystem Services	Biodiversity and Ecosystem Services
Function(s)	Assessment	Assessment	Assessment Policy-support Capacity-building Knowledge generation
Scale	Global	Multiscale	Multiscale
Primary users	"Policy-makers" but almost no impact	The MA Board (multistakeholder) represents the users	Governments and the six biodiversity conventions (CBD, CMS, CITES, ITPGR, Ramsar, UNESCO WHC)
Products	1 scientific report (1140 pages)	Several synthesis targeted for different audiences	18 deliverables currently on-going (2014-2018)

IPBES has also adopted a range of principles to guide its functioning (UNEP 2010; UNEP 2012a) stressing that it should be [or ensure]:

- An independent intergovernmental body
- Scientifically independent
- Credible, relevant, and legitimate

- Policy-relevant but not policy-prescriptive
- Full and effective participation of developing countries
- Inter and multidisciplinary approach, including other knowledge-systems
- Recognize regional context
- Gender-balance

A major similarity between the IPCC and IPBES is that they both operate in intergovernmental settings: the Assembly of States delegates (i.e. the Plenary) forms the main decision-making body. IPBES is assisted by two subsidiary bodies: a Bureau, in charge of fulfilling administrative duties delegated by the Plenary, and a Multidisciplinary Expert Panel (MEP) responsible for overseeing technical and scientific duties. When establishing IPBES, the Plenary also selected a place to host the IPBES Secretariat, an entity in charge of facilitating the work of IPBES on an everyday basis, and decided that this unit would be hosted in Bonn (Germany). While operating in intergovernmental settings, IPBES also aspires to provide usable knowledge to multiple audiences including governments but also MEAs, as well as businesses and civil society organizations. In this respect IPBES seeks to provide a space for stakeholder engagement and echoes the ambitions of the IAASTD. All negotiations conferences preceding the establishment of IPBES were labelled as being simultaneously 'intergovernmental' and 'multi-stakeholders'. MEAs expected to work closely with IPBES include in particular the six biodiversity-related conventions:

- The Convention on Biological Diversity (CBD, 1992)
- The Convention on International Trade in Endangered Species or Wild Fauna and Flora (CITES, 1973)
- The Convention on the Conservation of Migratory Species of Wild Animals (CMS also known as the 'Bonn Convention', 1979)
- The International Treaty on Plant Genetic Resources for Food and Agriculture (2001)
- The Convention on Wetlands (Ramsar, 1971)
- The World Heritage Convention (WHC, 1972)

All along the process leading to the establishment of IPBES, the IPCC has functioned as a role model and scientists affiliated with global change research programmes, such as

DIVERSITAS or the IHDP, have repeatedly called for the establishment of an 'IPCC-like mechanism' for biodiversity (Larigauderie & Mooney 2010). However, while adopting the IPCC as their main references, many authors have also emphasized the need for IPBES to draw the lessons from previous GEAs and to be designed for biodiversity issues. Most particularly IPBES should work closely with social sciences, and also be based on a broad knowledge base including TEK (Duraiappah & Rogers 2011; Mooney et al. 2013). Scholars advocating for a reflexive turn have also contributed to the discussions that took place on how to organize IPBES and provided normative advice for the organization (Box 2.3). In several aspects, the aspirations of IPBES are consistent with the normative recommendations emanating from this perspective, and this is also one of the reasons why IPBES appears as a relevant object of study (in particular rules 1, 2, 3 and 4). In Chapter 9, I will use these rules to reflect on the early developments of IPBES. Yet, the establishment of IPBES was far from straightforward and I give more background in Chapter 5 on the origins of IPBES and on the multiple ways in which it was imagined before being formally established as an intergovernmental organization.

Box 2.3 - Rules of engagement for the IPBES (*Source*: Turnhout et al. 2012:455)

1. Operate not as a centralized global organization, but as global coordinator of a distributed network that can be sensitive to local knowledge, needs and conditions.
2. Address all mandated functions simultaneously and in a balanced way so that non-elite actors are not placed in an end-of-pipe position.
3. Facilitate broad discussion of the terms and methodologies used to defined, understand, assess and conserve biodiversity; and be explicit about contested assumptions.
4. Ensure diverse representation in activities and decisions. Expert panel should include natural scientists, social scientists, humanities researchers, biodiversity practitioners and indigenous knowledge networks, with accreditation criteria and selection processes made public.
5. Experiment with ways to validate and maintain quality control, such as sensible narratives and citizen panels.
6. Embrace dissenting views and perspectives to build trust among represented parties – for example, through minority reporting instead of pursuing consensus.
7. Work with trusted civic organizations and networks at the interface of science, citizens, business and culture.
8. Have rolling and overlapping timetables for different products, rather than delivering a single 'big-bang report' every six years.
9. Reflect regularly to identify areas for improvement.

2.5. Summary and research questions

The four landmark GEAs introduced above presented diverse ways of organizing global expert advice for policy. The context in which these GEAs have been established has also changed. While the GBA and the IPCC were initiated more than 20 years ago, both the MA and the IAASTD were conducted more recently and their experimental features and pluralist approaches can be read as attempts to build on the lessons of earlier GEAs which had adopted more 'top-down' approaches. Both the IPCC and the GBA adopted a scientific framing of, respectively, climate change and biodiversity, and operated with a linear representation of relations between science and policy. This was, in contrast to, both the MA and the IAASTD which were, to a certain extent, more 'bottom-up' and attempted to engage with diverse voices and to work at multiple scales. As the IPCC is currently trying to reform itself as well in this direction (although ambiguities remain as to whether it actually manages to do so), discussions surrounding the potential creation of other GEAs, such as in the case of a global expert panel on land degradation also stress the need to adopt more polycentric and multi-scalar approaches (Thomas et al. 2012).

A challenge outlined in all of the approaches mentioned above is that GEAs should be more inclusive: ensuring a balance between developed and developing countries while broadening the scope of knowledge underpinning their work. The geography of expert participation has been identified as a key dimension to ensure the legitimacy and success of GEAs: numerous studies reported that Northern domination was hampering the overall credibility of assessments. In addition to the importance of geographical balance, disciplinary balance has also been identified as a key challenge for GEAs. While the need to design more inclusive GEAs is generally agreed, the underlying rationales may be different. As outlined above the drive towards more inclusivity is perceived as key for pragmatic reasons, to ensure the effectiveness of GEAs, but also for democratic reasons, to preserve a range of governance options. In this PhD I seek to build on the work of STS scholars that have started to engage with GEAs and to use IPBES as a site to explore how IPBES attempts to 'open-up' and implement an innovative model of expertise in global science-policy settings, and whether it has been successful to date.

In many respects, IPBES aims at constructing what I would call a 'view from everywhere': that is, being inclusive of developed and developing countries, while encompassing a broad range of knowledges including 'place-based' knowledges and indigenous and local knowledge. This ambition contrasts markedly with the IPCC which, as outlined above, has constructed a view of climate change as 'the view from nowhere', relying predominantly on physical science knowledge. This aspiration of IPBES can be read as willingness to learn the lessons from previous GEAs but also reflects the specific challenges characterizing biodiversity issues. There is a broad recognition that these issues are more local in nature (Loreau et al. 2006) and that the work of IPBES should be regionalized (Soberon & Sarukhan 2010; Brooks et al. 2014).

These features make IPBES a relevant object of inquiry to address the following research questions:

(1) How is IPBES being constituted? How is IPBES constituting biodiversity expertise and knowledge?
(2) Is IPBES actually 'opening-up' and providing an inclusive model of expertise, in keeping with its self-description and own ambitions?
(3) How does IPBES compare to previous Global Environmental Assessments (GEAs)?

In the next chapters I introduce the conceptual approach (Chapter 3) and the research design (Chapter 4) that will help me address these.

Chapter 3 - IPBES: An experiment in constituting global biodiversity knowledge and policy

3.1. Introduction

IPBES is an emerging institution of expert advice that seeks to tackle the loss of biodiversity and the degradation of ecosystem services at a global scale. Its aspiration is to bridge the gap between knowledge-holders and policy-makers by providing policy-relevant knowledge to the policy world. In this respect, IPBES can, in the first place, be described as an organization operating at the cross-road between two dimensions: a horizontal dimension between the two realms of knowledge and policy and a vertical dimension between local and global levels. However, with a STS lens, all of these concepts – ‘local’, ‘global’, ‘knowledge’, and ‘policy’ – can be deconstructed and understood as resulting from relational, co-production processes; the ‘gap’ itself is constructed. While they can appear as natural or self-evident, a wide range of STS studies suggests that all of these concepts are never abstract, they always emerge in some materials, in some particular places and are better understood as constructed relationally. For instance, as documented by Jasanoff and colleagues, the ‘global’ can always be traced back in some ‘local’ context (Jasanoff & Martello 2004). In a similar manner, as documented by historians and sociologists of science, scientific knowledge as well always originates somewhere – it is never the ‘view from nowhere’ (Shapin 1995). For this reason, from an STS perspective, GEAs such as IPBES, although they aspire to transcend national and cultural contexts, can also be approached as very *situated* projects.

IPBES aspires to develop new forms of science-policy interactions, being built on a broad knowledge base while being sensitive to cultural and geographic differences. As outlined in Chapter 2, STS and constructivist social science scholars have underlined the fact that GEAs, as they attempt to provide knowledge on global environmental change, simultaneously contribute to enact some forms of science-policy interactions and particular ways of framing environmental change while closing down others. For this reason I find the constructivist stance of the co-productionist idiom, which is an invitation to approach critically how boundaries between science and policy are drawn, and to be alert to practices, to be a useful point of departure. This idiom provides several useful analytical repertoires and tools, such as those provided by the social worlds framework (section 3.2.3) to study an institution which is still 'in the making'. Building on co-productionist insights, GEAs can be conceptualized as sites of co-production and far from 'speaking truth to power' necessarily offer a 'view from somewhere'.

In problematizing relations between science and policy, the co-productionist idiom builds extensively on the work of STS scholars that have localized science, explored the diverse places of knowledge-making and the ways in which credible knowledge-claims emerge. Historians and geographers of sciences, drawing on the spatial turn (section 3.3), have shown the importance of 'place' (e.g. laboratories) in the production, circulation and reception of knowledge. If science is made of, and in, places, so too are GEAs. However, so far little attention has been given to the particular places rendered authoritative in these organizations. For this reason, while I suggest that IPBES can be approached as a site of co-production, I also wish to emphasize the fact that where this co-production happens is not self-evident. GEAs are not abstract processes floating 'in the air' but also have a geography which needs exploring. In the remainder of his chapter I first outline the co-productionist idiom and the diverse strands included in this work, before turning to more specific literature on three particular areas, namely literature on the places of knowledge-making, on situated knowledges and on expertise. These literatures are intended to contextualize the three case studies that will be presented in the empirical parts of this study: on the location of the IPBES Secretariat in Bonn (Chapter 6), on the development of the IPBES conceptual framework (Chapter 7) and on the construction of the IPBES Multidisciplinary Expert Panel (Chapter 8). More details on the reasons which have guided the choices of these particular cases are given in Chapter 4 which explains my research design and methods.

3.2. Conceptualizing science-policy relations : GEAs as sites of co-production

3.2.1. Varieties of co-production

The purpose of the co-productionist idiom is to provide a framework which is able to analyse critically the role of science in societies. It refuses the idea that 'science' is a neutral, objective activity producing transcendental kinds of truth that can be developed without affecting the ordering of social life. It thus builds on a conception of science as constructed, in contrast to positivist accounts which posit that science directly reflects reality or nature.

This idiom starts with the idea that scientific knowledge and technologies are not developed independently from societal and political circumstances and contribute to the ways in which society is constituted. This implies that there is no linear relation between science and policy (Nowotny et al. 2001; Grundmann & Stehr 2012). Rather, science and technologic developments constitute social life, and vice-versa, with good and bad, intended and unintended consequences: examples supporting this point are countless, including the development of nuclear power, GMOs, internet or vaccination (Bjiker et al. 2009; Vinck 2012). Underpinning this position is the assumption that the material and social worlds are produced together, with the consequence that epistemology and ontology are inevitably intertwined. According to Jasanoff, co-production is the:

> 'Shorthand for the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it.' (Jasanoff 2004:2)

Thus, this approach, as will be further explained in this section, does not give primacy to 'the social' over 'the natural' but rather understand them as mutually constitutive, and attempts to avoid social and natural determinism. Approaching science as a social practice does not mean that social reality comes first[14], but it also refutes the idea that humans are primarily determined by nature and natural laws. Saying that science is constructed does not deny the role of materials and of the natural world in constituting reality. For example, echoing many other STS scholars, feminist STS scholars insist that:

> 'Genealogically, feminist technoscience studies are inspired by social constructionist approaches to gender, sex, intersectionalities, society, science and technology. However, it is important to underline that these studies, together with other kinds of material or postconstructionist feminisms has also transgressed social constructionism, forcefully drawing attention to the ways in which the discursive and material aspects of sociotechnical relations and processes of materialization are inextricably intertwined.' (Asberg & Lykke 2010:299)

Whilst the relations between science, technology, and society have been problematized in different ways by STS scholars – for instance granting different levels of agency to non-humans – it is possible, following Jasanoff, to classify this variety of approaches by differentiating between constitutive and interactionist accounts of co-production. Studies of first type are predominantly concerned with developing accounts revealing how the division between nature and culture is constituted. These accounts are particularly interested in revealing worldviews and representations: explaining why we have come to know the world in this way. For example:

> 'At the most basic level, the constitutive strain in STS seeks to account for how people perceive elements of nature and society, and how they go about relegating part of their experience and observation to a reality that is seen as immutable, set apart from politics and culture. This body of work is most closely related to metaphysical concerns in the philosophy of science, because one cannot discuss the constitution of nature or society without resolving questions

[14] It is worth noting that the ideas advanced by STS scholars have given rise to numerous debates during the 1990s most particularly between positivist scientists and social sciences scholars working in a post-modernist approach. These debates are often referred to as the 'Science Wars'.

> about what it means to be natural or social, human or non-human. Co-productionist accounts, however, are not content simply to ask what is; they seek to understand how particular states of knowledge are arrived at and held in place, or abandoned.' (Jasanoff 2004:19)

The second family of studies – interactionist accounts – takes the division between nature and culture as given and rather focuses on how boundaries between science and society are constructed. This strand investigates *how* science interacts with policy and with political power:

> 'The interactional approach, by contrast, is less overtly concerned with metaphysics and more so with epistemology—or less with what is and more with how we know about it (Hacking 1999:169). This line of work takes for granted that, in most exercises of world-making, neither science nor society begins with a clean slate but operates always against the backdrop of an extant order, in which people already 'know' in pragmatic terms what counts as nature or science and what as society or culture.' (Jasanoff 2004:19)

Scholars grouped within this latter strand have paid much attention to the ways in which, in conflictual situations, some claims are rendered authoritative at the expense of others and with what consequences. The landmark example here is found in the study by Shapin and Shaffer, *Leviathan and The Air Pump* (1985), in which the authors analyse the controversy between Hobbes and Boyle over the development of Boyle's experimental method. While the two thinkers were not particularly associated with a disciplinary realm at the time, Boyle came to be recognized as one of the founders of the experimental, modern, sciences, while Hobbes became a founder of political philosophy. In trying to understand this puzzling observation, Shapin and Shaffer concluded that the outcome of this controversy could not be understood without taking into consideration the particular political context of (Post-Restoration, i.e late 17th century) England at that time. While being an epistemological problem, the controversy over Boyle's method was also simultaneously a political problem regarding whose authority counts in producing knowledge and warrants its validity: 'Solutions to the problem of knowledge are solutions to the problem of social order' (Shapin and Shaffer 1985:332).

In addition to these sociological approaches to co-production, it is also worth underlining that the term 'co-production' has circulated widely, being increasingly used as the shorthand for 'doing things together' and more casually used as a methodological, organizational, approach. As illustrated by the recent reprise of the term by global change research programmes such as Future Earth, co-production is increasingly used as a synonym for 'producing knowledge together' (Lemos & Morehouse 2005; Tengö et al. 2014). In contrast to the sociological approach to co-production which stresses that co-production happens, no matter if we want it or not, this methodological approach can be read as an attempt to implement co-production practically[15]. Reflecting on this new use of the term, Jasanoff suggests that it may be understood as a 'weak' version of co-production:

> 'You might think of weak co-production as people sitting round a table to produce robust knowledge that is more useful, more robust, because people will buy into it, because they've already bought into the making of it. But in strong co-production you are not just constructing a representation of the world as it is, but also concurrently a representation of the world as you want it to be in various ways.' (Jasanoff, interview for Future Earth, July 2014)[16]

Drawing on these STS accounts, GEAs can first be approached as sites of co-production. By delineating what is policy-relevant knowledge they also contribute to the co-ordering of natural and social orders. This idea is well emphasized by Miller's notion of 'International Knowledge Institutions' that is 'these institutions seek to generate knowledge relevant to international issues, to settle transnational disputes over knowledge claims, and to bring reason and evidence to bear on global policy-making' (2007:331). With this concept he underlines that these institutions play a form of 'epistemic constitutionalism' and contribute to 'the ways in which social and

[15] This means that there are perhaps three varieties of co-production: ontological (i.e. constitutive accounts), epistemological (i.e. interactionist accounts) and methodological.

[16] http://www.futureearth.org/blog/2014-jul-23/be-inclusive-you-need-more-voices-qa-sheila-jasanoff (last accessed December 7th, 2015).

institutional processes for producing, validating, contesting and disseminating factual claims help to enable or constrain the exercise of power' (2009:142). This concept also stresses the normative assumptions embedded in the choice of some particular standards or categories (e.g. the notion of 'hotspot' in biodiversity conservation) that are rendered authoritative and promoted by these institutions (e.g. Thompson 2004). Developed specifically to be applied to nation-states, the concept of socio-technical imaginary – 'Collectively imagined forms of social life and social order reflected in the design of nation-specific and/or technological projects' (Jasanoff & Kim 2013:120) – is also a co-productionist concept which emphasizes the intertwinement between science, or technology, and social life.

Within the different approaches mentioned above several analytical tools can be found which could be useful to analyse the development of IPBES. As will be explained in Chapter 4, studying an organization 'in the making' has some methodological implications. In particular it involves looking at processes – asking and exploring *how* is IPBES constituted, rather than *why*. In the sections below (3.2.2 and 3.3.3) I outline two main sociological repertoires from which I will draw and use some specific concepts in the empirical chapters (Chapter 5 to 8) of this PhD: Actor-Network-Theory and the social worlds framework.

3.2.2. ANT and constitutive co-production

Among constitutive approaches to co-production, Actor-Network-Theory (ANT), also referred to as the sociology of translation, is probably the most prominent example. It emerged in the 1970s under the leadership of European scholars including Bruno Latour, Michel Callon, Anne-Marie Mol and John Law. Moving inside the place of science, these studies have focused on describing the practices of scientists in everyday-life and 'opened the black box' of science (e.g. Collins 1990; Traweek 1992). In particular, willing to provide an idiom that would overcome well-established sociological dichotomies, ANT scholars have adopted a materialist approach which broadens the definition of 'the social' by taking into consideration non-humans seriously in their analysis.

The most famous example of these ethnographic accounts is *Laboratory Life* in which the authors follow scientists in a Californian laboratory and trace the production of scientific facts (Latour & Woolgar 1979). Drawing on these insights Latour has questioned Cartesian dualism – or what he calls the 'Modern Constitution' (1991), that is the idea that facts can be clearly separated from values, nature from culture, objectivity from subjectivity and science from politics. According to him, Modernity happens through the two processes of 'hybridization' and 'purification'. Through 'purification', scientists produce clean facts about Nature that can apparently 'speak for themselves'. Yet, in this process a multiplicity of nature-culture hybrids are rendered invisible. As Latour explains: 'Our modern Constitution is actually full of hybrids and hairy objects whose existence, whose very possibility, it denies'(1991:34).

Drawing on Latour, GEAs can be thought of as very modernist endeavours, resting on a dualist worldview: by construction they seek to purify 'science' from 'policy'. The assumption that this dualism is a characteristic of Western societies has been contested, in particular by post-colonial science scholars who underline that:

> 'In claiming that 'we' have never been Modern, Latour reminded us of the need to unpack the social at the same time as we unpack its figurative double 'science'. But in defusing such analytic distinctions, he may have missed the real action: those of us outside Paris who have never had so many ways of being modern, so many ways of being scientific!' (Anderson and Adams, 2008: 183)

However, independently of whether dualism is particularly 'Western', numerous anthropological studies have underlined the multiple ways of articulating human-nature relationships, and underlined that in some cosmologies (e.g. totemism, animism, analogism) such purification processes do not exist (Descola 2005; Castro 2007; Salmond 2014).

Here a reflection on the particular nature of the issues that IPBES is meant to tackle is useful: biodiversity and ecosystem services are both particular ways of framing nature. The idea of biodiversity was formulated in the 1980s by conservation biologists, in particular under the leadership of entomologist E.O Wilson while the idea of ecosystem services was formalized in the context of the MA, partly motivated by the recognition that talking about biodiversity was not perceived as an effective way of conveying concerns about the natural world to decision-makers (see also Chapter 2 section 2.2.3). Yet, both of these lenses, biodiversity and ecosystem services, are constructed concepts which are particular ways of talking about nature, an idea which is itself subject to multiple meanings and interpretations, and of constituting it (Whatmore 2001; Lorimer 2012). What this means for IPBES as it attempts to bring together different 'knowledge-systems' is that it will necessarily be a site where diverse ontologies enter into deliberation. The question then is how are these ontologies articulated in practices and whether concepts such as biodiversity and ecosystem services help to re-draw boundaries between nature and culture.

Most notably, one of the core strengths of ANT has been the study of controversies – moments in which matters of concerns have not yet become 'solid' matters of facts and knowledge is contested (Latour 2004; Venturini 2009). Studying controversies at the methodological level implies a commitment to three ANT principles: agnosticism (the researcher should not give *a priori* more consideration to one actor or to another), generalized symmetry (conflictual perspectives should be explained equally) and free association (meaning that the distinction between natural and social is irrelevant). While these principles first emerged in the context of the Strong Programme of the Edinburgh School of Sociology[17] (e.g. Bloor 1976), one of the main tenets of ANT is the generalization of the symmetry principle which holds that, when describing a network, humans and non-humans should be considered equally. In this view:

> 'Both humans and non-humans form *associations*, linking with other actors to form networks. Both human and non-humans have *interests* that cause them to act, that need to be accommodated, and that can be managed and used.' (Sismondo 2010:81)

[17] The strong programme is a major approach of the sociology of scientific knowledge (SSK). It first emerged in the late 1970s under the leadership of scholars (e.g. David Bloor, Barry Barnes) at the time based at the Edinburgh School of Sociology. Other scholars (e.g. Harry Collins), based in Bath, formulated influential proposals in particular by developing several studies on the social construction of technology (SCOT, cf. Trevor Pinch).

In this perspective agency is understood as being in the relations between the different components of the network: *actants* can be either humans or non-humans, and there is nothing outside the network (i.e. the network is the outcome of these relations). A core concept formulated by ANT scholars to analyse how successful, or unsuccessful, claims emerge is the notion of translation which refers to:

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

In a seminal study from 1986, Callon analysed how three marine biologists attempted to design a conservation management plan to protect a threatened population of scallops under Saint Brieuc Bay and identified four stages in this translation process. As they seek to constitute themselves as obligatory passage points, scientists define the problem (*problematisation*) and attempt to build alliances with other actors including fishermen and scallops (*interessment*), roles for each actors are then attributed (*enrolment*), resulting in action (*mobilization*) if the network constituted in this way is robust, i.e. if all translation stages are successful. In this example this is not the case: some fishermen refuse to stop fishing in the bay, and scallops do not necessarily turn into larvae (i.e. they 'refuse' to stay in the bay). The network does not hold and the management plan fails (Callon 1986).

In ANT a key outcome of all these translations is the production of immutable mobiles, that is, devices which are meant to be interpreted the same independently of place or context and therefore allow the circulation of knowledge. Latour would suggest that, for example, a map can do such a thing. Within ANT:

> 'Universal scientific knowledge is the product of the manipulation of local accounts, a product that can supposedly be transported through time and space to a wide variety of local circumstances. But such universal knowledge is only applicable through a new set of manipulation that adapt it once again to those local circumstances.'(Sismondo, 2010:93)

While scrutinizing the material arrangements surrounding knowledge-making, these studies also emphasize that scientific inquiry is never independent from the socio-cultural context in which it takes place. When studying diseases, Pasteur had to build alliances and enrol actors well-beyond the settings of his laboratory, including politicians and industries so that his world-changing discovery – microbes in this particular case – could be recognized (Latour 1993).

3.2.3. Interactional co-production and the social worlds framework

Within the interactional strand of co-production a large amount of scholarship has focussed on developing understandings of the relations between science and policy underlining the socio-cultural factors explaining how the distinction between both is constructed and maintained. Of particular interest for this study is the notion of 'boundary work' developed by sociologist Gieryn. In addressing the demarcation problem – how to differentiate between science and non-science—Gieryn (1983)[18] argues that there is no universal criterion available to make such a distinction. Previous philosophers of science including Karl Popper (1959) outlined the falsifiability of scientific theories as the main demarcation criterion and Merton (1973) identified four institutional norms (the ethos of science), including communalism, disinterestedness, universalism and organized scepticism. In contrast, Gieryn argues that science is predominantly a socio-cultural, even ideological, activity, whose authority does not result from intrinsic, essentialist characteristics but from legitimation processes. Through boundary work scientists attempt to delineate a territory whose margins are always uncertain and open to contestations. In this view, boundary work is:

> 'The attribution of selected characteristics to the institution of science (i.e. to its practitioners, methods, stock of knowledge, values and work organization) for purposes of constructing a social boundary that distinguishes some intellectual activity as non-science (1983:782).'

[18] See also more recent works: Gieryn 1996; Gieryn 1999.

In this perspective, controversies about the practices and politics of knowledge-making animating GEAs can be thought as a form of boundary work, delineating whose knowledge claims are credible and should be included (Jasanoff 1990; Hoppe et al. 2013). Boundary work can be performed in multiple ways and has been used in a variety of contexts including to explain how some forms of knowledge are perceived as legitimate, unlike others, to support urban environment policies (Owens et al. 2006), to explain how the idea of 'science-policy interface' is maintained discursively (Huitema & Turnhout 2009), or by ecologists to promote biodiversity conservation plans (Nel et al. 2015). In attempting to go beyond 'individualized' boundary work (e.g. Waterton 2005) and to formalize the ways in which organizations such as the IPCC or IPBES institutionalize science-policy demarcations, Guston suggested the concept of 'boundary organizations':

> 'First, [boundary organizations] provide the opportunity and sometimes the incentives for the creation of boundary objects and standardized packages; second, they involve the participation of actors from both sides of the boundary, as well as professionals who serve a mediating role; third, they exist at the frontier of the relatively different social worlds of politics and science, but they have distinct lines of accountability to each.' (Guston 2001:401)

This concept emphasizes that experts involved in GEAs have to deal with multiple lines of accountability; that is, they have to be both scientifically and politically credible, and across a multitude of social worlds. It also points towards the need to analyze how stability between these different worlds is achieved.

The social worlds framework is an interactionist approach which bears some similarities with Gieryn's conception of science, approached as an activity. It also offers a number of useful tools to understand how delineations between science and non-science are constructed. Historically, this approach has emerged from the Chicago School of Sociology and been highly influenced by pragmatic philosophers such as George H.

Mead, John Dewey and Alfred Whitehead[19]. It focuses most particularly on practices and work, that is on the ways in which participants from different social worlds interact and build shared meanings with a view of doing things together (Becker 1986):

> 'This framework [thus] assumes multiple collective actors – social worlds – in all kinds of negotiations and conflicts, committed to usually on-going participation in broad substantive arenas. This framework is relentlessly ecological, seeking to understand the nature of relations and action across the arrays of people and things in the arena, representations (narrative, visual, historical, rhetorical), processes of work (including cooperation without consensus, career paths, and routines/anomalies), and many sorts of interwoven discourses. The social worlds framework is particularly attentive to situatedness and contingency, history and fluidity, and commitment and change.'(Clarke & Star 2008:115)

Building on the definitions proposed by Strauss, Becker, and Mead, social worlds are understood as:

> 'Groups with shared commitments to certain activities, sharing resources of many kinds to achieve their goals and building shared ideologies about how to go about their business. Social worlds are universe of discourses, principal affiliative mechanisms through which people organize social life.'(Clarke & Star, 2008:115)

In this perspective, science is first approached as a social activity. Scientists, as other collective actors, are in search of legitimacy (Gerson 1983). One of the objectives of the social world framework is to provide tools to understand how in conflictual situations, or when participants from multiple social worlds interact, stability is achieved. A key concept emerging in this approach is the notion of 'boundary object'. The study conducted by Star and Griesemer in Berkeley's Museum of Vertebrate Zoology is of particular interest here. Willing to understand how, despite the heterogeneity of scientific work, and the multiplicity of actors and their concerns working in the

[19] George H. Mead (1863-1931) was an American pragmatist philosopher and sociologist based at the University of Chicago; John Dewey (1859-1952) was also a major figure of pragmatic philosophy known especially for his work on democracy and Alfred Whitehead (1861-1947) was a British mathematician and philosopher.

Museum, collaboration could be achieved, they formulated the concept of boundary object:

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

In focusing on what people do and how they build collective understandings, the social world framework provides useful conceptual resources to make sense of the development of IPBES – an organization which brings heterogeneous actors including scientists, governments, MEAs and NGOs. Under this framework, IPBES can perhaps be thought of as *an arena* bringing together heterogeneous participants from different social worlds committed to overlapping objectives, while conferences could be conceptualized as *staged intersections* (Garrety 1998) – i.e. short periods of times during which participants of different social worlds gather together, which have consequences for the future of the arena.

3.2.4 Contrasting ANT and the social world framework

While not particularly applied to studies of scientific practices in its beginning, the social world framework has progressively become a major approach mobilized by STS scholars, along with ANT (e.g. Sundberg 2005; Mahony 2013b). Although these approaches come from different sociological traditions they share some similarities. Unlike its name indicate ANT is much more a methodology than a theory, as for the social world framework (which is often referred to as a 'theory-method package', cf. Clarke & Star 2008). They are two pragmatic approaches, focused on studying practices, and are also 'ecological' in that much emphasis is placed on relations. Yet, within ANT more attention is dedicated to the role and agency of non-humans, which are meant to be considered equally in the analysis. Moreover, ANT is commonly mobilized to study moments of emergence, or ordering, and controversies 'as they happen' or science 'in the making'. In contrast, within the social world framework more emphasis is placed on analysing how social relations and particular orderings are stabilized and maintained.

For example, in a critique of the Latourian notion of immutable mobile (1986), Star and Griesemer suggest that the existence of boundary objects, for example a classification system, or the map offered by Latour, is an important factor to explain how interactions between different social worlds can be stabilized. Unlike immutable mobiles – which, presumably, are immutable and should be given the same meaning everywhere – the notion of boundary object suggests that it is precisely the fact that these objects can be interpreted and used differently by different people, in different places, that renders them very robust and makes collaboration, or circulation, possible. For example, some have argued that the notion of 'ecosystem services' may itself serve as a boundary object stabilizing relations between different scientific communities interested in sustainability (Abson et al. 2014), or the IUCN list of threatened species for those involved in the science and policy of biodiversity conservation (Gustafsson & Lidskog 2013).

It is also worth underlining that these two approaches have distinct analytical strengths and actor-networks are distinct from social worlds. Contrasting ANT with the social worlds framework in a study over a long-running controversy on the relations between cholesterol, dietary fats, and heart diseases, Garrety concluded that the social world was more convincing in explaining this controversy as it could explain change, taking into consideration historical circumstances and intentionality, more easily: 'because it relies on non-humans to settle disputes and bans consideration of 'social factors', actor-network-theory cannot deal very well with the protracted controversies in which scientific truth is the outcome of power struggles among groups with competing interpretations' (Garrety 1997:758). In contrast, it has also been argued that ANT was better at studying emerging controversies (Whatmore 2009). While ANT and the social world framework may have different explanatory power, it is worth noting that they are also increasingly used together, as illustrated by the development of Situational Analysis which is an attempt to put the two approaches in conversation (Clarke 2005).

3.3. STS, geographies of science and the places of knowledge-making: placing GEAs

The co-productionist idiom can serve as a useful meta-framing to approach critically the relations between science and policy. It builds extensively on STS insights that have explored the places of knowledge-making and in many aspects the formalization of this idiom rest on the willingness to do justice to the extensive research in STS that has studied scientific practices and technologies.

In contrast to philosophical or essentialist approaches to the question 'what is science?', the novelty of STS scholars and constructivist historians and geographers of science has been to seek answers to this question by situating scientific practices in places, providing rich ethnographic and empirical accounts. As illustrated above, scholars working in an ANT tradition have studied extensively laboratories and sites of contemporary scientific practice. Concurrently, historians and geographers of science have also approached science as a mundane affair, as a socio-cultural practice, and provided thick descriptions (Geertz 1973) of the, sometime unexpected, places and spaces of knowledge-making. These includes houses of experiments, botanical and zoological gardens, cabinets of accumulation, fields and hospitals (Livingstone 2003). This interest in the importance of place in scientific inquiry has been called the 'spatial turn' (Powell 2007; Finnegan 2007). In a paper calling for a dialogue between science studies and geographies of science, Powell identifies different approaches that have been developed by scholars to study the 'where' of science. These include:

> 'Those who conceive of the sites of scientific practice as social arenas; in accounts inspired, in the main, by architectural studies; in ethnographic and ethnomethodological studies of laboratory spaces; in posthumanist theories of practice, such as ANT, and in discussions about normative proposals, such as postcolonial science studies.' (Powell, 2007: 310)

Localizing scientific practices has led STS scholars to numerous conclusions (some of which have already been outlined above, regarding relations between science and policy), which cannot all be explored in detail here. However I will focus on the ones which resonate most particularly for this research and have particular implications for GEAs.

Among the numerous factors affecting the credibility of scientific knowledge, the role of 'place' in warranting, or not, epistemic practices has received particular attention. According to Livingstone, even if scientific theories and knowledge are incredibly mobile and seem to be able to travel all around the world, they can actually never be completely detached from their place of production:

> 'It is only when the practices and procedures that are mobilized to generate knowledge are located – sited – that scientific inquiry can be made intelligible as a human undertaking.' (Livingstone 2003: 86)

For instance the success of laboratories as emblematic sites of science has been related to their ability to appear as 'placeless places': with their standardized features labs acquire the ability to lose any idiosyncratic characteristics and to be virtually the same everywhere. Credibility is then gained through the erasure of place. The lab itself disappears and allows facts to 'speak for themselves', contributing to the diffusion of science as a universalist enterprise (Galison & Thompson 1999; Henke & Gieryn 2007). Similarly, Secord argues that the fact that 'artisan botanists' were meeting in pubs in 19th Century in England – 'rough' places accessible to everyone – explains partly why they were disregarded as 'true' scientists (Secord 1994). Focussing on the emergence of ecology in North America, at a time in which higher status and authority was generally given to lab-related disciplines, Kohler suggests that the fact that ecologists had to practise science outside, in the field, contributed to the idea that ecology was less credible than other lab-related disciplines (Kohler 2002). To be able to affirm their identity as scientists, ecologists had to invent new 'border practices' in which 'placeless' practices (labwork) and 'practices of place' (fieldwork) were mixed.

Also interested in understanding how knowledge 'true everywhere' emerges, sociologist Gieryn has explored how some particular places – including the city of Chicago used for urban studies, Princeton's laboratory of molecular biology, and Thoreau's Walden pond – serve as 'truth-spots' lending credibility to knowledge-claims (Gieryn 2002; Gieryn 2006). He suggests that the particular features of the place in which knowledge-claims are made are key in constructing this 'universal' credibility – yet he also emphasizes that there is no single path to becoming a truth-spot and that credibility can be achieved in different ways.

While Gieryn places much emphasis on the role of place in constructing credibility, within ANT much more attention has been devoted to the role of 'placeless' immutable mobiles to achieve this. According to Latour, the production of immutable mobiles (1987), which have the ability to circulate as if they were offering a 'view from nowhere' or to play the God trick (Haraway 1988) is key in constructing universality. In response to Latour, other emphasize that there is some malleability in the reception of scientific knowledge including supposedly 'immutable' mobiles (e.g. de Laet & Mol 2000)[20]. Examples illustrating this point can also be found in the literature on the geographies of readings (Secord 2000) and related studies. These emphasize the role of place in shaping diverse interpretations of scientific knowledge and theories such as Darwin's theory of evolution in South Carolina, Russia, and New Zealand (Livingstone 2006). Rowe also emphasize that there are huge differences in the reception of the IPCC's reports between countries, such as Russia compared to Europe (Rowe 2012). Yet within ANT the notion of 'centre of calculation' also underlines that some particular locations, which have the ability to 'act at a distance', contribute to the constitution and circulation of these mobiles (Jöns 2011).

These insights have particular consequences for GEAs. First, by localizing science, STS accounts have contributed to move beyond a conception of science as producing universal, transcendental, truths. They emphasize that the credibility of scientific knowledge is relational, being more about trust than about truth (Shapin 1998). In this perspective, for universal knowledge to be achieved then it is knowledge which much appear credible to everyone. For GEAs this implies achieving credibility across a wide range of socio-cultural and geographical settings, and in this view achieving 'credibility', 'relevance' and 'legitimacy' is necessarily a relational process and involves recognizing the existence of multiple of ways of knowing. Second, these insights suggest that if localizing science is valuable to understand scientific inquiry, then since the practices of producing GEAs happen in distinctive, privileged places; developing micro-focussed

[20] In particular, as mentioned in sections 3.2.3 and 3.2.4, this is one of the key points made by Star and Griesemer when developing the concept of boundary object in their critique of immutable mobiles.

accounts on the particular sites in which they are crafted can help understand how relations between science and policy and local and global are being ordered. These insights also justify a research design involving multi-sited ethnography (Chapter 4). They also point towards the questions: What are the particular places rendered authoritative in GEAs? What are the 'centres of calculation' or 'truth-spots' of these organizations?

To date, accounts dedicated to the particular sites of GEAs remain scarce: in this respect it is worth noting that the IPCC has long been resistant to ethnographic inquiry. However in the field of global environmental governance conferences sites have received some attention. In particular, scholars working with an ethnographic approach have started to grapple with the particular practices taking place in conference venues to trace, for example, the birth of global environmental policies and knowledge (Monfreda 2010), the circulation of conservation concepts such as the idea of 'trade-off' (Brosius & Campbell 2010), and the micro-politics animating the 'local' origins of 'global' climate negotiations documents (Weisser 2014). Underlying such studies is the assumption that by providing thick descriptions of the practices taking place in the intimate spaces of conference venues something can be learned about the macro-level in which they operate. The 'global' cannot be taken for granted (e.g. Tsing 2004), and these sites can be understood as 'micro-spaces of globalization' (Cook & Ward 2012).

Engaging with the geographies of the IPCC, Mahony has explored the interplay between science and policy in the city of Copenhagen during the UNFCCC negotiations in 2009. Bringing together co-productionist insights with geographies of science, he develops the notion of 'boundary spaces' to underline the geographical dimension of 'science-policy interfaces' and problematize the ways in which some particular places contribute to the ordering of science-policy relations:

> 'The notion of 'boundary spaces' is developed to facilitate consideration of the epistemic geographies (the objects, actors, spaces and discourses) of science–politics interactions beyond the conventionally-delineated organisational spaces in which such interactions are subject to formal management.' (Mahony 2013a:30)

However, to date while the places of science have been widely studied, it is less so the case for GEAs. Yet studying the sites in which these assessments are made can help understand how knowledge-claims emerging from GEAs are crafted, as well as what *types* of places play a role in this process. Moreover, unlike conferences, which are ephemeral events, one of the only sites where these organizations seem to materialize themselves permanently is their Secretariat. No studies exist regarding whether the location of these units matter. The IPBES Secretariat is based in Bonn and one can then ask what is the significance of this particular anchor for the organization, whether its location matters, and if so, how (Chapter 6).

3.4. GEAs and *situated* knowledges

By localizing scientific practices, STS, historians and geographers of science have questioned the unicity of science and demonstrated that there are multiple ways of knowing including different 'epistemic cultures' between scientific disciplines (Knorr-Cetina 1999; Hacking 2004). In this sense, a key tenet of STS is that knowledge is unavoidably *situated* (Haraway 1988), which means that there is no such thing as universal 'objective' knowledge or transcendental truth. Applying this to GEAs constitutes an invitation to approach critically the kinds of knowledges assessed and rendered authoritative in GEAs, as well as the ways in which demarcations between local and global knowledges are made. In this section I consider the particular challenges raised by the inclusion of three categories of knowledges that GEAs have attempted to operate with: natural science knowledge, social science knowledge and indigenous and local knowledge (ILK).

First it is worth underlining that so far GEAs have often equated 'global' knowledge with conventional scientific knowledge (see Chapter 2), while other forms of knowledge are tied to a 'localness' discourse and their inclusion in GEAs remain problematic. In contrast to the STS understanding of 'local' knowledge, in the context of GEAs local knowledge generally serves as the shorthand for 'traditional ecological knowledge (TEK) or 'indigenous and local knowledge (ILK). This categorisation has been contested, in particular by postcolonial sciences scholars who underline that:

> ‘Recognizing the localness of science subsumes many of the previously supposed limitations of other knowledge systems compared with Western science. Though knowledge-systems may differ in their epistemologies, methodologies, logic, cognitive structures, or socio-economic contexts, a characteristic they all share is localness.’ (Watson-Verran & Turnbull 1995:116)

Numerous other studies have questioned the possibility of determining a clear demarcation criterion between scientific and non-scientific knowledge (e.g. Agrawal 1995; Cruikshank 2005), perhaps echoing Gieryn’s argument that such demarcation is primarily a matter of boundary work. Some authors also suggests that there is some tacit ‘indigenous knowledge’ that goes into the production of ‘scientific knowledge’ and that both are then completely imbricated (Raffles 2002; Raj 2010). However GEAs, even the most recent ones such as the MA which have attempted to broaden their knowledge-base, have tended to operate with and reinforce these dichotomies. While scientific knowledge is often associated with ‘modern western science’, local knowledge is often conceptualized as ‘from elsewhere’ and perceived as being an attribute of non-Western societies (e.g. Sutherland et al. 2013). In the MA, TEK was defined as:

> ‘A cumulative body of knowledge, practice and beliefs, evolving by adaptive processes and handed down through generations by cultural transmission.’ (Berkes 1999:8)

A key dimension emphasized by STS scholars is that, even if there is no clear discontinuity between diverse types of knowledges, some forms of knowledge lend themselves more easily to decontextualization than others. For example, in trying to understand how ‘global’ knowledge emerges, STS studies have underlined the role played by some powerful knowledge-practices, such as the construction of Global Climate Models (GCMs) in the case of the IPCC (Shackley & Wynne 1996; Edwards 2001)[21]. Unlike ‘local’ knowledge, which cannot easily be decontextualized nor

[21] STS scholars are also starting to engage with the globalization of biodiversity knowledge (Turnhout & Boonman-Berson 2011; Bowker & Leigh Star 1999) and to study the ways in which biodiversity is being standardized through classifications (Bowker 2000; Waterton 2003; Waterton 2010) and ecological indicators (Turnhout et al. 2007). In a recent paper, Turnhout and colleagues ask whether the notion of ‘ecosystem services’ may have the same role as the one played by the global mean temperature index in the case of the IPCC (Turnhout et al. 2015).

standardized, 'global' – placeless – knowledge is constructed through maps, indicators and other numerical representations (i.e. mathematical equations or chemical formulas) that makes it detachable, portable, and renders its circulation possible (Lidskog 2014). In contrast, ILK is more tacit and embodied and is not easily translated into immutable mobiles, conscription devices (Henderson 1991) or boundary objects.

Although biodiversity knowledge is often depicted or perceived as being more place-based, local, and contextualized than climate change knowledge (Görg et al. 2010; Vohland et al. 2011; Opgenoorth & Faith 2013), a number of efforts are being developed to construct global kinds of biodiversity knowledge. These include in particular work on the development of global biodiversity indicators, such as 'such as 'Essential Biodiversity Variables' (Pereira et al. 2013), and global monitoring systems such as the Group on Earth Observation Biodiversity Observation Network (Scholes et al. 2012). These global monitoring networks are being supported by global change research programmes and organisations, such as DIVERSITAS and international organisations such as the UNEP World Conservation Monitoring Centre (WCMC) based in Cambridge. Alongside these technologies, some ecologists (i.e. modellers) are also trying to develop the capacity of ecology to be a predictive science, in a way similar to global climate models (Purves et al. 2013; Harfoot et al. 2014):

> 'No report from the IPCC would fail to mention global climate models. (…) We think that analogous general ecosystem models (GEMs) could radically improve our understanding of the biosphere and inform policy decisions about biodiversity and conservation.' (Purves et al 2013:295)

However, there is no agreement, including within ecologists themselves, as to whether such global ecosystem models are needed and this task has been identified as challenging in particular since ecological processes are chaotic and contingent (Boero et al. 2015)[22]. Different discourses can be heard regarding what kind of knowledge-practices should be developed in priority. While some perceive IPBES as an opportunity to be an 'IPCC for biodiversity', developing similar knowledge practices, others insist that it should be much more regionalized and focus on including diverse forms of place-

[22] These debates also resonate with those that have taken place within climate sciences some decades ago more specifically between modellers (or simulationists) and empiricists (Martin-Nielsen 2015).

based knowledge (Brooks et al. 2014). These debates are not new in ecology: for example in the context of the development of the International Geosphere-Biosphere Programme in the 1990s similar tensions animated diverse communities of ecologists (Kwa 2005). In the early stages of IPBES, discussions surrounding the particular institutional design of a new organization as well as the appropriate scale of action that it should adopt for biodiversity also echoed these debates (see Chapter 5).

Building on the experience of the MA, IPBES is one of those organizations whose aspiration is to embrace diverse disciplines, including natural and social sciences, as well as other ways of knowing. In this respect, IPBES departs significantly from previous GEAs. Unlike the IPCC which was shaped since its conception around ‘climate sciences’, IPBES does not aspire to be based solely on scientific ecology, and has adopted early on some principles illustrating this ambition:

- Recognize and respect the contribution of indigenous and local knowledge to the conservation and sustainable use of biodiversity and ecosystems
- Take an inter- and multi-disciplinary approach that incorporates all relevant disciplines including social and nature sciences (Busan outcome, UNEP 2010)

So far the inclusion of both local knowledge and social science knowledge has been limited in GEAs. Arguably there are some very mundane reasons for this. Historically GEAs have been highly organized around networks of scientists participating in global environmental change research programmes and Earth system sciences, and issues of *environmental* change have first been predominantly constituted around natural sciences (Biermann 2007).

Yet, there is an increasing recognition that addressing global environmental change, in particular biodiversity-related issues, needs more than natural science knowledge and that social scientists should have a stronger voice in GEAs (Sörlin 2013). However, there are ambiguities regarding why this inclusion is necessary and important divergences between natural and social scientists, and between social scientists themselves regarding the form that it should take. For example, while some insist that this inclusion is necessary to progress towards more integration between natural and social sciences (Rockström et al. 2009; Mooney et al. 2013), such as in the case of sustainability science

(Kates 2001), interpretive social science scholars argues that it is precisely this drive towards integration and unified representations which is problematic in GEAs (see also Chapter 2 section 2.3.2). One of the values of social sciences should be instead to reveal the multiple possible framings and meanings of 'global environmental change' (Barnes et al. 2013; Castree et al. 2014; Lövbrand et al. 2015). Differences in epistemological positioning lead to different expectations regarding how social scientists should contribute to GEAs (Malone & Rayner 2001). In the MA, cross-disciplinary interactions were easier between economists and natural scientists, both using positivist approaches, but proved more difficult for anthropologists (Filer 2009).

As for social sciences, the need to consider ILK is driven by different rationales. While it is supported by authors emphasizing the need to democratize GEAs and provide space for other ways of knowing, it is also supported by the pragmatic consideration that 'conventional' scientific knowledge is not available everywhere (Amano & Sutherland 2013). Many databases on species occurrence are highly skewed towards developed countries (Boakes et al. 2010; Feeley & Silman 2011; Martin et al. 2012), and question the 'global' dimension of biodiversity databases such as the Global Biodiversity Information Facility (GBIF) (Yesson et al. 2007). One of the core principles of the CBD is also the recognition of ILK and this MEA stresses that each country should:

> 'Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.' (CBD, Article 8(j))

Advocating for the incorporation of ILK in IPBES, Sutherland and colleagues point out that:

> 'Limiting the collation of information to conventional science could also mean that science conducted in more developed countries (with larger scientific budgets) may dictate decision-making elsewhere. This situation is unlikely to be

> either politically acceptable or appropriate. There is often a mismatch between the needs of decision-makers and the conventional scientific knowledge available. (…) This mismatch is important, as illustrated by considering pollinators, a topic of considerable current interest and favoured for the first IPBES assessment. In a global review of conventional scientific evidence for the effects of interventions to maintain or restore wild bee populations 30 of the 163 studies identified were outside Europe and America. (…) In such contexts, local and traditional knowledge are particularly necessary to enable assessments that are tailored to local understandings and needs.'(Sutherland et al. 2013:1)

The particular ways in which GEAs validate knowledge has complicated the consideration of these alternative knowledges. So far, GEAs have predominantly assessed knowledge validated through peer-review publications. However to integrate grey literature and other forms of knowledge alternative 'border practices' are needed. For example, peer-reviewing ILK would imply judging its validity according to conventional scientific standards – potentially leading to the hierarchization of one worldview under another (Agrawal 2002). In the context of IPBES, this difficulty has been acknowledged and reflections on alternatives ways to include ILK are on-going. They include, for example, the development of a 'Multiple Evidence Based (MEB)'approach:

> 'The MEB is an approach that proposes parallels where indigenous, local, and scientific knowledge systems are viewed to generate different manifestations of valid and useful knowledge. (…) The MEB highlights the importance of indigenous and local knowledge on their own terms, where evaluation of knowledge as relevant and useful for the issue of investigation occurs primarily within rather than across knowledge systems. (…) In the context of knowledge-policy processes such as the IPCC or the IPBES, where power inequities and epistemological differences between diverse knowledge systems are brought to the fore, it is important to differentiate among (a) integration of knowledge, (b) parallel approaches to developing synergies across knowledge-systems, (c) co-production of knowledge.'(Tengö et al. 2014:580-582)

As outlined in Chapter 2, it has been argued that preserving a plurality of knowledges is crucial to do justice to the multiple ways in which people make sense of the world and of environmental change. From a co-productionist perspective, as some forms of knowledges allow some forms of social ordering, preserving a range of knowledges make sense to preserve a range of governance options and diverse future trajectories. This is a major assumption underlying the normative recommendation that GEAs should 'open-up' (Chapter 2 section 2.3.3). To study how IPBES attempts to do so in Chapter 7 I provide an analysis of the development of the IPBES conceptual framework, a device which is meant to provide the vision of the organization while being used across its work programme. Crucially, this also involves looking at whose voices are included in the production of these global situated knowledges: who is connected to these settings. Experts here appear as key actors, mediating between diverse situated knowledges and global science-policy settings, as the following section elucidates.

3.5. GEAs and expertise

GEAs cannot operate without 'experts'. They rely heavily on the mobilization of a wide-range of experts worldwide: around 900 experts participated in the IAASTD, more than 1360 in the MA. As explained in Chapter 2 different roles and responsibilities can be attributed to these experts, while some have leading roles (being Coordinating Lead Authors or Lead Authors), GEAs also rely on numerous contributing authors. Hundreds of experts are also mobilized in the reviewing processes of GEAs' reports. However, behind these numbers it is important to scrutinize how expertise is understood and whose expertise is recognized in GEAs.

The notion of expertise has been studied extensively by STS scholars but with very different approaches and concerns, triggering debates between STS scholars themselves (e.g Jasanoff 2003). For instance, adopting a realist approach, Collins and colleagues have tried to answer the question 'what is expertise?', and to develop a theory of expertise outlining different types of expertise including categories such as 'beer-mat knowledge', 'interactional expertise' and 'contributory expertise' (Collins & Evans 2007). In contrast to this approach which addresses the substantive dimension of expertise, other STS scholars, more in line with a co-productionist thinking, have not identified criteria to isolate what expertise *is* but rather focussed on the question 'what makes experts credible and trustworthy?'. The focus here is less on the particular knowledges – what Collins would call their 'contributory expertise' – of those experts, but rather on the diverse factors that lead them to be recognized as such by diverse publics. In this respect, GEAs have progressively recognized that beyond the epistemic skills of the mobilized experts, other factors are key in constituting their credibility such as their place-based affiliations. In contrast to older, top-down, GEAs, most recent GEAs have paid much attention to the geographical balance of experts, along the lines Bert Bolin, the first chair of the IPCC, once commented:

> 'Right now, many countries, especially developing countries, simply do not trust assessments in which their scientists have not participated. Don't you think credibility demands global representation?' (Quoted in Schneider 1991:25)

These lessons learnt from practical experience echo numerous STS studies that have paid attention to the nature of expertise and highlighted the fact that beyond epistemic skills, expertise is also a form of political representation (Krige 2008; Brown 2009). This is made especially visible in the context of GEAs which are hybrid organizations operating at the intersection between science and policy, especially when governments are in charge of nominating and selecting experts.

Beyond the question of the credibility of expertise, co-productionist scholars have questioned Collins' attempt to find substantive criteria for expertise by pointing out that in numerous cases delineating who should be recognized as an 'expert', and then entitled to speak more legitimately than someone else on a public matter, is challenging (Lidskog 2008). In a landmark study, sociologist Bryan Wynne analysed how UK public authorities dealt with the consequences of Chernobyl for sheep farmers in Cumbria. He showed that there were competing knowledge-claims, regarding the impacts of radiation on grass and therefore on cattle originating from mandated government experts and local farmers. While government experts relied on their scientific knowledge to assess the consequences of Chernobyl, farmers also relied on their 'local' knowledge of the area and of the sheep:

> 'Whereas the hill-farmers were quite reserved in their scepticism towards the scientists on scientific matters, they were abrupt and outspoken about them when they saw the extent of the scientists' ignorance of hill-farming environment, practices and decision-making. Even worse was the way that the outside experts did not recognize the value of the farmers' own expertise, nor see the need to integrate it with the science in order to manage the emergency properly.'(Wynne 1992:295)

This example echoes other studies, for example on the value of considering both local knowledge and 'western' agronomic knowledge in practices of soil management in West Africa (Fairhead & Scoones 2005), and is illustrative of the tensions between institutionalized forms of expertise and more marginalized ones[23]. It also suggests that in situations of controversies different types of expertise and knowledges are made visible and may be relevant. The failure to consider these can not only erode the credibility of scientific expertise (as in this particular case), but also lead to inappropriate policy responses (see also Aitken 2009).

As with knowledge itself, co-productionist studies on expertise emphasize the fact that, without rejecting the idea that some people are more knowledgeable than other on some topics, the credibility of expertise is also relational. As underlined by the concept of civic epistemologies it can vary in different national settings:

> 'Civic epistemology refers to the institutionalized practices by which members of a given society test knowledge claims used as a basis for making collective choice. Just as any culture has established folkways that give meanings to its social interactions, so I suggest that modern culture have developed tacit 'knowledge-ways' through which they assess the rational basis for ordering their lives; demonstrations or arguments that fail to meet these tests may be dismissed as illegitimate or irrational.' (Jasanoff 2007:255)

[23] Wynne goes on adding: 'The administrative restrictions introduced by the Government to prevent contaminated lamb from reaching the market were tantamount to large-scale social control and reorganization, and denial of essential aspects of the farmers' social identity, to an extent that the outside experts and bureaucrats did not remotely recognize. The interventions required not only scientific understanding of the radioecology of caesium in this particular physical environment; they also required this to be integrated with knowledge of hill sheep farming methods and decision-making processes.' (Wynne 1992:295)

Contrasting this concept with the notion of public understanding of science, Jasanoff suggests that these ‘knowledge-ways’, for example regarding regulations around biotechnologies, have a geographical sensibility and vary in diverse political cultures such as in the cases of Germany, UK and the US[24]. The concept is useful to point towards some specific difficulties for GEAs whose aspiration is to be global and meaningful towards a planetary audience. For example what kind of global civic epistemology is being constituted in those transnational institutions of expert advice?

In another, yet complementary, approach to the question of experts’ credibility, a number of scholars have built on the work of sociologist Ervin Goffman (1959). They approach science and the construction of scientific authority as a performance, paying attention to the discursive and dramaturgical practices contributing to the construction of scientific credibility (Bjiker et al. 2009). Using a dramaturgical metaphor organized around concepts such as *frontstage* (what is made public and visible) and *backstage* (what happens behind the scenes), Hilgartner has analysed the production of several, successful and unsuccessful, reports of the US National Academy of Science. He suggests that, beyond the scientific quality of the experts mobilized in these exercises, practices of *stage management* are key in understanding the success, or lack thereof of, these reports (Hilgartner 2000). Along these lines, Hajer also shows the importance of discursive and dramaturgical practices and suggests that in our highly mediatized societies, authority has to be performed in front of multiple audiences to be maintained durably (Hajer & Uitermark 2008; Hajer 2009). These dramaturgical studies can perhaps be related to Gieryn’s concept of boundary work through the notions of *frontstage* and *backstage*: the demarcation between what is made visible and what is rendered invisible appears crucial to understand how experts’ authority is constructed, maintained, or challenged[25].

The issue of whose expertise counts has been identified as particularly challenging for global environmental change issues. For example, Funtowicz and Ravetz suggest that

[24] These differ in terms of (1) participatory style of public knowledge-making ; (2) methods of ensuring accountability ; (3) practices of public demonstrations; (4) preferred registers of objectivity; (5) accepted bases of expertise. (*Source*: Jasanoff 2007)

[25] Adopting a Foucauldian (governmentality) perspective, Death also suggests that global summits can also be approached as ‘moments of political theatre, performative enactments of legitimacy and authority, and sites for the communication of particular examples of responsible conduct’(Death 2011:1).

such issues are always characterized by high levels of uncertainty and that in post-normal situations, what counts as relevant expertise is always open to contestation (Funtowicz & Ravetz 1991), such in the case of climate change (Turnpenny et al. 2009). These authors then suggest broadening the scope of expertise and developing, for example, the practice of 'extended peer-review' which would consist in inviting more than scientific experts to be involved in the validation of knowledge. Although at the normative level co-productionist scholars would provide the same type of recommendation, it is worth noting that delineating what counts as a 'post-normal' situation is not obvious (Goeminne 2011). An issue associated with a high-level of uncertainties for one actor may be perceived as not uncertain at all by another and therefore it may not be possible to characterize a situation as such in advance. From a co-productionist standpoint, the impossibility to recognize a post-normal situation in advance is also one the key rationales supporting the assumption that GEAs should open-up.

For example, in its conventional scientific understanding, the term biodiversity is meant to refer to all species on Earth including in terms of genetic and ecosystem diversity (see Overview). For biodiversity issues delineating whose expertise should be recognized is particularly difficult, the divide between lay and expert knowledges being often blurred or irrelevant. One illustration of this is the increasing trend towards citizen sciences in ecology: scientific ecology is increasingly relying on multiple networks of amateur naturalists and citizen science initiatives (Ellis & Waterton 2004; Lawrence 2009). As mentioned above there is also a wide-range of 'non-conventional' biodiversity knowledge and multiple ways of seeing nature, or articulating nature-culture relations. The inclusion of various forms of knowledges also raises the question of who should represent these knowledges (Escobar 1998). Reflecting on his experience in the MA, Brosius points out the tensions arising from the attempt to integrate 'local' knowledge: should these knowledges be represented by – what he terms – 'local local' people, that is indigenous peoples, or by 'local' social scientists such as an anthropologists (Brosius 2006)?

This means that for IPBES the question of who should be entitled to speak for biodiversity and ecosystem services is particularly relevant. IPBES can be seen as an experiment in constituting a new space of transnational expertise with an aspiration to re-distribute expertise and draw the lines differently between conventional scientific forms of expertise and less institutionalized ones. In light of these aspirations, following the constitution of the IPBES Multidisciplinary Expert Panel becomes a relevant process to study (see Chapter 8).

3.6. Summary

IPBES appears as a relevant object of inquiry for different reasons. First, complementary to the insights provided by geographers of science and STS scholars, it allows to study how policy-relevant knowledge is produced in an organization whose ambition is to achieve global credibility. Geographers and scholars studying science have moved away from transcendentalist conceptions of truth by showing, through empirical case studies, that what constitutes credible knowledge is always situated in space and time. These observations suggest that more attention should be directed towards the circulation of knowledge and the ways in which it acquires credibility, in particular across different cultural settings. While the places of science have been widely studied by scholars, it is not the case of the places and spaces of knowledge assessments. Moreover, most of the studies conducted in geography of science have explored historical geographies of knowledge but work exploring contemporary geographies of knowledge remains scarce. IPBES is still 'in the making' and studying its development allows to approach the politics of knowledge surrounding biodiversity issues in a contemporary manner. Simultaneously, a number of STS studies has revealed some of the problematic dimensions of GEAs. In particular, these suggest that the practices developed in these settings to separate 'science' from 'policy' and 'local' from 'global' lead to some contradictions and forms of exclusion. Not all kinds of knowledge are situated in these global arenas and the practices through which 'policy relevant knowledge' is produced deserve further scrutiny.

Secondly, as outlined in Chapter 2, IPBES aspires to be different than any previous GEAs. Although it shares a number of similarities with the IPCC the context in which it been established as well as its mandate and the particular issues it is meant to address make it unique. These ambitions of IPBES can be read as reflecting the willingness to learn from previous GEAs and in response to the critiques that have targeted these organizations. Numerous critiques faced by GEAs relate to their lack of geographical sensibility and to the uneven representation of diverse types of knowledges and expertise. While the aspirations of IPBES in themselves make it a relevant object of inquiry, it is also worth noting that these resonate to some extent with some of the normative recommendations formulated by STS scholars and advocating for a reflexive turn in the governance of global expert advice (Beck et al. 2014). Whether there is a direct link between the principles formulated by STS scholars and the ambitions of IPBES is another question. It is worth noting that some STS scholars have been involved in the early discussions about IPBES (see Chapter 5). However, there are many reasons why IPBES would want to 'do different' and these do not necessarily reflect a willingness to implement the STS agenda. Independently of this, from an academic standpoint it means that IPBES is a laboratory, an experiment, to study how the ambition to organize global expert advice differently translates into practices.

While the co-productionist idiom is useful to make sense of the ways in which delineations between science and policy are constructed, I find it useful to put these insights in conversation with the wide array of STS and geographies of science studies that have looked at the places and spaces of knowledge-making. These insights suggest that it matters who produces knowledge, where, and how: 'science-policy interfaces' also have a geography. Importantly, IPBES is in a 'constitutional moment' and still in the making. This moment of formation of IPBES appears as a critical one. It is a moment of 'enrollment' during which numerous actors and places are, or can be, mobilized and influence the development of the Platform. This also means that my focus will be on processes more than on outcomes. Drawing on some of the STS concepts (e.g. boundary object, boundary work, socio-technical imaginaries) and methods reviewed in this chapter, I set out to study more specifically three ways in which IPBES is being constituted by looking at three distinct processes: (1) the development of the IPBES conceptual framework which is intended to provide 'the vision' of the Platform (Chapter 7); (2) the nomination of the experts forming the Multidisciplinary Expert Panel (MEP), that is IPBES's scientific and technical body (Chapter 8); and (3) the location of IPBES in Bonn (Chapter 6). The methodological approach adopted for these purposes is explained in Chapter 4.

Chapter 4 – Research design and methodological approach

In this chapter, I introduce the research design and the methods for data-collection and analysis used to address the research questions introduced in Chapter 2:

(1) How is IPBES being constituted? How is IPBES constituting biodiversity expertise and knowledge?
(2) Is IPBES actually 'opening-up' and providing an inclusive model of expertise, in keeping with its self-description and own ambitions?
(3) How does IPBES compare to previous Global Environmental Assessments (GEAs)?

This chapter starts by describing the particular features of IPBES – 'in the making' and 'multi-sited' (section 4.1) – that justify the choice of a case study research design, exploring three particular processes through which IPBES is being constituted and, in the same move, constituting biodiversity knowledge and expertise (section 4.2). This focus on processes gives the rationale for using qualitative research methods, consistent with the interpretive stance of STS studies and the co-productionist approach underpinning this PhD, and most specifically multi-sited ethnography for data collection (section 4.3). It ends by a reflection on my own assumptions and positionality as a researcher (section 4.5).

4.1 Characterizing the object of study

As I started my research, in February 2012, I knew I was interested in exploring how IPBES was trying to develop a new type GEA, ostensibly more inclusive than the previous ones (see Chapter 2) and open to different knowledge-systems. Moreover, much of my theoretical concern was about the ways in which biodiversity knowledge, which is often depicted as more contextualized and local than climate change knowledge (Loreau et al. 2006; Brooks et al. 2014), was made visible at a global scale. I was wondering how the notion of 'ecosystem services', which has now become hegemonic, was going to be used in this context, and what this meant in light of IPBES' ambition to encompass these multiple forms of knowledges. At that time the IPCC was still recovering from the Climategate controversy, which had affected its credibility (IAC 2010), and many debates were taking place regarding the challenges awaiting these global expert organizations, in particular regarding how they could achieve global credibility (e.g. Grundmann 2012). IPBES was officially established in April 2012, only a few months after the commencement of my studies, which meant that the organization was in its very early stages of development – being in a 'constitutional moment'(Jasanoff 2003b). I soon realized that studying its development so early on implied several methodological challenges, and would also have some implications as to what I would actually be able to study in practice. For example during the first IPBES plenary session very few conceptual discussions on biodiversity actually took place and I was struck by the fact that most of the meeting revolved around the construction of consensually-agreed bureaucratic documents[26]. Most specifically I had two major questions: *(1) How, and where, to look at an object of study with such a distributed and networked structure? (2) How to study an organization that is emerging and keeps on changing?*

First, this implied the development of a research design appropriate to study an organization as it happens, 'in the making', and justified to focus on processes rather than on outcomes. Consistent with this, my objective in this thesis is not to provide a detailed assessment IPBES (it would be to early) nor to provide normative advice and guidance relevant to its work but rather to document empirically how IPBES is constituted in practice. Arguably, organizations are always in the making – with institutional rituals being re-performed on an everyday basis by actors, discourses, and practices (e.g. Schatzki 2006; Pallett & Chilvers 2014) – but in the case of IPBES it means that those rituals were still emerging, although being to some extent modelled or

[26] During this particular conference, I remember talking to some ecologists, who were there out of curiosity to follow the development of this 'new animal'. Many seemed disappointed by how little conceptual, or scientific, discussions were happening and seemed to be unsure regarding what their role in these particular settings was.

influenced by the processes and procedures in use in the organizations of the United Nations. The first official plenary session of IPBES took place in Bonn, in January 2013, and the IPBES work programme was officially adopted in December 2013, during the second IPBES plenary session (Table 4.1).

Table 4.1 Brief overview of IPBES conferences

IPBES conferences
IPBES-0: April 2012 (Panama, Panama)
IPBES-1: January 2013 (Bonn, Germany)
IPBES-2: December 2013 (Antalya, Turkey)
IPBES-3: January 2014 (Bonn, Germany)

My second major challenge with IPBES relates to its distributed, multi-sited form. Where is IPBES? Where is this 'science-policy interface'? Being interested in using the constitution of IPBES as a way to look at ecology beyond the field, and how it 'travels' in science-policy settings – beyond conventional places of knowledge-making – I was also keen to develop a concrete, non-abstract, picture of science-policy interfaces, consistent with a pragmatic, STS approach. Yet, IPBES is hardly visible: it has a distributed, networked, form, does not materialize itself in a single place, and brings together a wide range of actors – more than 129 States (as of September 2015) as well as different types of observers including NGOS, research institutes, universities, scientific organizations and networks, representatives of indigenous people organizations. As in the case of the IPCC, IPBES is both a 'huge and yet very small organization'[27]. This means that engaging with IPBES is challenging as it brings together heterogeneous actors, has ambiguous materialities, and this 'science-policy interface' seems to be simultaneously everywhere and nowhere. In addition to the Secretariat, hosted in Bonn, which is the only place where the organization is anchored permanently, IPBES plenary sessions (which could perhaps qualify as 'staged intersections' under the social world framework) are perhaps the only moments in which it is possible to observe, in a single place, the coming together of the organization.

[27] This is how the IPCC describes itself on its website (last accessed November 25th, 2015): http://www.ipcc.ch/organization/organization_structure.shtml

These two important features of IPBES - 'in the making' and 'multi-sited' – explain why I have chosen to adopt a case study research design, in conjunction with qualitative research methods and multi-sited ethnography for data collection. Before turning to these aspects in more detail, it is important to underline a third methodological challenge: the delineation of an appropriate period of time – the timeframe – to study the development of the organization. Since IPBES is in the making, it would be possible to look at the processes through which it is developing potentially forever. For obvious pragmatic reasons a temporal limit had to be chosen – which implies accepting that later developments, that may have added valuable insights to this work, were not included. In accepting this limitation, I chose to focus on the constitution of IPBES from the official establishment of the organization, in April 2012 – when the choice of the location of the IPBES Secretariat was made – up until the adoption of IPBES work programme during the second plenary session of IPBES, in December 2013. The choice of the case studies presented in this PhD was guided by these pragmatic considerations and by the willingness to focus on processes that were relevant during this particular timeframe. While developments that have happened after this timeframe are not included in the empirical chapters, more recent insights are used in the discussion and conclusions (Chapter 9).

While studying an organization at such an early stage of development involves methodological challenges it also presents significant advantages. First, in light of IPBES aspirations to design a model of expertise inclusive of a wide range of biodiversity knowledge and expertise, paying attention to these early stages – during which the institutional design and procedures are being discussed – makes sense since forms of representation are intimately related to the design and practices in use in organizations (e.g. Jasanoff & Martello 2004). For example, following the discussions surrounding the rules of procedures of IPBES regarding relevant criteria to nominate and define expertise, allows analysing how expertise is actually understood in IPBES (Chapter 8). Working on the development of Long Term Socio-Ecological Research (LTSER) platforms, Mauz and colleagues emphasize:

> 'Such early stages are a methodologically important moment, since the new concept of carrying out scientific research is open to negotiation on the kind of

research considered important and, more fundamentally, possible. The platforms we investigated typically belong to those unroutinised scientific settings where much attention should paid to processes.'(Mauz et al. 2012:92)

Secondly, focusing on IPBES 'in the making' allows following the controversies and debates as they unfold, while they are still visible. In this sense, studying IPBES as it happens bears some resonance with the wide range of STS studies looking at controversies:

> 'Those moments of ontological disturbance[28] in which the things on which we rely as unexamined parts of the material fabric of our everyday lives become molten and make their agential force felt. Such situations, matters or events render what we think we know or, more usually, what 'experts' claim to know about the subject of intense public interrogations.' (Whatmore 2009:588)

Since its beginnings, the development of IPBES has been marked by numerous contestations and before its formal establishment there was no consensus as to whether a new organization was needed. Similarly all the processes studied in this PhD have also been sites of conflicts and contestations – for example around the nomination of IPBES experts (Chapter 8) and the notion of ecosystem services (Chapter 7) – and it is worth studying how these conflicts have gradually been rendered invisible. Finally, studying IPBES as it evolves provides insight to understand how and why alternatives are gradually made invisible, and also as underlined by Schatzki: 'an organization as it happens is not simply the organization's happening it is also about what is *not* happening' (Schatzki 2006:1866, emphasis added). Furthermore, it also helps to avoid teleological explanations.

[28] These moments of ontological disturbance have also been referred to in the STS literature as 'hot situations' (Callon 1998), 'matters of concern' (Latour 2004) and 'things that force thought' (Stengers 2005).

4.2 A case study research design

4.2.1 The value of a case study research design

In addressing the challenges outlined above – the study of an organization in the making and multi-sited – the choice of a case study research design proves appropriate as it allows to focus on the practices and processes through which IPBES is being constituted and to follow different 'moments', bounded in time, of the life of IPBES. Moreover, IPBES exists nowhere else and at such an early stage the development of a fully comparative piece of work contrasting different cases, for example equally comparing IPBES with the IPCC, would not have been possible (I reflect in Chapter 9 on the similarities and differences between IPBES and other GEAs). There are different definitions of what a case study is, following Thomas:

> 'Case studies are analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems, that are studied holistically by one or more methods. The case that is the subject of the inquiry will be an instance of a class of phenomena that provides an analytical frame – an object – within which the study is conducted and which the case illuminates and explicates.'(Thomas 2011:513)

While this definition is in line with my objectives other definitions emphasize the limits of case study research. In particular, the fact that findings are not generalizable and that the case study is perceived as a way to start an investigation, to know whether it is worth pursuing further, rather than a proper investigation in itself. Accordingly, several critics have been formulated towards case study research (Box 4.1). However, many also emphasize the advantages of case study research and underline the 'power of example' and the value of empirically-grounded, richly detailed, case studies (Flyvbjerg 2001:66).

Box 4.1 Five misunderstandings or oversimplification about the nature of case study as a research method (adapted from Flyvbjerg, 2001: 66)

Misunderstanding 1 (M1). General, theoretical (context-independent) knowledge is more valuable than concrete, practical (context-dependent) knowledge.

Misunderstanding 2 (M2). One cannot generalize on the basis of an individual case; therefore the study cannot contribute to scientific development.

Misunderstanding 3 (M3). The case study is most useful for generating hypothesis; that is in the first stage of a total research process, while other methods are more suitable for hypothesis testing and theory-building.

Misunderstanding 4 (M4). The case study contains a bias toward verification, that is, a tendency to confirm, the researcher's preconceived notions.

Misunderstanding 5 (M5). It is often difficult to develop general proposition and theories on the basis of specific case studies.

In response to the misunderstandings highlighted above several counter-arguments can be formulated (see also Foulds 2013). First, regarding M1, one the main tenets of STS and constructivist studies is that context always matters. As outlined in Chapter 3, science is never the 'view from nowhere' and the credibility of knowledge is always context-dependent. From this perspective it is worth developing fine grained accounts that do not take 'science' or 'scientific knowledge' for granted, but which emphasize the socio-material elements in which science-policy relations are enacted. Secondly, in response to M2 and M5, the very purpose of STS studies is not generalization – rather the assumption is that empirically rich descriptions can be as explanatory and valuable (e.g. Geertz 1973). According to Jasanoff and Martello:

> 'There is a need to integrate ethnographic and micro-focused accounts of local institutions and cultures with more systemic and macro-focused perspectives on globalization.' (Jasanoff & Martello 2004:5)

Moreover, it is misleading to think that case studies cannot help to generalize. Through the collection and analysis of numerous STS studies, interpretive scholars also manage to identify recurring patterns and although complete theorization is generally not the overarching objective, formalization is to some extent possible – as illustrated by the idiom of co-production that posits that ontology and epistemology are always mutually constitutive. This implies that, in response to M3, case study research can actually contribute to theory-building. Developing a case study on IPBES also allows to pay attention to the contingencies through which the organization is constituted and in this sense, in response to M4, the purpose is not to 'verify' the researcher's assumptions but rather to adopt an empirical, inductive, reasoning.

4.2.2 Introducing the different cases and sources of data

In analysing the development of IPBES, the research in this thesis examines closely three particular processes:

(1) The choice of the location of the IPBES Secretariat (Chapter 6);
(2) The development of the IPBES conceptual framework (Chapter 7); and
(3) The selection of the IPBES experts forming the Multidisciplinary Expert Panel (MEP) (Chapter 8).

While (2) and (3) explicitly relate to each other in that they explore practices of knowledge-making within IPBES, the case study on Bonn and IPBES (1) is more exploratory in that it explicitly pays attention to an overlooked place, the location of the IPBES Secretariat. Yet, all these three processes relate to each other: they are three windows into IPBES, and are also three co-production processes. They are three ways of exploring how IPBES is situated by studying its geographical location, the making of an epistemic device (its conceptual framework) and its conception of expertise. In the early stages of this research, a fourth line of inquiry regarding the origins of IPBES was also pursued through interviews with key informants. Recently several studies – taking different perspectives - have been published on this topic (e.g. Granjou et al. 2013; Vadrot 2014). The insights of this work is presented in Chapter 5 as a background to the study – using both elements present in the literature and findings by the author of this thesis in order to provide some historical context on the main events and debates that led to the establishment of IPBES. The focus on the processes mentioned above has been guided by both pragmatic – what is possible to study now within this particular timeframe? – and theoretical – why would it be interesting to follow this process? – considerations. The rationale for each of these decisions is explained below.

For each of these processes I have used similar qualitative research methods and, although their respective corpuses of documents (Appendix 1) differ significantly, the material presented in the empirical chapters has been produced through three main modes of data collection: (1) participant observation; (2) semi-structured interviews (the full list of which is presented in section 4.3); and (3) documents[29]. The research design used to study these processes can qualify as a form of multi-sited ethnography, an approach which is particularly suited to follow a distributed 'global' organization such as IPBES (Marcus 1995; Hine 2007; Coleman & Hellerman 2010). As described by Marcus:

> 'Ethnography moves from its conventional single-site location, contextualized macro-construction of a larger social order, such as the capitalist world system, to multiple sites of observation and participation that cross-cut the dichotomies such as the 'local' and the 'global', the 'lifeworld' and the 'system'.'(Marcus 1995:95)

Accordingly, instead of staying over a long period of time in the same place as in conventional ethnography – which would not have been possible with IPBES as the heterogeneous participants forming the IPBES 'community' only gather once a year – I have attended several IPBES-related events (Table 4.2). This allowed me to observe its development through different windows, and I also relied on semi-structured interviews and documentary analysis to complement the insights gained through direct observation. In addition to these events, I also often had the opportunity to interact informally with ecologists and science-policy experts interested in IPBES, for example when attending conferences (e.g. Planet Under Pressure conference, London, UK, March 2012), workshops (e.g. Nested Network workshop, Leipzig, Germany, May 2013) or when participating in the Alter-net Summer School on biodiversity and ecosystem service (Peyresq, France, September 2014). This illustrates the networked dimension of IPBES and the fact that the organization stretches well beyond a formal organizational space with clear delineations, as emphasized in other social science studies of organizations (e.g. Pelling et al. 2008). Before reflecting on the particular advantages, challenges and limits experienced during data-collection (section 4.3), I briefly introduce

[29] More details about these are provided later in this section in relation to each of my empirical chapters.

the cases forming the empirical material of this thesis as well as the sources used for data-collection.

Table 4.2 IPBES-related events attended as observer during fieldwork

Event	Date & Place	Description (main events)
IPBES-1	21-26th January 2013, Bonn (Germany)	First meeting of IPBES. Main decisions taken: - Drafting of the IPBES rules of procedures - Selection of IPBES MEP and Bureau members
UK IPBES Stakeholder meeting	9th July 2013, Peterborough (UK)	Meeting of the IPBES stakeholders in the UK whose purpose was to discuss: - The IPBES work programme (2014-2018) - The Stakeholder Engagement Strategy for supporting the implementation of the work programme of IPBES in the UK
IPBES-2	9-14th December 2013, Antalya (Turkey)	Second meeting of IPBES. Main decisions taken: - Adoption of the IPBES conceptual framework - Adoption of IPBES work programme (2014-2018)
BION Conference	17-19th September 2014, Bonn (Germany)	1st Conference of the 'Biodiversity in Bonn' (BION) network "Biodiversity today for tomorrow"
IPBES-3	12-17 January 2015, Bonn (Germany)	Third meeting of IPBES. Main decisions taken: - Adoption of a 'conflict of interest' policy - Adoption of the Stakeholder Engagement Strategy

4.2.2.1 Setting the stage for IPBES (Chapter 5)

As explained above, as I started my research IPBES had just been established and in order to identify relevant processes to follow, I first focussed on conducting a range of interviews whose purpose was to find out more about the context and origins of IPBES and to re-construct the debates pre-existing its establishment. This early work is presented in Chapter 5 as a background to the study. In the published literature, the conference 'Biodiversity: Science and Governance', held in Paris in 2005 was depicted as a landmark event leading to the establishment of IPBES (e.g. Loreau et al. 2006). This conference concluded with the launch of the International Mechanism of Scientific Expertise on Biodiversity (IMoSEB) process whose objective was to assess the need for a new expert organization on biodiversity. For this reason, I first contacted people (e.g. ecologists, national civil servants, international civil servants) who had been involved either in the organization of this 2005 Conference and/or in the IMoSEB process. My first interviewees (see Table 4.3), although having heterogeneous professional affiliations, were predominantly French, and I used a snowball sampling strategy to gather other, non-French, perspectives on the early debates surrounding the origins of IPBES:

> 'Snowball sampling is a sampling technique in which the researcher samples initially a small group of people relevant to the research questions, and these samples participants propose other participants who have had the experience or characteristics relevant to the research? These participants will then suggest other and so on.' (Bryman 2012:424)

These preliminary interviews also helped me to identify relevant processes to follow, in particular the selection of IPBES experts (see section 4.2.2.3 below) – which had been at the core of discussions since the inception of the IPBES process – and the development of the IPBES conceptual framework. While providing a narrative on the origins of IPBES, Chapter 5 also maps the multiple IPBESes that were once imagined and suggests that, initially, an intergovernmental 'global' organization was just one possibility among others.

Debates regarding whether a new organization should be established lasted more than seven years, during which different consultative and negotiations processes took place. I therefore also relied on the documents and proceedings that were produced during these years, in particular on the reports provided by the International Institute for Sustainable Development (namely the Earth Negotiation Bulletins), a Canadian think-tank whose reporters have covered in detail the diverse intergovernmental meetings preceding the creation of IPBES in 2012.

4.2.2.2 Hosting IPBES in Bonn (Chapter 6)

The choice to study the location of the IPBES Secretariat in Bonn arose for several reasons. First, in terms of practical aspects, it was one of the first decisions taken by IPBES delegations. Second, many STS studies have focused on the places of knowledge-making – using ANT or ethnomethodology to follow scientists in laboratories (e.g. Latour & Woolgar 1979; Traweek 1992; Knorr-Cetina 1999) but, with very few exceptions (e.g. Mahony 2013a; 2013b), the places and spaces of GEAs have been researched less. These units (i.e. Secretariats) are not designed to have any power, and as with science when the laboratory (apparently) disappears to let 'facts speak for themselves', the Secretariat – whether it is in Bonn, Hong-Kong or Buenos Aires – should disappear to let IPBES speak for itself. A quick literature review confirmed that little had been said about the location of these units and while these are often depicted as 'placeless places', locating IPBES in Bonn does have implications for both the production of global biodiversity knowledge and for the city of Bonn. This case therefore document the ways in which a place which is assumed not to matter actually does. It also shows how GEAs can become mobilized by nation states, here Germany, to retain influence and exert power in international politics.

Material presented in Chapter 6 comes predominantly from a corpus of documents (Appendix 1) including IPBES documents relating to the role of the IPBES Secretariat as well as the different bids written by the countries that were willing to host IPBES; and also books, newspaper articles, and historical documents on the history of Bonn and Germany following the second world war (WWII). It also includes online resources, in particular resources made available on the 'UN in Bonn' and 'Biodiversity in Bonn' websites; and brochures including touristic brochures and leaflets on Bonn. Importantly, as I don't speak German, most of this corpus is in English. This could perhaps be a limitation as more abundant and detailed information unavoidably exists in German. Yet analysing documents which are in English has specific value as it allows to see how Bonn, in particular, is 'performed' by German authorities to non-German speaking audiences and also how Bonn is perceived and depicted outside of Germany, for instance in Anglophone medias. To gather newspaper articles I have used the Nexis-Lexis database, whose access was provided by the University of East Anglia, and conducted an extensive research using keywords such as 'Bonn and the United Nations' and 'United Nations cities'[30].

In addition to these documents, I also draw on interviews and participant observation conducted during three different events. I went to Bonn twice to attend IPBES conferences, in January 2013 (IPBES-1) and in January 2015 (IPBES-3). In both cases these conferences were hosted next to the UN Campus, close to the Rhine River, in the

[30] Lexis-Nexis is one of the most comprehensive databases for newspaper articles and provides full access to these. This research allowed me to gather a list of 997 newspaper articles, from 1978 until the date of the research (March 2015), among which I selected a sample of the ones that were most relevant for my study. All newspaper article used in Chapter 6 are listed in the corpus of documents (Appendix 1).

'Bonn World Conference Centre', a building that used to be the Parliament of the Federal Republic. I also attended the first international conference of BION, 'a network of biodiversity stakeholder in the UN city of Bonn' (gathering 55 Bonn-based institutions), which took place in September 2014 (17-19th). During all these events, I took notes and wrote memos, paying, for example, particular attention to the ways in which the UN presence in the city was made visible, materially and discursively – and to the ways in which IPBES was connected to it. I also took numerous pictures of elements suggestive of the UN presence in Bonn's urban landscape. In some sections, material has been coded using NVIVO as a tool to facilitate data-analysis, in particular to analyse the different bids put forwards by the States willing to host IPBES (section 4.4).

4.2.2.3 Making the IPBES conceptual framework (Chapter 7)[31]

As explained in Chapter 2, all GEAs, whether explicitly or implicitly, contribute to the delineation of particular ways of framing global environmental change. While the IPCC has done so rather implicitly, a distinctive feature of global biodiversity and ecosystem assessments (in particular the Millennium Ecosystem Assessment) is that they have adopted explicit conceptual frameworks that carry with them particular visions of human-nature relations while at the same time legitimating, some particular forms of knowledge and expertise. The decision to develop a common conceptual framework for IPBES, to provide the vision of the organization while supporting the implementation of its work programme, was also one of the early decisions taken by IPBES delegations in April 2012. Following the development of the IPBES conceptual framework then appeared as an opportunity to study how IPBES would approach and conceptualize biodiversity and ecosystem services and which voices would be included in the making of this device. This chapter then addresses the questions: How does IPBES seek to accommodate different perspectives on biodiversity and ecosystem services? How are these articulated in the context of the IPBES conceptual framework?

[31] This chapter forms the basis of: Borie, M., & Hulme, M. (2015). Framing global biodiversity: IPBES between mother earth and ecosystem services. *Environmental Science & Policy* **54** (487-496). Available online at: http://www.sciencedirect.com/science/article/pii/S1462901115001069

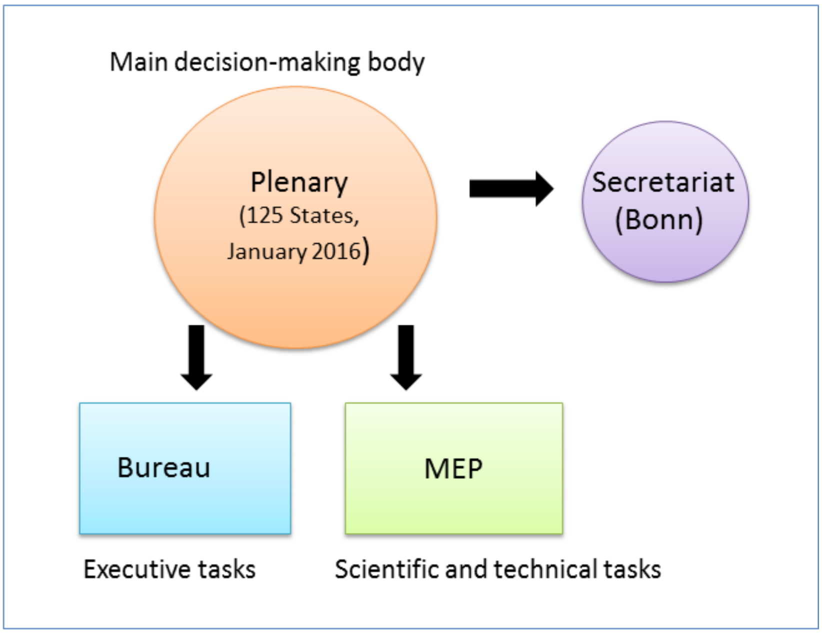
More specifically, empirical materials for this study come from a range of semi-structured interviews conducted between December 2013 and February 2014 with experts who were involved in the conception of the framework and had substantial roles in this process (see Table 4.3). These interviewees included both natural and social scientists as well as members of IPBES delegations and MEP members, some of them were interviewed twice. In addition to these interviews I also rely on participant observation of two IPBES plenary session: IPBES-1 held in Bonn, Germany (21-26 January 2013), during which an initial framework was presented; and IPBES-2 held in Antalya, Turkey (9-14 December 2013), during which the final framework was adopted. A corpus of texts including official IPBES documents, workshop reports, and all the comments received on the framework (made available online) provides the basis for document analysis. Interviews and all relevant documents have been analysed using an interpretive approach inspired by grounded theory (Charmaz 2006) (more details on the analytical process is given in section 4.4 below).

4.2.2.4 Constituting the MEP (Chapter 8)

In terms of institutional design, IPBES now has two subsidiary bodies: a Bureau, in charge of taking executive decisions in relation with the Assembly of States' delegates, and a scientific and technical body, the Multidisciplinary Expert Panel (MEP), in charge of fulfilling scientific and technical tasks (See Figure 4.1). However, this top-level governance structure with two subsidiary bodies, Bureau and MEP, was just one of the possible options and alternatives discussed by delegations.

Tracing the origins and constitution of the MEP was relevant different reasons. First, IPBES claims to be a knowledge platform rather than a 'science' platform, which means broadening the definition of expertise: moving beyond the conventional opposition between 'global' experts with academic credentials and 'local' knowledge holders, whose knowledge is conceptualized as more tacit and embodied. If IPBES is a boundary organization, it then aspires to draw the boundaries between 'local' and 'global' and 'science/knowledge' and 'policy' differently than other GEAs, being more sensitive the heterogeneity of biodiversity experts and the place-based nature of their knowledge. This proposition was explored in this chapter: in examining the selection of the first body of experts forming the MEP, one objective was to study whether IPBES would prove able to ‘open-up’ expertise: how is expertise understood within IPBES? Whose expertise is rendered authoritative?

Figure 4.1 Institutional structure of IPBES (*Source*: Own figure)



Secondly, the MEP is one of the most visible bodies of IPBES, being an important element of its public identity, and therefore important to perform credibility in front of multiple audiences. Thirdly, MEP members have an essential functional role: they are charged with coordinating the implementation of the IPBES work programme as well as with selecting experts contributing to all IPBES deliverables. Finally, this chapter is complementary to Chapter 7 following the development of the IPBES conceptual framework. While the IPBES conceptual framework was nicknamed a ‘Rosetta Stone’ (Díaz et al. 2015a), a metaphor conveying the idea that it can articulate different worldviews and knowledge-systems, this ambition was only partially reflected in the composition of the MEP (Montana & Borie 2015).

In Chapter 8, I also draw on ethnographic observations; MEP experts were selected during IPBES-1 and I was able to follow this process closely. I also rely on document analysis, specifically the numerous documents that have been produced by UNEP that has acted as the interim Secretariat of IPBES. This allows seeing how the self-description of IPBES has evolved and how the idea of the MEP has been shaped. In this respect the reports published by the International Institute for Sustainable Development (Earth

Negotiations Bulletins) are again important resources. I have conducted several interviews with experts who have followed the IPBES project from its origins, or that have been involved at critical stages in the making of the MEP (Table 4.3). In particular these expert interviews include representatives of: a United Nation organization, several national ministries, a research foundation, an indigenous peoples organization, a think-tank specialized in international relations, an international research programme on biodiversity and several experts nominated for the MEP. These interviews have been transcribed and coded thematically with the software NVIVO. I also conducted an analysis of all the CVs of the nominees for the MEP (N=89) that were posted online on the IPBES website prior to the selection of the 25 MEP members (see section 4.4).

While in Chapter 8 I reflect solely on the constitution and composition of the first MEP, I have also jointly published a paper[32] contrasting it with the second MEP, which was selected during IPBES-3 (Bonn, January 2014); I draw upon this work in Chapter 9.

4.3 Values and limits of multi-sited ethnography

4.3.1 Fieldwork in conference sites

A key site of engagement with IPBES has been through direct participant observation during IPBES conferences. Unlike the IPCC, which has been reluctant to open-up to ethnographic inquiry (Hulme & Mahony 2013), it was possible to register as an observer, from the University of East Anglia, for the first IPBES plenary session and therefore to conduct an *internal* ethnography of the organization. In this respect, the access problem which is often mentioned in ethnographic research was not really an issue (e.g. Atkinson et al. 2001; Scheper-Hughes 2004) and, whereas some ethnographers choose to go 'under cover', I made it explicit in the registration form that I was a PhD student studying IPBES. However, it is worth underlining that whereas for the first IPBES plenary session almost anyone could register, for the next conferences new observers had to go through a more constrained process. During IPBES-1 some

[32] Montana, J. & Borie, M. (equal contribution) (2015). IPBES and Biodiversity Expertise: Regional, Gender, and Disciplinary Balance in the Composition of the Interim and 2015 Multidisciplinary Expert Panel. *Conservation Letters*. Available at: http://onlinelibrary.wiley.com/doi/10.1111/conl.12192/full

national delegations signalled that they would oppose the presence of some specific organizations in the conference venue and new observers had to be validated by the representatives of national delegations to be able to register. Over the course of my research I attended two IPBES plenary sessions for data collection: IPBES-1 in Bonn (January 2013) and IPBES-2 in Antalya (December 2013). I also went – without the intention to gather data but rather as a way to keep in touch with the development of IPBES – to IPBES-3 which was held in Bonn again (January 2015). Each of these sessions lasted one week and, although limited in time, were very intense.

Being able to access IPBES conferences was useful for several reasons. First of all, consistent with the STS approach underpinning this thesis, it made it possible to observe and document empirically the practices in use in these settings. It resonates with the idea of 'thick description' (Geertz 1973) or Nader's invitation to 'study up' (Nader 1972). At the conceptual level, these micro-settings are local sites of co-production and being there prevents from taking 'the global' for granted. It allowed me to pay attention to the context, including material elements, and contingencies through which *global* science-policy interactions were being crafted. Other scholars have emphasized the value of studying conferences to analyse the emergence of global knowledge and norms (e.g. Wong & Wainwright 2009; Cook & Ward 2012), or to understand the formation of 'global assemblages' (Collier & Ong 2005). In particular in the field of biodiversity conservation Monfreda suggests that these conferences may be understood as sites of 'discursive production'[33] (Monfreda 2010). Studying the climate negotiations of the UNFCCC, Weisser underlines:

> 'An ethnographic approach to the UNFCCC's COP offers the opportunity to account for the site-specific work of policy production, to disintegrate the black-

[33] Monfreda writes about the constitution of new global knowledge in the context of the TEEB (the Economics of Ecosystem and Biodiversity): 'This analysis takes the TEEB sessions at the World Conservation Conference as what Marten Hajer (Hajer 2006) calls a site of discursive production, where mutually understood norms, rules, and routines condition what may be said, in what manner, by whom and with what effects. Collectively, these norms, rules and routines constitute discursive practices that structure to some extent, pre-condition the terms and topics on which people are able to speak.' (2010:278). Similarly, Wainwright and Wong have studied the meetings of the World Trade Organization and the International Monetary Fund/World Bank and suggests that these are 'spaces within which global norms may be constituted' (2009:425), other authors talk about conferences as 'micro-space of globalization (Cook & Ward 2010:4).

> boxed 'global' in its constituting parts and to highlight its spatial implications.(…) Every policy document is composed of parts that are negotiated and brought into being *somewhere*, at a particular place; it may be a situation centre in the Ministry, conference rooms at airport hotels, or the nested spaces of the COP under the institutional structure of the UNFCCC.' (Weisser 2014:5)

From my perspective, attending IPBES conferences was especially useful to observe how the consensual documents that are used to regulate the functioning of IPBES were constructed, to take notes of the contestations and debates over the wording of particular words and the creation of categories (see one example of ethnographic observation in Box 4.2). It also allowed me to observe the politics of knowledge[34] and the ways in which delineations between science and policy, that is 'boundary work' (Gieryn 1983), were being constructed.

From a dramaturgic perspective, these conferences can also be understood as performances:

> 'Global environmental meetings are moments when diverse actors, normally dispersed in time and space, come together to produce – through decisions, interpersonal relationships, information, exchanges, etc. – environmental governance. Meetings become spectacles, orchestrated to enact political strategies in front of an audience.' (Campbell et al. 2014:3)

[34] 'The politics of knowledge is concerned with the role of scientific expertise and other ways of knowing in resolving controversy and forming public policy. Scientific knowledge embodies political relationships as myriad ways while contributing to their reconfiguration, a process known as coproduction. Complex socio-ecological phenomena like biodiversity loss can sustain a number of competing explanations, each with different implications for policy action. For example, is the 'problem' of protected areas one of coverage or ineffective management?' (Campbell 2014:4)

Box 4.2 Ethnographic observation from IPBES-1 (Bonn, January 2013)

Give me a word document and I will shape a consensus [or not][35]

Last week, the UN city of Germany, Bonn, hosted the first official plenary session of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). While the official creation of IPBES was agreed upon in Panama, in April 2012, many aspects regarding modalities for the institutionalization of the Platform remained to be addressed. Items to be discussed during the week were mostly procedural and included: rules of procedures for the work of the platform, guidelines for the implementation of a work programme, or relations of the platform with the UN system. Such topics – while maybe not that exciting at first sight, actually triggered some heated discussions among delegates. Yet, in these UN-related processes, decisions should generally be taken by consensus – that is, delegates all have to agree on the same texts. So the question is; 'How to construct a consensus with delegates from over 100 Member States?'

As the Beatles would say, all you need is word, or Microsoft Word [and a computer, a screen, electricity, coffee and delegates]. Obviously, Word documents are widely used in these types of conferences to circulate working documents, information documents and logistic information. Usually available on-line and distributed through internet, these aim at making sure that all delegates arrive with the same background information and are ready to discuss all items on the agenda. However, one of the most interesting aspects of Word documents in this conference related to the way they were used as structuring devices when consensus could not easily be found (which was the case for most items). In such cases, the working document under scrutiny would be made visible on a big screen – like in a cinema projection, and all delegates would be able to discuss and modify the script live. Here, for an observer, it is an experience of "Visualizing a consensus in the making".

Picture: Delegates drafting the IPBES rules of procedure (IPBES-1, Jan. 2013)

[35] This box is an example of ethnographic observation from the first IPBES plenary session. It was written just after the IPBES plenary, in January 2013, and published as a blog post on the website of my research group (3S: Science, Society and Sustainability).

Usually, the Chair would decide how the text should be discussed and select a paragraph. He would then invite all delegates to express their views and amend the text, if necessary. Sometimes delegates agree quickly on the text and it is possible to move to the next paragraph without any further discussions. However, in many instances, delegates express diverging views and these are included in the text in the form of square brackets. These are used to express the lack of agreement regarding certain parts of the text. Sometimes, for controversial topics, the whole text can be considered as being in square brackets. Different types of contributions can be made by delegates: changing a word, adding a word or a sentence, deleting a word or a sentence, reversing some terms. Modifications don't always change the meaning of the text but in most occasions they do reveal things about what is at stake for delegates. This scripting process is a task that they perform very carefully since it affects the content and meaning of the text. And once the text has been accepted it is very hard to re-open it.[36] For instance, there was an interesting debate on the admissions of observers and the question was: under which criteria can observers be accepted within the Platform? One sentence under discussion was the following: (b) Evidence of the [current existence][legal status] of the organization as appropriate (...). There was an opposition here between two different visions for the admission of observers: is it a procedural or a substantive matter? And also a surrealist discussion about existence: how can observers prove that they actually exist? *(Interestingly I was present as an observer, both legally and - I think - existentially present.)*

This collective scripting process with the visualization of the metamorphosis of the text is quite fascinating to observe. It is also quite telling to understand what shapes or motivates delegates' interventions. While a detailed analysis is not possible here, it is interesting to note that in most instances these processes were about delineating boundaries between different actors. For instance between the Multidisciplinary Experts Panel (the scientific and technical body of IPBES), the Bureau (the Executive body of IPBES), the Secretariat (in charge of performing the administrative functions), the Plenary and observers. For delegates, the ability to keep these different bodies under control – that is making sure that the Plenary remains the main decision-body - seemed to be the main driver.

Once the text has been discussed and is packed with square brackets, the work continues and controversies are little by little rendered invisible as some options are deleted. While during discussions the different meanings that the text could have acquired are made visible, at the end of the process the result is a consensual document – that has to be formally accepted in plenary. Dissensus and square brackets have disappeared. During this session, the issue around the admission of observers was not resolved, hence the text remains in square bracket until a solution is found at the next plenary [or not].

[36] Similar observations have been made by anthropologist Annelise Riles regarding the square-bracketting of the word 'gender' during the Fourth World Conference on Women in 1995: 'Delegates experienced negotiations [on the word gender] within the brackets as a tortuous gridlock, a kind of interminable present. Again and again, colleagues remarked that the several days we had spent together felt like months. In the windowless conference halls there were no outside indicators of the passage of time and sessions habitually began and ended several hours behind schedules. Build on the premise that every delegation had a right to be heard on every point (...) participants wondered again and again if *this* would be the last comment on a particular point or whether there might be more to come. It was if within the brackets, time stopped.' (Riles 2006:82)

During each of my fieldwork sessions I took numerous field notes. As I was attending discussions I was taking notes 'on the moment', but I also wrote more reflective memos afterwards with thoughts on what had been happening during the day. These were helpful to maintain a critical stance. During the first IPBES plenary session, I took notes about everything as I did not know exactly what would be useful afterwards. I made notes on the material settings as well as inventoried 'biodiversity' (e.g. presence of plants) in the conference centre. I observed how space was used within the venue, which places were accessible to whom, what was kept frontstage and backstage. I was also interested in how material elements (e.g. microphones, screens) were shaping social interactions. In the next conference, as I knew better the processes I wanted to study, my notes were much more focussed and specific. There were also significant differences between IPBES-1 and IPBES-2. The first one took place in freezing Bonn and at night every participant would go back to their respective hotel. In contrast in Antalya the conference was convened in a massive tourist resort near the Mediterranean sea and all participants lived in this 'bubble' for one week. This means that interactions between participants were markedly different[37].

Attending IPBES conferences also had significant practical advantages: IPBES brought together a wide range of heterogeneous actors from all over the world and I used these conferences to conduct interviews. It is in this context that I also met some key

[37] The atmosphere of these two conferences was markedly different, illustrating the fact that even if in theory the location of conferences should be of no interest, it does matter where and how these events happen. In Bonn the meeting took place in the World Conference Centre near the Rhine River, it was freezing and many delegates arrived late as many airplanes were delayed because of snowfalls. At night participants went back to their hotels. In Antalya, all participants spent the week together in huge tourist resort deserted in winter time, and it was fascinating to observe the role performed by delegates in different spaces of the resort. Although numerous conflicts took place in plenary sessions (e.g. regarding how to nominate experts) and discussions extended late at night, the conference also had something of (perhaps?) a summer camp: restaurants were serving food all the time, an open bar was open all night, it was possible to take a walk near a giant turquoise swimming pool, and the Turkish organizers convened numerous events to distract delegates (e.g. dervish dances). Many more interactions were then possible between participants in Antalya. For me this affected my data collection as well, since I was able to have on-going informal conversations all day long without having to plan much ahead as everyone was all the time in the same place. During this second conference it should also be mentioned that owing to a prior accident I was on crutches, therefore being quite noticeable, and this affected relations with interviewees as well.

informants whom I was later on able to interact with regularly in a more informal manner, as well as other academics and PhD students interested in diverse aspects of IPBES.

I also experienced particular challenges during conferences. First of all, 'being there' does not mean that I was able to see everything. As explained above, inside conference centres space is quite fragmented with some zones (e.g. plenary room) being open to everyone, and some zones being kept for high level meetings (e.g. for MEP or Bureau meetings), or regional meetings (i.e. representatives of particular UN regions) where it was not possible to access without being part of a national delegation. This stage management was in itself interesting, but also justified complementing participant observation by interviews and documents analysis in order to gain richer insights about 'backstage' IPBES processes. Moreover, during conferences it was not possible for me to attend every meeting: numerous events took place simultaneously. As the days pass, the more meetings (e.g. contact groups) happen at the same time and late at night: the 'conference' stretches in time and space. This means that I had to make choices regarding relevant events to attend. Unlike in collaborative event ethnography[38] (e.g. Brosius & Campbell 2010; Campbell et al. 2014), in which a team of researchers work together to analyse (for example) global meetings, I was by myself (although, as mentioned above I did have the opportunity to meet with and exchange with other academics).

Another challenge is that these conferences are bounded in time. One advantage of this is that it was therefore not really possible to 'go native'. As explained by Bryman:

> 'Going native refers to a plight that is supposed sometimes to afflict ethnographers when they lose their sense of being a researcher and become

[38] Campbell and colleagues describe the purpose of collaborative event ethnography with these words : '(1) to analyse the dynamic role of individuals, groups, and objects, situated in networks, in shaping the ideological orientation of global biodiversity conservation; 2) to document the social, political, and institutional mechanisms and processes used to legitimate and contest ideas about what biodiversity conservation is; 3) to relate team members' individual research experiences in diverse locales around the world to the agendas established in venues like COP10 in order to better understand how ideas about conservation travel and with what consequences.' (Campbell et al 2014:2)

> wrapped up in the worldview of the people they are studying. The prolonged immersion of ethnographers in the lives of the people they study, coupled with the commitment to seeing the social world through their eyes, lie behind the risk and actuality of going native. Going native is a potential problem for several reasons but especially because the ethnographer can lose sight of his or her position as a researcher and therefore find it difficult to develop a social scientific angle on the collection and analysis of data.' (Bryman 2012:445)

On the other hand, since prolonged immersion was not possible, it means that often it felt that I was working on an organization that was disconnected from me, as if I was studying a spaceship that was occasionally landing on the Earth. In particular during my first year, my engagement with IPBES was very virtual, in a very literal sense, as it was mostly realized through its website. However, before starting my research, although I did not know much about IPBES I had already been familiarized with UN processes as I had done an internship with UNESCO during my Master's and had the chance, in this context, to attend intergovernmental conferences.

4.3.2 On interviews and documents

In addition to participant observation, I have also conducted several rounds of semi-structured interviews. IPBES conferences were a fascinating opportunity to see 'live' the happening of IPBES but they are ephemeral events. Interviews proved necessary to understand what was happening 'behind the scenes' as well as how participants were making sense of the diverse IPBES-related processes These interviews can qualify as *elite* interviews as they were predominantly conducted with participants closely following IPBES and participating in it, in most instances working for United Nations organizations, governments and delegations, or in academia. In this respect, many interviewees had a high level of education, having studied for a Masters and, in many cases, for a PhD.

While my first round of interviews, on the origins of IPBES, was exploratory, the next rounds of interviews were more specifically focussed on investigating particular processes, namely the nomination of the MEP experts and the development of the IPBES conceptual framework. Most of these interviews were conducted during IPBES conferences but I also conducted pre-arranged interviews, either in person when possible or on skype. In all cases, when selecting interviewees my ambition was not to achieve statistical representation but rather to gather diverse perspectives on these processes. For this reason, I interviewed members of IPBES subsidiary bodies (MEP and Bureau), members of national delegations, representatives of the IPBES Secretariat and other United Nations organizations as well as diverse stakeholders. In total I conducted 36 formal interviews, the full list of which is presented in table 4.3 below. Some interviewees were contacted several times. For these interviews I prepared interview guides and recorded them when the interviewee agreed to it (a copy of the consent form that I used is available in Appendix 5). On several occasions I noted that interviewees felt more comfortable when the conversation was not recorded, in particular representatives of delegations or institutions often preferred to express themselves 'off the record'[39]. For this reason while in the beginning I tended to record everything, for later interviews I mostly focussed on writing detailed notes and memos afterwards. I stopped doing interviews when I had a feeling that I had heard the same stories several times (Guest 2006).

For the first interviews, I approached potential interviewees through my initial primary supervisor (Hulme) who would send a formal invitation to take part in the research. In general, interviewees were responsive and willing to share their thoughts about IPBES. However, IPBES is a global process and I did receive much more positive answers from certain regions than from others, in particular when contacting the MEP experts. While MEP experts from Europe, Africa and South America agreed to be interviewed, my requests to interview experts from some Asian countries (e.g. China) remained without answer. This is perhaps related to different academic and political cultures, and being a white European and a native French speaker probably facilitated my interactions with interviewees sharing a similar background, or having studied in the same universities as me. I also received much more positive responses to my invitations from MEP and Bureau members rather than from representatives of national delegations. Maybe because of their explicit diplomatic functions many national representatives were very

[39] This was especially the case for interviewees having to represent an institution such as a Ministry or a national delegation: interviewees would stick to one view when recorded and then sometimes present to me other views, or more reflexive thoughts, 'off the record'.

prudent when engaging in conversations. For this reason the detailed criteria guiding the selection of the MEP experts at national levels were to some extent 'black-boxed' (see Chapter 8). In all cases, far from conceiving interviews as an exchange between me and a passive respondent, I approached interviews as a relational process. Following Mahony:

> 'Participants in the research process are constituted not as objects but as subjects – knowledgeable, agentive actors whose behaviour is not determined solely by structures and power external to themselves.' (Mahony 2013b:88)

Even if I had particular points I wanted to address I was willing to have an exchange rather than a formal interview so as to allow unexpected topics and ideas to emerge. Often during these interviews participants shared their interrogations about IPBES and suggested research questions that I should address while asking me about what I, or other interviewees, were thinking of IPBES processes.

Table 4.3 Full list of interviews conducted during fieldwork[40]

N°	**Interviewees** (brief description)	**Gender**	**UN Region**	**Used in Chapter(s)**	**Date & Place**
1	Ecologist participating in DIVERSITAS activities and member of the IPBES Secretariat, also involved in the IMoSEB process	F	WEOG	5, 6, 7,8	19.11.2012 Paris (Skype)
2	Researcher on biodiversity science-policy interfaces and in charge of following the early stages of IPBES within the French Environment Ministry	F	WEOG	5	19.112012 Paris
3	Diplomat working in the French Environment Ministry, member of French delegation to IPBES	M	WEOG	5,6	20.11.2012 Paris
4	High-level civil servant, member of French delegation to IPBES	M	WEOG	5,6	21.11.2012 Paris
5	Project manager at the French Foundation for Biodiversity Research, member of French delegation to IPBES	F	WEOG	5,6	21.11.2012 Paris
6	Member of the administration of the French Foundation for Biodiversity Research	F	WEOG	5,6,8	21.11.2012 Paris
7	Diplomat working in the French Ministry of Foreign Affairs, member of French delegation to IPBES	M	WEOG	5,6,8	21.11.2012 Paris
8	High-level civil servant, director of a think tank on sustainable development and involved in IPBES negotiations	F	WEOG	5	22.11.2012 Paris

[40] This list includes all formal interviews conducted during my fieldwork period. However it should be noted that over the course of my research I also benefited from numerous exchanges and informal interactions with a much broader number of people, in particular during the events listed in table 4.2.

9	International civil servant working at UNESCO, member of the IPBES interim Secretariat	M	WEOG	5,6,7,8	23.11.2012 and 12.12.2013 Paris; Antalya
10	Civil servant working at the Commissariat General du Développement Durable (French government body working on transversal topics)	F	WEOG	5	6.12.2012 Paris
11	Member of the Executive Secretariat of IMoSEB	M	WEOG	5	13.12.2012 Montpellier
12	Representative of an indigenous people organization	F	ASIA-PACIFIC	5,7,8	23.01.2013 Bonn
13	Expert nominated for the Multidisciplinary Expert Panel	M	WEOG	7,8	23.01.2013 Bonn
14	Delegate representing a South American country	M	GRULAC	6,7,8	23.01.2013 Bonn
15	Expert selected for the Multidisciplinary Expert Panel	M	WEOG	7,8	24.01.2013 Bonn
16	Ecologist working at the French Natural History Museum (MNHN)	M	WEOG	5,6	29.04.2013 Montpellier (by phone)
17	Economist and anthropologist, Member of the organizing committee of the IMoSEB process	M	WEOG	5	30.04.2013 Montpellier (skype)
18	Delegate representing a country of the Asia-Pacific region	M	ASIA-PACIFIC	8	10.12.2013 Antalya
19	Anthropologist based in the US, member of IHDP	M	GRULAC	7,8	10.12.2013 Antalya
20	Member of the Multidisciplinary Expert Panel, Asia Pacific region	M	ASIA-PACIFIC	7,8	10.12.2013 Antalya
21	Delegate representing a South American country	M	GRULAC	7,8	11.12.2013 Antalya
22	Member of the Multidisciplinary Expert Panel, natural scientist	M	AFRICA	7,8	12.12.2013 Antalya
23	Member of the Multidisciplinary Expert Panel, natural scientist	M	AFRICA	7,8	12.12.2013 Antalya
24	Delegate of a South American country	M	GRULAC	7,8	12.12.2013 Antalya
25	Member of the Multidisciplinary Expert Panel, natural scientist	F	GRULAC	7,8	13.12.2013 Antalya
26	Member of the Multidisciplinary Expert Panel, natural scientist	M	ASIA-PACIFIC	7,8	13.12.2013 Antalya
27	Member of the Multidisciplinary Expert Panel, social scientist	F	EEA	7,8	13.12.2013 Antalya
28	Environmental economist participating in the IPBES work programme	M	WEOG	7,8	27.01.2014 Norwich (skype)
29	Ecologist participating in the IPBES work programme	M	AFRICA	7,8	28.01.2014 Norwich (skype)
30	Ecologist participating in the IPBES work programme	F	WEOG	7,8	05.02.2014 London
31	Member of the IPBES Bureau, also member of the MA follow-up group	M	WEOG	5,6,7,8	10.02.2014 Norwich
32	Ecologist (modeller) based in the UK	M	WEOG	5	19.02.2014 Cambridge
33	Member of the IPBES Bureau, also involved in the MA follow-up and the IMoSEB process	M	AFRICA	5,7,8	27.02.2014 Norwich (skype)
34	International civil servant working at UNEP, member of the MA follow-up group	M	AFRICA	5,7,8	27.02.2014 Norwich (skype)
35	Economist, participant in the development of the IPBES conceptual framework, member of IHDP	M	ASIA-PACIFIC	7,8	12.12.2014 Antalya
36	Member of the Multidisciplinary Expert Panel, economist	M	EEA	7,8	13.12.2014 Antalya

In addition to participant observation and semi-structured interviews, much of the material used in this PhD comes from documents including IPBES official reports, workshop reports, and policy documents. At some level, the coming into being of IPBES can be seen as an accumulation of documents that are crafted gradually, circulating from one conference to another. As emphasized by anthropologist Riles:

> 'Documents provide a useful point of entry into contemporary problems of ethnographic methods for a number of reasons. First, there is a long and rich tradition of studies of documents in the humanities and social sciences. Second, documents are paradigmatic artefacts of modern knowledge practices. Indeed, ethnographers working in any corner of the world almost invariably must contend with documents of some kind or another. Documents thus provide a ready-made ground for experimentation with how to apprehend modernity ethnographically.'(Riles 2006:2)

Maybe as a side effect of IPBES's aspiration towards transparency, all the official institutional documents related to the organization were made available online, on the IPBES official website (http://ipbes.net). Granjou and colleagues underline the performative dimension of this aspiration towards transparency by referring to the idea of 'traceability on stage' (Granjou et al. 2013:17). During the course of this research, I found myself being heavily dependent on this virtual space. For example, following the drafting of the first IPBES conceptual framework, all comments on the draft formulated by observers and delegations on it were made available online (I have analysed these in Chapter 7). This website provided a permanent window through which I was able to access a wide-range of resources and when it was temporarily unavailable I found myself feeling suddenly very disconnected, in both a literal and figurative sense, from IPBES. On some occasions it was also useful to follow discussions on Twitter as this tool was used by some participants during IPBES conferences (during IPBES conferences, using Twitter was sometimes useful to know what was happening in other rooms; it was also interesting to read comments coming from diverse perspectives on IPBES).

4.4 Data-analysis

To analyse the data I first focussed on compiling different corpuses of materials for each case. These include all the relevant interviews, memos gained from ethnographic observation and documents. All recorded interviews were transcribed and this transcription process was a fruitful way to reflect on their content. While related to each other, I treated the data of the three cases covered in the next chapters (Chapter 6 is about a the making of a place, Chapter 7 about the construction of an epistemic device and Chapter 8 about the constitution of a transnational space of expertise) rather independently as they were three distinct processes and involved the use of quite different materials. For example, for the analysis on Bonn I included many historical documents about post-war Germany, while such historical insights were not necessary for the two other sites.

In analysing these data my reasoning was predominantly inductive at first and I have relied on an interpretive version of grounded-theory (Charmaz 2005). However, in choosing to focus on these different processes I was already guided by some specific questions and interests which means that my reasoning was more iterative, or abductive, rather than fully inductive. I was rather interested in going back and forth between the empirical material and my analysis to find an appropriate way to account for these three processes. In doing so, I have used sensitizing concepts (Blumer 1969) to guide my analysis:

> 'A definitive concept refers precisely to what is common to a class of objects, by the aid of a clear definition in terms of attributes or fixed bench marks (…). A sensitizing concept lacks such specification of attributes or bench marks and consequently is does not enable the user to move directly to the instance and its relevant content. Instead, it gives the user a general sense of reference and guidance in approaching empirical instances. Whereas definitive concepts provide prescriptions of what to see, sensitizing concepts merely suggest directions along which to look.' (Blumer 1954:7)

Using the software NVIVO, I started by doing some open-coding and then gradually developed more specific codes. For example, to analyse material in Chapter 7 I used codes such as 'view on ecosystem services', 'view on Mother Earth' and 'role of science' to gather the different meanings that were given to these concepts. Similarly in Chapter 5, to map the diverse ways in which IPBES was imagined I have used an iterative approach and progressively developed categories ('role of science', 'framing of biodiversity issues', 'scale') to characterize these multiple IPBESes. In Chapter 6, to analyse the bids put forward by States willing to host IPBES, I focussed on identifying similarities and differences between the different potential places and progressively identified four main elements of demarcation: (i) presence of scientific knowledge on biodiversity in the country vs. presence of biodiversity in the country; (ii) ability to mediate between developed and developing countries; (iii) presence or absence of United Nations organizations in the city; and (iv) material conditions and financial support. For Chapter 8, when analysing the selection of the MEP experts I also coded the different contentions arising in this process (e.g. 'conception of scientific credibility', 'view on expertise'). I also used some basic quantitative data to analyse the CV of the MEP experts – for example to identify the share of natural *vs.* social scientists, or women *vs*. men, among experts, and elements of social network analysis. I was also able to analyse the list of participants to IPBES-1 and present some data in Chapter 6 (see also Appendix 5). However, my interest was not to generate a theory, as in classic grounded theory (Glaser & Strauss 1968), but rather to provide a narrative accounting for these three processes. This focus on processes also means that, while I did use coding techniques, I was also careful not to fragment the data too much.

4.5 Positionality and ethical aspects

4.5.1 Assumptions and positionality as a researcher

From a constructivist stance, all knowledge is situated and this entails recognizing the researcher's own subjectivity and normative assumptions. The content presented in this PhD is the result of my own interpretations. While researchers, especially in quantitative sciences or in positivist and naturalist approaches to ethnography, often strive to be 'objective' by abstracting themselves from the data, from an interpretive perspective the researcher is never neutral or transparent to the research process. This is encapsulated by the notion of reflexivity:

> 'The concept of reflexivity acknowledges that the orientations of researchers will be shaped by their socio-historical locations, including values and interests that these locations confer upon them. What this represents is a rejection of this idea that social research is, or can be, carried out in some autonomous realm that is insulated from the wider society and from the biography of the researcher, in such a way that its findings can be unaffected by social processes and personal characteristics. (…) By including our own role within the research focus, and perhaps even systematically exploring our participation in the settings under study as researchers, we can produce accounts of the social worlds and justify them without placing reliance on futile appeals to empiricism of either positivist or naturalist varieties.' (Hammersley & Atkison 2007:15)

Rather, the researcher also offers a 'view from somewhere'. Following feminist scholars such as Haraway, who writes about the importance of 'vision' and 'ways of seeing', I am sensitive to a conception of objectivity as situated, partial and mediated:

> 'Vision can be good for avoiding binary oppositions. I would like to insist on the embodied nature of all vision and so reclaim the sensory system that has been used to signify a leap out of the marked body and into a conquering gaze from nowhere. (…) I would like a doctrine of embodied objectivity that accommodates paradoxical and critical feminist science projects: Feminist objectivity means quite simply situated knowledges.(…) Feminist objectivity is about limited location and situated knowledge, not about transcendence and splitting of subject and object.' (Haraway 1988:581-583)

From a personal standpoint a tension that I often faced during my PhD related to the fact that I am on the one hand deeply committed to 'biological diversity' and would like to see organizations such as IPBES succeed in their ambitions. Simultaneously, from a social science perspective, I am also sceptical about some discourses promoted by some ecologists and environmental economists, for example regarding the necessity to adopt an ‘ecosystem services’ approach as well as regarding what such ‘global’ organizations can actually achieve, especially considering that ‘biodiversity’ can serve as the shorthand for all life on Earth and that ways of approaching humans-nature relations are multiple (e.g. Lorimer 2012). For this reason, while conducting this research I have experienced similar questions as those described by an STS scholar and author of a landmark book deconstructing the idea of biodiversity, David Takacs:

> ‘My disciplinary home lies at the boundaries of social sciences and the humanities, areas where traditional notion of truth currently hold scant sway. To “deconstruct” an idea is not difficult, and I attempt to do that here with biodiversity. Yet how does one deconstruct constructively? How to make it so that others do not misuse my analysis to obstruct those biologists attempting to stem the destruction of biological diversity? How does one bring advocacy to scholarship while remaining far enough removed from the events one chronicles to make some stab at objectivity? How can one feel about the natural world as strongly as I do, and as do the biologists whose exploits I narrate, and not believe that those feelings approach the truth in some sense? How can I balance my healthy scepticism about conservation biologists’ proselytizing on behalf of biodiversity against my fervent hope that they succeed? In reporting the tensions at whose nexus biodiversity is located, I hope to resolve some of them myself.’ (Takacs 1996:8)

From my perspective, at the normative level, the move towards more plural approaches advocated by IPBES is necessary if the organization is to be successful. This would do justice to the wide array of history of science, STS and geographies of science studies that have underlined the existence of multiple ways of knowing and the fact that the credibility of knowledge is relational, being dependent upon multiple socio-cultural factors. To be successful IPBES first needs to be meaningful to multiple audiences. However, as will be demonstrated in this PhD, numerous contradictions and ambiguities remain as to whether IPBES is actually embracing multiple forms of knowledges.

During the first IPBES conference, I did not know exactly how to position myself. Being there as an observer, I was asked whether I wanted to contribute more actively to the work of IPBES, for example by participating directly in the development of a stakeholder engagement strategy and I was tempted to have this more explicitly 'engaged' role. I was also frequently asked to give my advice on what was happening. On another hand, I also wanted to maintain a certain distance with IPBES. Similarly, when I participated in the UK stakeholder meeting in Peterborough, I was there as an observer but since I presented myself as a PhD student studying IPBES and doing social science one of the organizers mentioned that they were having difficulties to find ways to engage social scientists in IPBES and asked me whether I would be happy to review and contribute to some working documents. Finally, I chose to remain a 'quiet' observer. This is mostly due to the fact that I thought it was too early for me to engage with IPBES constructively at that stage. However, this does not mean that I did not have any 'effect' on it, just by 'being there' affected some social interactions in the conferences, for example. I was also contacted by other researchers studying IPBES who, having noted my participation in two IPBES conference, had classified me as a 'stakeholder' and wanted to interview me – hence illustrating that no matter whether I wanted it or not I was inevitably 'part of it'.

4.5.2 Ethical aspects

In pursuing this research, I have always kept up with high ethical standards – in line with the guidelines provided by the University of East Anglia[41]. As my research involved working abroad and interviewing people, this project had to be validated by the General Research Ethics Committee of the University of East Anglia (G-REC) and the approval letter is presented along with the consent form that was presented to interviewees (appendix 7 and 8). Before conducting interviews I always asked whether the interviewee was comfortable to be recorded, if not I took notes. Given their positions within IPBES, many of these interviewees could be easily identified and in order to preserve their anonymity the quotes are always presented in a way that allow the reader to understand what kind of role the interviewee has in the IPBES process without disclosing her/his identity. During IPBES conferences I also always made it clear that I was a PhD student studying the development of IPBES, even during informal interactions.

[41] https://www.uea.ac.uk/polopoly_fs/1.161266!Policy_guidelines_on_Good_Research_Practice_Nov_09.pdf (last accessed January 11th, 2016).

Chapter 5 – Setting the stage for IPBES

5.1. Hesitant beginnings

What's the problem with biodiversity? Is there a need for yet another organization to effectively govern it? IPBES marks an important development in the institutional landscape of biodiversity governance and is now firmly established as an intergovernmental organization with a Secretariat anchored in Bonn, the UN city of Germany (see Chapter 6). Yet, before its formal establishment, several assessments had already been carried out in the field of biodiversity sciences including, as presented in Chapter 2, the Global Biodiversity Assessment (1995) and the Millennium Ecosystem Assessment (2005). For some, the establishment of an intergovernmental organization institutionalizing biodiversity and ecosystem assessments was a 'natural evolution' of these previous assessments. However, the process leading to the establishment of IPBES was far from straightforward. While the roles that IPBES should fulfil animated many debates, the idea of an IPBES itself was controversial and the need for a new organization was contested.

Although the idea of an intergovernmental organization for biodiversity was discussed in the 1990s, the process leading directly to the creation of IPBES in 2012 can be traced back to the international conference 'Biodiversity: Science and Governance' (Paris, 2005). This conference was convened by the French Government, during Chirac's Presidency, and concluded with the launch of a consultation on an 'International Mechanism on Scientific Expertise on Biodiversity' (IMoSEB) whose objective was to assess the need for a new expert organization on biodiversity. In addition to the IMoSEB process, other discussions over the future of global biodiversity assessments were taking place in the context of the Follow-up of the Millennium Ecosystem Assessment (MA Follow-up), a process conducted under the leadership of UNEP. After the start of the IMoSEB process, the discussions leading to the establishment of IPBES were on-going for more than seven years (see Table 5.1 below and section 5.2).

Drawing on Granjou et al., the process leading to a functional IPBES can be separated into three stages: (1) *a consultative stage* (2005-2008), during which the IMoSEB process was developing, alongside the MA Follow-up, (2) *a diplomatic stage* (2008-2010) during which several intergovernmental and multi-stakeholders conferences took place under the auspices of UNEP, and (3) *an implementation stage* from 2010 onwards (Granjou et al. 2013). During the first official session of IPBES (IPBES-1, Bonn, January 2013), the attention of delegations was mostly directed towards the drafting and adoption of a set of documents; in particular the rules of procedures regulating the functioning of the Platform. However, during the years preceding the establishment of IPBES numerous debates took place regarding what should be done about biodiversity and ecosystems, whether a new organization was necessary, and if so, which form it should take: the idea of an IPBES was not consensual. While a detailed account of the different narratives animating the intergovernmental negotiations has been provided (Vadrot 2014), less attention has been directed towards the different debates animating the consultative phase.

The purpose of this chapter is to give an account of the origins of IPBES outlining the diverse ways in which it was imagined during the consultative phase and paying particular attention to the diverse events happening in 2007-2008 that allowed the transition from a consultative process to an intergovernmental process to happen. Having its roots in two scientific and multi-stakeholder initiatives, IPBES was finally officially established as an intergovernmental body owned by States and operating through consensus-focussed processes[42]. In particular I seek to answer the questions: What were the main events leading to the official establishment of IPBES? How was IPBES imagined during the consultation phase?

The material presented in this chapter comes from primary sources, including interviews, and secondary sources including numerous official institutional documents and reports (workshop reports, Earth Negotiation Bulletins, etc.) – the full list of which

[42] Granjou and colleagues state that the 'implementation phase' started in 2010, that is when delegations officially adopted the Busan outcome (see Table 5.1) which outlined the functions that an IPBES should fulfil and the principles it should adopt. However, following this foundational moment, there remained some uncertainties as to whether the organization had actually been created (as will explained in section 5.4.2) and it had to be validated by the UNEP Governing Body and by the United Nations General Assembly (UNGA). The conference in Panama (2012) is the one during which the work of IPBES officially started.

is presented in Appendix 1. Having noted that IPBES was imagined in multiple ways, I have used an iterative approach to map these multiple IPBESes and gathered them into three main categories: an IPCC for biodiversity, a network of networks and a wiki for biodiversity. While other perspectives existed, I have focussed on identifying the most recurrent ones, and also selected these because they represent three diverse ways of organizing science-policy relations while also justifying different scales of action. The remainder of this Chapter is organized as follow: Section 5.2 provides some background information on two processes preceding the official creation of IPBES (namely IMoSEB and MA Follow-up), and Section 5.3 maps the multiple IPBESes that were once imagined, in Section 5.4 I argue that the year 2007-2008 was foundational for the establishment of IPBES as an intergovernmental organization and explain how the switch to an intergovernmental context was made. Elements of discussion and conclusion are presented in Section 5.5.

Table 5.1 Chronological overview of the main events leading to the establishment of IPBES

IMoSEB	Conference Biodiversity 'Science and Governance', Paris (Jan 2005) ➔ Start of the IMOSEB Process	Case studies on science-policy interfaces Workshop in Leipzig, Germany (Oct. 2006)	Series of six regional consultations in Montreal, Yaounde, Geneva, Beijing, Bariloche and Atola. Final conference of the IMOSEB process, Montpellier (Nov. 2007)					
MA	Publication of the final report of the MA		Meeting MA Follow-up, Stockholm, Sweden (Oct. 2007)	Global strategy MA Follow-up (Feb 2008)				
DATES	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
UNEP Conferences				Putrajaya, Malaysia (Nov 2008)	Nairobi, Kenya 'Gap-analysis' (Oct 2009)	Busan, Korea 'Busan Outcome' (June 2010)	Nairobi, Kenya (Oct 2011)	Panama, Panama (April, 2012)
					Intergovernmental negotiations (3 conferences)		Operationalization (2 conferences)	
Other Processes			Launch of The Economics of Ecosystem and Biodiversity (TEEB) initiative, Germany Annual meeting of DIVERSITAS, Cape Town (March 2007)	TEEB interim report (May 2008)		Presentation of TEEB report, Convention of Biological Diversity (CBD) COP 10 (Oct. 2010)		

5.2. The roots of IPBES: two science-driven multi-stakeholder processes

Before being formally established as an intergovernmental organization, several initiatives prepared the ground for IPBES. In the 'magma' of biodiversity science-policy initiatives two are of particular interest here: the IMoSEB process and the Millennium Ecosystem Assessment Follow-up (see Table 5.1 above).

5.2.1. The IMoSEB process

The idea of a global biodiversity organization first received explicit political support from French President Chirac (1995-2007). At that time, several ideas were in circulation and, at the United Nations General Assembly[43], in the 2000s, French diplomats often mentioned the idea of a 'global environmental organization', but it never really took off[44]. Following several declarations, at the Rio Summit in Johannesburg (South Africa, 2002) and at the G8 Summit (Evian, France, 2003), the French government gave its support to UNESCO to organize a conference called 'Biodiversity: Science and Governance' (2005). This event took place at UNESCO Headquarters, in Paris, and gathered more than 1000 participants. The conference concluded with a speech from President Chirac explicitly referring to an 'IPCC for biodiversity'(Barbault & Leduc 2005). On the same occasion, the International Mechanism on Scientific Expertise for Biodiversity (IMoSEB) was launched. However, objections regarding the potential creation of a new organization on biodiversity were known and largely explain why the IMoSEB process was labelled as a 'consultation' and not as a negotiation process:

> 'In the beginning the idea of an IMoSEB was contested by many organizations including IUCN, UNEP, who already had in mind the idea of a global environmental panel of its own. Many in the MA also saw the IMoSEB as a

[43] The United Nations General Assembly (UNGA) is one of the most important organs of the UN system in which all States are represented equally (currently including 192 States). The UNGA takes decision regarding the budget of the UN and meets every year in New York from September to December. (*Source*: http://www.un.org/ga/about/background.shtml)

[44] As reported, for example, in this newspaper article published in Le Monde, 16.11.2001 'Jacques Chirac s'empare de l'écologie', available online: http://www.lemonde.fr/politique/article/2009/11/16/jacques-chirac-s-empare-de-l-ecologie_1266390_823448.html. At the time the United States in particular were strongly opposing the creation of a new global environmental organization.

> potential competitor for funding, and the CBD did not really see the interest.' (I8, own translation)

IMoSEB was mandated with conducting 'a consultation to assess the need, scope, and possible form of an international mechanism of scientific expertise on biodiversity' (Babin et al. 2008:10). In terms of governance structure, IMoSEB was organized around an Executive Committee, co-chaired by French conservation biologist and former President of DIVERSITAS Michel Loreau and Ghanaian botanist Alfred Oteng-Yeboah, a science-policy expert also a member of DIVERSITAS (but having held different positions in the CBD). This Executive Committee included fourteen scientists, most of them being natural scientists with a background in ecology and having been involved in former biodiversity assessments (e.g. Georgina Mace, Charles Perrings, Robert Scholes). A small Executive Secretariat was based in Montpellier (France) and included four people working at the French Biodiversity Institute, the Executive Director of the global change research programme dedicated to biodiversity sciences (DIVERSITAS, see box 5.1 below), and one US-based scientist. In addition to these two bodies, a multi-stakeholder international Steering Committee was formed, gathering together scientists as well as representatives of intergovernmental and international organizations, governments and civil society.

The process was conducted over a two year period, starting officially in 2006 and concluding with a final conference in Montpellier (France, November 2007). After conducting a series of case studies to document existing knowledge on science-policy interfaces, a series of six regional consultations was organized by the IMoSEB Executive Secretariat, with the support of some participants of the Executive Committee and Steering Committee. The idea of an IMoSEB was also presented in several side-events of conferences including at the CBD COP 8 (Curitiba, 2006) and in several scientific conferences such as the European Congress of Conservation Biology (Eger, 2006), the British Ecological Society Annual Meeting (London, 2006) and the Earth System Science Partnership Conference (Beijing, 2006).

5.2.2. The MA Follow-up

As the IMoSEB process was developing, a parallel initiative was established under the leadership of UNEP to follow-up on the findings of the Millennium Ecosystem Assessment (MA 2005) and to encourage its broad diffusion and implementation. This group, co-chaired by Achim Steiner (UNEP) and Kemal Dervis (UNDP) was composed of nineteen members and included representatives of diverse United Nations agencies (FAO, UNESCO), NGOs (IUCN), funding bodies (GEF), research centres and scientific organizations (Stockholm Resilience Centre, ICSU). In addition to this group, a small advisory committee was set-up, co-chaired by Robert Watson (who at the time was Chief Scientific Adviser to the UK Environment Ministry, DEFRA) and Julia Carabias (Director of the Interdisciplinary Centre for Biodiversity and Environment, Mexico). Robert Watson chaired the MA, was later on selected as a member of the IPBES Bureau for the Western European region and was subsequently elected as IPBES co-chair, and Julia Carabias was selected as an expert for the first IPBES Multidisciplinary Expert Panel (both these events took place in January 2013 during IPBES-1).

Members of the MA Follow-up published a document called 'A global strategy for turning knowledge into action' (UNEP 2008):

> 'The strategy, spearheaded by UNEP and developed by a consortium of partners, has been developed in a spirit of cooperation. It aims to provide a roadmap for operationalizing the MA and to explore the needs, options and modalities for a second global ecosystem assessment.' (UNEP 2008:6)

This strategy included numerous activities and was organized around four main objectives:

(1) Continue to build and improve the knowledge-base on the links between biodiversity, ecosystem functioning and human well-being

(2) Integrate the MA ecosystem services approach into decision-making at all levels

(3) Disseminate the MA

(4) Develop future global ecosystem assessments (UNEP 2008b)

Unlike the IMoSEB process, participants in the MA Follow-up did not explicitly debate potential options for a new organization. However they were also interested in thinking about the future of biodiversity sciences and policy, including exploring options for a second global biodiversity assessment. In this respect it is worth noting that the initiative placed much emphasis on the importance of adopting an ecosystem services approach:

> 'The MA's emphasis on ecosystem services and their significance for human well-being is widely recognized as having made a major contribution to clarifying the linkage between biodiversity conservation and poverty alleviation.' (UNEP 2008:4)

In this perspective, biodiversity issues were perceived as relating particularly to the existence of 'gaps in the ecosystem services knowledge base'. Participants in the MA Follow-up insisted that any new global biodiversity assessment should be guided by the following principles:

- 'The MA conceptual framework linking biodiversity with ecosystem services and human well-being should be used as the starting point in any subsequent assessment
- A multi-scale approach is necessary to assess effectively the links between biodiversity, ecosystem services and human well-being, and to ensure effective engagement of stakeholders at all levels,
- Inter-linkages with other global assessment processes should be pursued,
- Capacity-building activities should be incorporated into any future assessment process or mechanism to facilitate application of findings and methodologies, and
- The assessment process should include provision for effective intergovernmental and stakeholder input.'(UNEP 2008:16)

5.3. Imagining IPBES

In the context of the discussions animating the IMoSEB process, there were numerous discourses regarding what a future international biodiversity organization would or could look like. These were made particularly visible in the context of the six regional consultations that punctuated the process: Montreal (Canada), Yaounde (Cameroon), Geneva (Switzerland), Bariloche (Argentina), Beijing (China) and Alotau (Papua New Guinea)[45]. Discussions around the creation of a new organization permeated these formal consultations and numerous other workshops and events were held alongside. During this brainstorming phase, the diverse ideas included a new Davos forum or a panel of celebrities advocating for biodiversity. These were underpinned by some recurrent discourses and particular ways of imagining IPBES. In the following three sub-sections I describe three particular ways in which an IPBES was imagined (see Table 5.2), emphasizing that these each relate to different ways of framing biodiversity issues (what is the problem?) and best responding to them (how to organise knowledge?). While many other ideas were mentioned, I have selected these three as they represent three discourses that were predominant over the course of the IMoSEB process. In doing so, I build on the concept of socio-technical imaginary - 'Collectively imagined forms of social life and social order reflected in the design of nation-specific and/or technological projects' (Jasanoff & Kim 2013:120). However, in contrast to this definition, my use of the concept here is slightly different: these imaginaries illustrate different ways of organizing science-policy relations while justifying diverse scales of action to address biodiversity issues but they relate to individuals and institutions rather than to nation-states. These three imaginaries justified different forms of science-policy relations and knowledge practices: an IPCC-like mechanism for biodiversity, a network of networks and a wiki for biodiversity.

[45] Each of these meetings, apart from the last one, was covered by the Earth Negotiations Bulletins (ENB) and reports were made available online. The final IMoSEB report also synthetizes each of these consultations.

Table 5.2 –Three different IPBESes

	Framing of biodiversity issues	Role of Science/Knowledge	Scale	Intergov./ Participatory
An IPCC for Biodiversity	Gap in the science-policy interface : more scientific knowledge is needed to bridge this gap	Assessments Global observation systems	Global Regional	Intergovernmental. and multi-stakeholder
A Network of Networks	Biodiversity as complex issues with multiple possible framings	Multiple forms of knowledge are needed : natural sciences, social sciences, traditional and indigenous knowledge	Multi-scale	Multi-stakeholder with some degree of inter-governmentality
A Wiki for Biodiversity	Biodiversity issues as related to lack of capacity and lack of implementation, what is needed are concrete actions	Multiple forms of knowledge are needed (including traditional and indigenous knowledge) but mostly what is needed is to have the resources to act	Mostly local	Not intergovernmental.

5.3.1. An IPCC for biodiversity

The IPCC acted as an important reference for discussions surrounding the creation of IPBES, but its example was mobilized in different ways throughout the consultative process. For example, when President Chirac called for an organization akin to the IPCC for biodiversity, the analogy triggered some controversy[46]. Although the formal mandate of IMoSEB was to explore a diversity of institutional options, it is worth noting that before the start of the consultation, two of the leading scientists of the IMoSEB, Alfred Oteng-Yeboah and Michel Loreau (and also chair and co-chair of the executive committee and of the international steering committee), co-authored a paper in *Nature* called 'Diversity without representation' explicitly calling for the establishment of an IPCC for biodiversity (Loreau et al. 2006).

Actors advocating for an 'IPCC for biodiversity' emphasized that there was an on-going 'biodiversity crisis', characterized in particular by an unprecedented rate of species loss (potentially leading to a sixth mass extinction), that needed an urgent and coordinated

[46] http://www.scidev.net/global/biodiversity/news/france-stirs-controversy-with-plan-for-biodiversit.html (last accessed January 12th, 2016)

response at a global scale. The 'biodiversity crisis' was most specifically perceived as resulting from:

(1) A lack of impact of science on the policy world. There was a gap between science and policy that needed to be 'bridged'. Unlike climate scientists who had been able to put anthropogenic climate change onto the political agenda thanks to the IPCC, ecologists lacked such an organization.
(2) A lack of recognition of the 'global' dimension of biodiversity issues. While recognizing the multi-scalar nature of biodiversity, scientists advocating for an IPCC for biodiversity claimed that this global dimension was insufficiently considered.

From this perspective, an intergovernmental organization appeared as a necessary evolution to ensure that the provision of scientific knowledge was demand-driven and responded to the needs of governments. Having a specifically intergovernmental organization was perceived here as a condition to achieve 'policy relevance':

> 'My personal opinion has always been that it was important to have some intergovernmentality, I think this is what has made the strength of the IPCC in the sense that the scientific community has always been able to do great reports such as the Global Biodiversity Assessment but in the end biodiversity is still declining so our great reports do not have enough influence and we need to have a better link with political processes.' (I1, own translation)

However, actors agreed that this organization should also be independent: the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the CBD was largely perceived as being too political and therefore devoid of scientific credibility. For example, many conservation biologists perceived the CBD-SBSTTA, which is officially meant to provide technical and scientific information on biodiversity to the CBD, as being already a negotiation space dominated by political interests (e.g.Laikre et al.

2008)[47]. Moreover, actors advocating for this perspective were convinced of the global meaning of biodiversity issues, such as in the case of this ecologist:

> 'Some people think biodiversity issues are more regional [than for climate change] but I completely disagree. We need to recognize the global dimension of the biodiversity problem… globalization for instance has many interlinkages with biodiversity. You know food we eat that is produced in the 'Third World', and what it causes in terms of biodiversity loss there, and how does biodiversity in Europe change as a consequence of global trade…' (I13)

In this view, there was a need to develop global knowledge practices, such as global monitoring systems for biodiversity (e.g. GEO-BON[48]) and global models in a way similar to the global climate models used by the IPCC. While acknowledging the difficulties of measuring global biodiversity many scientists argued that there was a need to work in this direction:

> 'Biodiversity science needs to evolve, and is evolving, towards greater unity and integration. What is lacking, however, in our view, is a mechanism akin to the IPCC that is able to bring together the expertise of the scientific community to

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[47] Laikre and colleagues authored a call in *Conservation Letters* entitled 'Wanted: Scientists in the CBD Process' in which they underlined: 'The scientific body of the convention, the SBSTTA, is increasingly dominated by politicians and professional negotiators. We, the undersigned of this letter, constituted the Swedish delegation at the 13th meeting of the SBSTTA (18–22 February 2008). We are active researchers and conservation managers and as such felt very much alone at this SBSTTA. We had come to discuss and provide recommendations on how to identify conservation priority areas in deep sea waters, manage forest biodiversity in relation to climate change (…). Instead, we found ourselves devoting hours of discussions on whether to "welcome" or "bear in mind" a report from a particular working group, or whether reptiles, amphibians, fishes, and associated species kept ex situ by private persons or institutions should be called "aquarium species," "terrarium species," or both, and whether the Conference of the Parties should even be informed about the potential risks for biodiversity associated with the introduction of genetically modified trees. One of the delegates revealed his biological ignorance when stating his country's position on alien species with respect to inter- and intraspecific biodiversity—whatever the hell that means. Of course, scientists are not the only ones responsible for the failure to keep the SBSTTA a scientific forum. Some parties evidently want to steer the process away from science to be able to make sure that decisions taken within the CBD framework do not interfere with national issues of trade and economic growth.' (Laikre et al. 2008:815)

[48] The Group on Earth Observation: Biodiversity Observation Network (GEO-BON) is a network which aims to provide information on the state of the worlds' ecosystem to policy and decision-makers (*Source:* http://geobon.org/about/, last accessed October 19th, 2015). It is currently chaired by Portuguese ecologist H. Pereira, who is also a Coordinating Lead Author in one of the IPBES working groups and the network GEO-BON is registered as an observer to IPBES.

> provide, on a regular basis, validated and independent scientific information relating to biodiversity and ecosystem services, to governments, policy-makers, international conventions, non-governmental organizations and the wider public' (Loreau et al 2006:246).

It is worth highlighting, however, that there are different sensibilities among ecologists themselves regarding what kind of knowledge practices should be developed. While some advocate for the development of global models (e.g. Madingley model, see Purves et al. 2013), others do not perceive the evolution towards 'global ecology' as necessary. These dissensions are not new and have animated ecological sciences for a long time. For example, Kwa suggests that similar debates animated ecologists participating in the International Biosphere Programme and the International Geosphere-Biosphere Programme in the late 1980s (Kwa 2005) and are still relevant. They respond perhaps to different 'epistemic commitments' – that is 'different views of knowledge that matters and how these views are embedded in research practices and networks' (Granjou & Arpin 2015:1).

Moreover, the IPCC was perceived as having successfully raised the profile of climate change issues, attracting wide-ranging media and public attention, and for this reason having a similar organization for biodiversity would ensure more visibility on the world stage. As will be explained in the next sections, in contrast to actors inspired by the IPCC, others emphasized that biodiversity issues were markedly different to those of climate change and that an intergovernmental organization acting predominantly at a global scale might not be the solution.

Box 5.1 Introducing DIVERSITAS

DIVERSITAS was an international research programme dedicated to biodiversity sciences which was founded in 1991 under the auspices of UNESCO, the International Union of Biological Sciences and the Scientific Committee on Problems of the Environment. In 2014, DIVERSITAS merged into Future Earth, along with other international research programmes dedicated to global environmental change (the International Geosphere-Biosphere Programme, the International Human Dimension Programme and the World Climate Research Programme). Members of DIVERSITAS have often underlined the need to progress towards more unification between the different strands of ecology and many, although not all of them have actively promoted the development of 'global ecology' (e.g. Dirzo 2005; Loreau 2010).

Since its creation, the research agenda of DIVERSITAS has known three major phases: Phase 1 (1991-2001) aimed at putting biodiversity issues on the global agenda while Phase 2 aimed at developing 'An international framework for biodiversity sciences', with more integration between the different strands of ecology, so as to contribute to the development of Earth System Sciences (in particular with the Earth System Science Partnership). Phase 3 (2012-2020) is called 'Biodiversity and Ecosystem Services for a Sustainable Planet': 'This new vision is a response of the biodiversity and ecosystem services scientific community to the accelerating loss of the components of biodiversity, as well as to the changes in the biodiversity science-policy landscape'(Larigauderie et al. 2012:101). It explicitly aims to contribute to the development of global monitoring systems, to IPBES, as well as to the strategic plan (2011-2020) of the CBD for biodiversity.

Members of DIVERSITAS have been particularly active in advocating for and contributing to the discussions on an IMoSEB, often adopting the IPCC as their main reference. This advocacy has taken different forms including numerous publications in scientific journals (e.g. Loreau et al. 2006; Larigauderie & Mooney 2010) and several conferences' statements (e.g. Open Science Conference of DIVERSITAS in Oaxaca, November 2005; Scientific Committee annual meeting, Cape Town, March 2007).

Several ecologists affiliated with DIVERSITAS have also played key roles in diverse global science-policy processes. Notable examples of which include American ecologist Harold Mooney, former chair of DIVERSITAS (2008-2011) and co-chair the scientific panel of the Millennium Ecosystem Assessment; French ecologist Michel Loreau, also former chair of DIVERSITAS (2002-2004; 2005-2007) and co-chair of the IMOSEB process. Scientists who were part of DIVERSITAS are currently highly involved in IPBES. For example French ecologist Anne Larigauderie (who authored several papers mentioned above) has also been the Executive Director of DIVERSITAS and was elected as the Head of the IPBES Secretariat. She was also awarded the French Legion d'Honneur for her role in establishing IPBES. Numerous members of DIVERSITAS also figured among the nominees for the first and second IPBES Multidisciplinary Expert Panel, and several were selected (e.g. Argentinian ecologist Sandra Diaz, English ecologist Paul Leadley).

5.3.2. A network of networks

In contrast to the actors advocating for an intergovernmental, 'top-down' IPCC for biodiversity, others emphasized that there was rather a need to build on the experience of the MA and develop more bottom-up and flexible approaches. In particular, a workshop was held in Leipzig (Germany, 2006) entitled 'International Science-Policy Interfaces for Biodiversity Governance: Needs, Challenges, Experiences' (Görg et al. 2007). This workshop was explicitly designed as a contribution to the IMoSEB process and gathered a multidisciplinary group of scholars including several scholars working at the Centre for Environmental Research (UFZ, Leipzig), as well as diverse science-policy experts (e.g. Martin Sharman from the European Commission, Sybille Van den Hove from the University of Barcelona, Thomas Koetz – PhD student who at the time was authoring a PhD on the institutional dynamics of science-policy interfaces for biodiversity. It is worth underlining that participants in this workshop also included a small number of political scientists and STS scholars (e.g. Christoph Görg, Silke Beck, both at the UFZ Centre; Roger Pielke Jr). The former president of the French Biodiversity Research Institute, Jacques Weber, was also advocating for this perspective. The Leipzig workshop concluded with the publication of a report formalizing the idea of a 'networks of networks'.

Those advocating for a 'network of networks' underlined that there was no single way of framing biodiversity issues. They stressed that the 'biodiversity crisis'– which places much emphasis on the lack of scientific knowledge – was only one framing among many others, and potentially a too narrow and reductionist one (Görg et al. 2007). They maintained that biodiversity issues were 'wicked problems' (Rittel & Webber 1973) in the sense that there were multi-dimensional, multi-scalar and there was no consensual framing. Advocates of the 'network of networks' suggested that biodiversity issues did not only have a scientific dimension but also social, ethical, moral ones – and hence called for the inclusion of multiple forms of knowledge, including traditional and indigenous knowledge, in the practice of assessments and other activities. They also insisted on the lack of resources, both scientific and financial, in numerous regions.

From this perspective, there was a need to have a flexible approach, to integrate a wide array of knowledge and to work at multiple scales:

> ‘A successful knowledge-policy interface needs, therefore, to create a meta-network that builds upon and bring together diverse knowledge organizations without reinventing or duplicating existing networks (…). The interface should not simply consist of a global assessment of global losses of biodiversity; rather its organization should be thoroughly multi-scalar and trans-jurisdictional. Provision must there be made, perhaps following the lead of the MA sub-global assessments, for nested, decentralized, largely autonomous sub-global networks, activities, and assessments focussed on the need of specific actors in specific decision-making contexts.’ (Görg et al 2007:8)

The ‘network of networks’ did not exclude an intergovernmental dimension to an IMoSEB, but suggested a more polycentric and bottom-up approach. Much emphasis was placed on the need to have a multi-stakeholder mechanism in order to ensure dialogue, exchange, and facilitate the inclusion of different types of knowledges and expertise. What was needed was a knowledge-policy platform rather than a science-policy platform:

> ‘(…) biodiversity governance needs to be able to bring the full range of knowledge and expertise available, including not only the best scientific information but also a wide range of pragmatic knowledge and expertise held by resource managers, local communities, social movements, the private sector, and indigenous people. The Leipzig workshop calls for a Knowledge Policy interface that would go well beyond what has become the traditional top down model of international scientific assessment as represented by the Intergovernmental Panel on Climate Change (IPCC).’ (Görg et al 2007:8)

The perspective of a network of networks can therefore also be read as an attempt to move beyond a representation of the science-policy interface as in the linear model of expertise, acknowledging that knowledge does not directly turn into policy and that there is no such thing as ‘speaking truth to power’(Wildavsky 1979). This is perhaps unsurprising as, as mentioned above, some STS scholars participated in the workshop and one can interpret this as an attempt to make STS insights on science-policy relations circulate from academia towards the 'science-policy' world. In this respect, it is worth noting that a research project (Nested Network)[49] whose purpose was to develop ideas for the conduct of global environmental assessments, and in particular to contribute to the discussions on IPBES and on how to reform the IPCC, was developed later by the STS scholars involved in the 2006 workshop, notably by Silke Beck. Another workshop called 'Nested Networks' was convened, in Leipzig in May 2011, which also gathered a multidisciplinary group of scholars with expertise on GEAs. One of the outcomes of this workshop was the publication of a short piece called 'Science-policy Interface: beyond assessments' which explicitly recommended that IPBES encompasses a broad range of knowledges, work at multiple scales and include a diverse set of stakeholders (Hulme et al. 2011).

While this development happened after the end of the IMoSEB process, it is also worth emphasizing that this perspective was more particularly rooted and promoted in Europe (with the UFZ Centre in Leipzig acting as a node – the first workshop gathered mostly European scholars, the second was more international). The European consultation of the IMoSEB process (Geneva, April 2007) also concluded that a 'network of networks' was the preferred option for a new organization. This perspective which emerged over the course of the IMoSEB can now also be seen in the recent development of a 'Network of Knowledge to support decision-making on biodiversity and ecosystem services in Europe' developed in the context of a research project funded by the European Union. While not explicitly called a network of networks, this network of knowledge is highly inspired from this concept and shares similar principles (BiodiversityKnowledge 2014; Carmen et al. 2015). The idea was also supported by members of the European Platform for Biodiversity Research and Strategy (EPBRS)[50].

[49] https://www.ufz.de/index.php?en=19865 (last accessed December 2nd, 2015)

[50] In particular the background documents presented at the 2011 Nested Network workshop included a discussion paper called 'Concept Note: Network of knowledge for biodiversity governance' (2009) written by members of the EPBRS.

5.3.3. A wiki for biodiversity

This third perspective on a design for IPBES was in particular promoted during the regional consultation in Africa. In contrast to the idea of an IPCC for biodiversity, other participants viewed biodiversity issues as predominantly local and emphasized the lack of capacities and concrete implementation of relevant policies on the ground:

> 'A global mechanism is great in terms of visibility, you can take Angelina Jolie or Di Caprio, and raise awareness, or have educational discourses…but in my view if you really want to act and address biodiversity issues you need to start locally. Recommendations emanating from an intergovernmental organization will never be prescriptive anyway…so 'the global', as I see it, is not the most relevant scale of action. There are already tons of environmental reports…' (I11, own translation)

Problems associated with biodiversity could sometimes stem from a lack of scientific knowledge but mostly the main issue was that existing knowledge was not made accessible and, or when accessible, not translated into concrete action at the local level. From this perspective, while the global dimension of biodiversity issues was not denied, what mattered was to act locally. The lack of resources and capacities to ensure knowledge-transfer was then perceived by these advocates as particularly important: building the capacity to enact local action was seen as more necessary than the scientific knowledge.

A 'wiki for biodiversity' conveyed the idea of an IMoSEB that would not be too bureaucratic in order to ensure quick responses, it would be flexible and decentralized. An intergovernmental component here was not perceived as necessary, but rather as a potential burden as it would slow-down processes, add bureaucratic layers, and complicate action:

> 'We need to act regionally…this was made really visible during the [IMoSEB] consultation in Africa. Many participants emphasized that what was needed was to facilitate access to information, a bit like in social networks…a Facebook for biodiversity for example. There are many free programs that can be used to do this and develop collaborative, cooperative platforms…it can be cheap, all you

> need then is people willing to participate and share information. For example there are lots of invasive species in Africa, with a social network you can discuss this topic specifically and start locally, for example gathering information on a particular species in a specific area.' (I11, own translation)

In this view, the 'local' was seen as the relevant scale of action and an effective mechanism should be kept small and functional. In contrast to the two other perspectives, the 'wiki for biodiversity' was a more marginal perspective, but I have chosen to include it here for two reasons. First, it suggests that for some actors 'biodiversity issues' were predominantly local and there was no need to have an intergovernmental organization. Secondly, promoters of this perspective developed it further and it gave birth to an initiative called Afribes which now exists alongside IPBES (Box 5.2). Afribes is now registered as an observer to IPBES.

Box 5.2 Afribes: 'Towards a social network of scientific and technical information for Africa'

Following the African regional consultation of IMoSEB in Yaounde (March 2007), two members of the IMoSEB Secretariat became convinced of the need to develop a flexible tool to render biodiversity knowledge more accessible in this particular region. This is how the idea of Afribes, which describes itself as 'A social network of scientific and technical information for Africa' first emerged.

This pilot project aims at :

(1) Developing a spirit of information sharing,
(2) Creating synergies between holders of traditional knowledge and scientists, and
(3) Promoting South-South and North-South cooperation' (See: SPIRAL Brief 2014:1)

More specifically the Afribes project takes the form of an online platform (www.afribes.net), based uniquely on open software, in which individuals can create their own profile. Once registered their profile is linked to a map showing their location and expertise. The underlying idea is, as mentioned above, to have a very flexible mechanism that does not depend on bureaucratic processes and can quickly help users to locate and find the information they need.

5.3.4. Scepticism towards a new organization

Throughout the consultative process, there were some voices sceptical of the need for an IMoSEB for, at least, three reasons. First, a set of reasons advanced by those opposing an IMoSEB consisted in claiming that threats to biodiversity were not related to a lack of scientific knowledge. In other words, what is happening with biodiversity is already known and more scientific knowledge will not be the solution. Rather, these actors emphasized that there was a lack of concrete implementation of existing agreements; that is, there was an 'implementation' gap and not a 'knowledge' gap. For this reason, it was better not to duplicate efforts and to focus on implementing existing agreements and regulations.

A second set of partially related reasons was the lack of resources available to create a new organization. In this respect, at the inception of the IMoSEB process, other major organizations in the field of global biodiversity governance, such as the CBD and the IUCN, were quite resistant to the establishment of a new organization since it would imply having to compete with other organizations for funding and for leadership. As mentioned above, these resistances were known to the French government at the time and also explain why the IMoSEB was officially described as a consultative, and not a negotiation, process. In particular, the way in which IPBES would fit in the institutional landscape of biodiversity governance was controversial. Since the CBD was already assisted by a scientific and technical body (the SBSTTA), there was a debate as to whether it would be better to reinforce and improve the effectiveness of this body as opposed to creating a new one. Furthermore, many biodiversity-related conventions (e.g. CITES, Ramsar) already had their own scientific advisory body or did not think a new one was needed. Of particular importance for the advocates of an IPBES was the observation that the SBSTTA was serving as a 'pre-negotiations chamber' for the Conference of the Parties of the CBD and that it was not perceived as scientifically independent (Koetz et al. 2008).

Finally, another set of reasons was more specifically related to the design of the consultative process itself. Some critics suggested that the leaders of the consultation too often already assumed that an IMoSEB was needed. As the IMoSEB had a French origin many countries were wondering what was behind this French initiative (whether there was a 'hidden agenda'):

> 'Initially, because France had been at the forefront of promoting IMoSEB, it attracted jealously, it attracted... some countries, just because France was leading, they were not interested... So when the idea came, we said ok, we need

> to transform ourselves... because the idea is good but some people are now feeling that this is just a French process, if we take off that tag and make it a process that is universal, then it will be acceptable. And that was the biggest change that we made, when we changed from IMoSEB to IPBES.' (I 33)

Moreover, the IMoSEB was also sometimes perceived as a consultation led by scientists and oriented towards scientists (as outlined in section 5.2 the idea of an IMoSEB was mostly presented in international scientific conferences). In this respect, it was perceived as being a dialogue among scientists about how to improve the science-policy interface for biodiversity, but without including representatives of the 'policy world':

> 'Obviously if you do regional consultations with scientists asking them whether we need more knowledge on biodiversity everyone is going to agree. If governments are not included in the process there is no added value whatsoever.' (I4)

Several critics of IMoSEB underlined that to be credible such a consultation should have involved representatives of governments more actively.

By the end of the IMOSEB process, in November 2007, there was no consensus regarding whether a new organization was needed. And, if so, about the form it should take. Two major options were competing at this stage (as mentioned above the 'wiki' was a more marginal perspective): the idea of an organization akin to the IPCC and a network of networks (Babin et al. 2008). For this reason, the end of the consultative process was chaotic; according to some 'it was a mess' (I33). While the MA Follow-up group was trying to advocate for a second global biodiversity assessment, according to a member of UNEP it was also 'losing its focus and track' (I34). As the next section explains, the year 2007-2008, which saw the merging of these two initiatives was decisive for the birth of a future IPBES as it allowed discussions over the establishment of a new organization to continue.

5.4. Placing IPBES in an intergovernmental context

5.4.1. The transition towards an intergovernmental context

While both the IMoSEB process and the MA Follow-up gathered participants interested in thinking about the future of biodiversity science and policy, these two initiatives were developing largely independently, almost as two sub-worlds. Few people were involved in both of them:

> 'They were, very largely, independent communities. So there was the MA Follow-up process, which had some basis in the UN system, it was helped by UNEP, the MA process itself, the board had been in very close collaboration with UNESCO and UNDP, so the MA follow-up was very much housed in UNEP, and had a whole series of things going on, the sub global assessment activity, the capacity building work (which UNDP was the greatest stakeholder in but which didn't quite take off), a whole series of communications going on…' (I 34)

Different perceptions existed regarding what were the main substantial differences between the two initiatives. For some, these two processes gathered networks of professionals operating with different norms, with the IMoSEB process being much more oriented towards 'biodiversity' and the MA follow-up much more about 'ecosystem services':

> 'In the MA they were really all about ecosystem services while in the IMoSEB they were much more about the intrinsic value of biodiversity…' (I8, own translation)

In this respect, it is worth noting that Robert Watson was strong advocate for the adoption of the ecosystem services approach, that he perceived as being the only one that could convince policy-makers to take action (Watson 2005)[51]. However, in contrast a participant in IMoSEB emphasized:

[51] In a paper called "Turning science into policy: challenges and experience from the science-policy interface" Robert Watson emphasized: 'We have to link the conservation and sustainable use of biodiversity to the development issues that policy-makers and the majority of the general public care

> '[Some participants in the MA] thought that IMoSEB was only about species, like pandas and birds, and not about ecosystem services at all. But that was wrong, if you look at the framing of the IMoSEB process, you see that we were approaching 'biodiversity' in a very open and broad way, with a link with poverty and development as well.' (I11, own translation)

Although different perceptions existed as to the main differences between these two processes, some experts thought that instead of evolving separately and being competitors, they ought to merge:

> 'We [participants in the MA and IMoSEB] all understood we had reached the stage where we needed a common front.'(I 33)

As emphasized above, the IMoSEB process was having difficulties providing clear recommendations; similarly there was also a feeling that the MA Follow-up was losing its momentum. The small of number of experts (all of whom were closely associated with DIVERSITAS) who were involved in both processes participated in building an 'alliance' between them. This mediation was also achieved through actors who were operating outside both of these networks. In particular, an expert mandated by the French government, who had not been either in the MA nor in IMoSEB, contributed to this junction and convened a meeting with representatives of both networks[52]:

> 'We needed to merge these two to move forward: without merging them there is no possible coalition. Here it was, very manifestly, a case of bringing networks together; we needed to build an intellectual coalition between them so that these transnational networks could work together…that was the condition. (…) It was a case of politics between scientific networks. (…) I convened an informal meeting gathering representatives of the two communities saying that we need to agree on

about. This can be done by linking ecosystem services, i.e. the provisioning, regulating, supporting and cultural services to key development issues.'(Watson 2005:471)

52 The same interviewee reflected on her role: 'The role I had (…) it is about this type of person who doesn't fit into any box and who plays a role of intellectual leadership. I did not have any particular interest in this story, it is just that intellectually I did not see why these two processes were not working together. Moreover, I did not want to be the president of this new body so it made my life much easier. I did not have any agenda…maybe it would have been more effective if I had one. I did not have any particular interest in taking the lead but it helps a lot as well to be a mediator acting with a global perspective without any personal agenda, it gives a lot of freedom'. (I11, own translation).

> something otherwise we won't find any solution. No governments wanted to fight for the MA, but at some point you need some political authority in order for scientists to be able to speak. So my idea was to merge both processes…This, by the way, can be read in the title of IPBES: 'biodiversity' and 'ecosystem services'. I had involved people from UNEP and from IUCN as well, and we decided that we needed to start a new process of institutionalization to be accepted by the CBD and by the UNEP governing body…Plus we needed real political negotiations, with governments involved.' (I8, own translation)

The 'successful' construction of this coalition can be read in the outcome of the IMoSEB process. Their final declaration officially recognized the work of the MA Follow-up and recommended that UNEP take the lead on the next steps and convene an intergovernmental and multi-stakeholder meeting to further explore the need for an IMoSEB:

> '[We invite] the Executive Director of UNEP, in collaboration with the Government of France and other governments, the CBD, and the partners of the IMOSEB consultation process, to convene an intergovernmental meeting with relevant governmental and non-governmental organisations, including the relevant MEAs, academic institutions and civil society (including local communities and indigenous people) to consider establishing an efficient international science-policy interface (…) with the following characteristics (IMoSEB 2007:10):
>
> - Be flexible, be intergovernmental but also include non-governmental stakeholders, and build upon existing network of scientists and knowledge-holders,
> - In collaboration and as a follow up of the Millennium Ecosystem Assessment, consider the need, scope and requirements for assessments of biodiversity and ecosystem changes at the global level,
> - Ensure the interaction with other relevant assessment processes,
> - Has monitoring procedures for measuring its effectiveness, used from the outset for programme evaluation, development and continuation.'

This agreement could be interpreted as a ‘smart deal’. It allowed the IMoSEB process to conclude while providing an opportunity for the MA Follow-up to continue while attributing a key role to UNEP, which at the time had already the idea of an environmental panel of its own. In March 2008, a common meeting was organized ‘IMoSEB-MA Follow up: Strengthening the Intergovernmental Science-Policy Interface on Biodiversity and Ecosystem Services’(UNEP 2008a:2). This merging was then a crucial moment for the evolution of IPBES. The role of the experts who contributed to it has to be underlined, since their perspective was key in allowing discussions over a new organization in an intergovernmental context. However, further to this agreement, several years of intergovernmental negotiations were necessary before IPBES was formally established and until 2012 there remained uncertainties as to whether this would in fact happen (Granjou et al. 2013; Vadrot 2014). I briefly summarize these next steps in the section below.

5.4.2. Intergovernmental negotiations (2008-2010)

Under the leadership of UNEP a new negotiation phase started. UNEP is an intergovernmental organization and State delegations therefore became the actors at the core of the process while scientists and other knowledge-holders, unless they were included in these delegations, as is sometimes the case, became ‘stakeholders’ (to use the term of the United Nations). Three intergovernmental and multi-stakeholders meetings were then organized under the auspices of UNEP in November 2008 (Putrajaya, Malaysia), October 2009 (Nairobi, Kenya) and June 2010 (Busan, South Korea) (see Table 5.1 above). As summarized by a representative of UNEP:

> ‘The first of those meetings wanted to find out more, to do a gap analysis for the process going forward. The second meeting looked at the gap analysis[53] and thought there probably was a need for some body. The third meeting in Busan

[53] Following the meeting in Putrajaya, a gap analysis aimed at answering the questions ‘What are the organizations operating at the science-policy interface for biodiversity? And, is there a need for a new organization?’ was requested by delegations. This gap analysis was carried out by UNEP-WCMC and concluded there was room for a new organization. When asked about this document interviewees had different perspectives on it: some saw the gap analysis as convincing in terms of content while others saw it more as an instrument for a potential IPBES to gain legitimacy in front of delegations and as a way to gain time and to allow the discussions to continue.

> was the only time they agreed to establish the process going forward, and there was no clear outcome, but a lot of people thought that therefore it was established, and some people thought it would be at some point in the future... and then there was the whole issue of the General Assembly, and it went to the General Assembly which took note of the outcome, and it came to UNEP governing council a couple of times. There was a lot of confusion around the establishment of IPBES to the point that in the Nairobi meeting, the General Assembly asked UNEP to convene a plenary meeting to determine the modalities and institutional arrangements for the platform, many people assumed that therefore it must have been established, many others considered it had not been established, so lots of confusion.' (I34)

This negotiation process was challenging in many ways and until the formal establishment of IPBES many felt that the outcomes of the process were uncertain. Capacity-building was a key issue especially for developing countries, in particular Brazil, who insisted that such a dimension ought to be central to the negotiation process if a new institution was to be established. In 2010, delegations officially adopted the 'Busan outcome' and agreed on joint principles to guide the development of a new platform whose role would be not to focus solely on providing assessments but would also explicitly have a capacity-building function.

The Busan Outcome mentioned in particular that an IPBES should have four functions including: (1) 'identify and prioritize key scientific information needed for policymakers at appropriate scales and to catalyse efforts to generate new knowledge'; (2) 'perform regular and timely assessments'; (3) 'support policy formulation by identifying policy-relevant tools and methodologies'; (4) 'prioritize key capacity-building needs to improve the science-policy interface at appropriate levels'(UNEP 2010:3). In this respect, it is worth noting that IPBES was given a very broad mandate, which contrasts markedly with the IPCC's. Moreover, the Busan Outcome also underlined that IPBES would not be a 'science platform' but a 'knowledge platform' that would 'Recognize and respect the contribution of indigenous and local knowledge to the conservation and sustainable use of biodiversity and ecosystems' and 'Take an inter- and multi-disciplinary approach that incorporates all relevant disciplines including social and natural sciences'. It would also

'Recognize the unique biodiversity and scientific knowledge thereof within and among different regions and also recognize the need for full and effective participation of developing countries as well as balanced regional representation and participation in its structure and work' (UNEP 2010:5).

However, further to these three meetings, two other conferences were necessary to operationalize IPBES and discuss institutional arrangements. These were held respectively in October 2011 (Nairobi, Kenya) and April 2012 (Panama, Panama), at the end of which Robert Watson, who had been chairing most of these conferences, claimed 'Today, biodiversity won'. The first official meeting of IPBES took place in Bonn, January 2013. In both the MA Follow-up and during the IMOSEB process, despite the difference of sensibilities regarding the form that a new organization could take, there was a consensus that any new organization should have a multi-stakeholder component. However, with the transition to an intergovernmental context, many ambiguities arose on this topic.

5.4.3. Intergovernmental and multi-stakeholder?

As mentioned above, in 2008, discussions over the establishment and operationalization of IPBES continued following the ritualised procedures of the United Nations. Delegations now became centre stage. However, new civil society actors also joined the process. While both the MA and IMoSEB predominantly involved networks of scientists, under the scope of UNEP some of the major groups[54] recognized by the United Nations became more involved, as observers in the process.

> 'And then some new people turned up, some of the scientific institutions who had been frustrated by the IMoSEB process and wanted a new opportunity, the Society for Conservation Biology and others turned up, and then some of the UNEP stakeholders who hadn't been involved in either IMoSEB or MA follow-up became involved as well. So the stakeholder base broadened over that 3 year period.' (I34)

[54] Major groups in the UN include Business & Industry ; Farmers ; Children & Youth ; Indigenous Peoples ; Local Authorities ; Non-governmental Organizations, Scientific and Technological Community ; Women ; Workers and Trade Unions. These groups have been formalized in 1992 as a recognition that 'achieving sustainable development would require the active participation of all sectors of society' (*Source*: https://sustainabledevelopment.un.org/aboutmajorgroups.html, last accessed December 2nd, 2015).

In particular, representatives of indigenous and local people (e.g. Tebtebba), building on their success in the CBD and in other UN fora, started advocating the recognition of IPBES as a multi-knowledge platform and strongly emphasized the need to recognize other knowledge-systems. Although both the IMoSEB process and the MA Follow-up were 'science-driven', it is worth underlining that participants also generally emphasized the need to consider 'traditional and indigenous knowledge' (as mentioned in the final declaration of IMoSEB).

However, with the adoption of intergovernmental processes, clearly demarcating State actors from others, numerous doubts also arose regarding the form that the participation of non-state actors should take:

> 'The process definitely became political in 2008 (…) as soon as UNEP convened intergovernmental and multi-stakeholder meetings it became a political process, it transformed overnight. (…) The first three meetings were intergovernmental and multi-stakeholder, and they were that because there was recognition that both the MA Follow-up and the IMoSEB were heavily stakeholder promoted, dependent on stakeholders, neither of them were intergovernmental processes at all. But in some ways, with the intergovernmental and stakeholder meetings, it was somewhat semantics, because the second UNEP convenes a meeting, and it does so at an intergovernmental meeting, there is a whole bunch of procedures (…). It was an intergovernmental meeting from day one.' (I34)

So while efforts were made to ensure that there was good access for non-State actors in these meetings, many ambiguities remained regarding the ways in which they should be included in IPBES[55]. Among delegations different views existed, and continue to exist, regarding the ways in which stakeholders should relate to IPBES:

> 'There were concerns from China, Iran, some of the Latin American countries about the stakeholder involvement. It became clear over those 3 years that the process was going to be going forward after 2010 from Busan onward as an intergovernmental process, despite the efforts of many to persuade the governments that it should have a broader stakeholder base - it fell on

[55] See also chapter 8 for controversies over who should be able to nominate experts.

> traditional deaf ear. And to this day there are big problems with that in IPBES, for example, the nomination of experts, four-fifths of those have to be nominated by governments and only 20% by other stakeholders. It just makes no sense. This legacy of governments wanting to control, the concern from some governments about stakeholder involvement continues to this day, it continues to be a challenge'. (I34)

Consistent with this observation, during the first two IPBES plenaries in 2013 and 2014, discussions over the establishment of a 'stakeholder engagement strategy' were on the agenda but were finally postponed until IPBES-3 (Bonn, January 2015).

5.5. Discussion and conclusions

Before it was formally established as an intergovernmental institution, the idea of an IPBES was contested and imagined in multiple ways. In particular in the course of the IMoSEB process, diverse ideas were expressed regarding what a potential IPBES could, or should, look like (see Table 5.2 in section 5.3). They differed in several aspects and suggest that there was no consensus about the form that a new organization should take nor about the scale at which it should act (predominantly at a global scale *vs.* local). Different ways of framing biodiversity issues justified different ways of organizing science-policy relations, while attributing different roles to knowledge and biodiversity sciences. In this respect, these diverse ways of imagining IPBES (see Table 5.2) were also underpinned by different socio-technical imaginaries (Jasanoff & Kim 2013). They were three different forms of co-production and ways of making sense of science-policy relations. The 'IPCC for biodiversity' can be situated predominantly within the natural sciences and reflects a very linear conception of science-policy relations, whereas the 'network of networks' appears more situated within the political and social sciences and reflects a more interactional conception of these relations, being influenced by ideas about polycentrism. While legitimating different knowledge-practices, they also gave a more prominent role to some actors and institutions than to others. For example, an 'IPCC for biodiversity' put much more emphasis on the role of ecology and global change research programmes, such as DIVERSITAS (now part of Future Earth), whereas in a 'network of networks' there was much more room for diverse forms of knowledges and in the 'wiki' less emphasis was placed on the need to develop 'global biodiversity knowledge'. Moreover, an 'IPCC for biodiversity' legitimated the mobilization of intergovernmental organizations (e.g. UNEP) and governments, whereas in the 'wiki' the presence of intergovernmental organizations was perceived as less necessary. In the idea of a 'network of networks', the participation of diverse actors and institutions was perceived as essential: while recognizing the need to have governments on board, this perspective also required the mobilization of multiple actors from civil society.

Being officially established in 2012, IPBES has its roots in two multi-stakeholder scientific initiatives, IMoSEB and the MA Follow-up, whose merging has been instrumental in allowing the transition towards intergovernmental negotiations. Some experts operating within and outside the IMoSEB and the MA Follow-up had a key role in this junction. Reflecting on what allowed a particular perspective to dominate is also useful: in particular the experts who contributed to the merging of the MA and IMoSEB, and drafted the conclusion of the IMoSEB consultation, were convinced that an intergovernmental component was necessary. These experts have therefore been instrumental in enabling discussions over IPBES to be pursued in an intergovernmental context. However, several additional years of negotiations were necessary before IPBES could be formally established. In contrast to IMoSEB and to the MA Follow-up, during these years delegations acquired a prominent role and in intergovernmental settings scientists and other stakeholders became 'observers'. This means that the switch to an intergovernmental context affected whose voices were rendered authoritative and how.

Moreover, it is worth highlighting that when comparing the diverse IPBESes that were once imagined (Table 5.2) to the functions and principles that IPBES finally adopted almost nothing was excluded. Although IPBES is clearly 'intergovernmental' and not a 'wiki', in terms of functions delegates agreed that the work of IPBES should be conducted at multiple scales, that a multi-stakeholder component should be established (although numerous difficulties arose later on how such a component should be developed) and that various forms of knowledges should be included. For this reason, while in the beginning IPBES faced numerous resistances, it can also be argued that by agreeing to ‘do everything’, these resistances were overcome. IPBES was established as an inclusive knowledge-policy Platform with a mandate broader than any previous GEA.

During IPBES-1 (Bonn, January 2013), most of the work conducted by national delegations consisted in agreeing upon consensually agreed document, in particular the rules of procedures to regulate the functioning of IPBES. In this respect, while IPBES was established with a mandate very different than to that of the IPCC, in terms of procedures the IPCC, being the most similar organization, also became an important source of inspiration and a template for IPBES. While IPBES explicitly recognized the necessity to include various forms of expertise, numerous ambiguities also remained regarding how to achieve this in practice. New areas of contestation arose, not only regarding the form that the participation of non-states actors should take, but also regarding the particular institutional arrangements that IPBES should adopt such as, for example, the particular processes to nominate experts (Chapter 8) and the development of a common conceptual framework to guide the work of IPBES (Chapter 7). Before analysing these processes, in the next chapter I draw attention to another process which is also revelatory of the difficulty for IPBES in ‘opening-up’ by reflecting on the geographical location of the IPBES Secretariat in Bonn (Germany).

Chapter 6 – Co-producing IPBES, Bonn and biodiversity knowledge

6.1 Introduction

Global science-policy organizations such as IPBES or the IPCC have complex geographies, bringing together heterogeneous networks of actors and institutions; they seem to be simultaneously nowhere and everywhere. Their 'global' credibility depends on their ability to be perceived as relevant and legitimate across a whole range of socio-cultural settings while not being perceived as owned specifically by one country or region. Rather, to be truly global they should be perceived as simultaneously owned equally by everyone. Yet, organizations such as IPBES are made in particular places and spaces. IPBES plenary meetings are one of the types of events during which many of the actors participating in the organization come together in a single place and, in these local settings, negotiate and contribute to the constitution of what then counts as 'global' biodiversity knowledge and policy. In this respect, the 'local' and 'global' categories are always mutually co-produced and their demarcation is not given in advance (Jasanoff & Martello 2004). In contrast to conferences, which are ephemeral events, the IPBES Secretariat, which is hosted in Bonn, is the only place where the organization materializes itself locally, in a permanent manner. However, the location of this permanent anchor is generally depicted as irrelevant because in theory Secretariats of GEAs are powerless units[56] whose location does not matter as long as the host country does not interfere directly with it and adopts a neutral position.

Yet, there is generally an important politics of place surrounding the location of these units. Particularly illustrative of this is the recent controversy triggered following the announcement of the structure of the Future Earth Secretariat, a new initiative

[56] See Box 6.1 about the role of Secretariat in section 6.2.1 below.

dedicated to global environmental change research. This Secretariat adopted a distributed structure made of four 'hubs', hosted in Cyprus, Japan, the UK and Uruguay. Following this announcement, some commentators suggested that this Secretariat was 'too-Northern centric' and that 'the hubs will articulate Northern views' (SciDev 2014). Similarly, the location of the new international renewable energy agency (IRENA, established in 2009) in Abu Dhabi, capital of the United Arab Emirates situated at the core of a region whose wealth depends on petrol has caused some surprise (Van de Graaf 2012). These reactions suggest that the location of these units does matter and can potentially be an important element in establishing credibility. While it is easy to imagine the many reasons why a country would want to host an international organization – for example to improve its image and leadership in a particular area, stimulate its political and economic development – it is also striking that international organizations are actually concentrated in very few cities. With regards to United Nations (UN) organizations, these are mostly concentrated in Northern countries including the United States (New York), Switzerland (Geneva), France (Paris), Austria (Vienna) and Germany (Bonn), with only one major UN city being in a developing country: Kenya (Nairobi).

In this respect, it can be argued that hosting global organizations such as IPBES can be used by nation states, here Germany, to exert what has been increasingly referred to as a form of 'soft power'[57]. Contrasting it with the notion of 'hard power', American political scientist Joseph Nye explains:

> 'What is soft power? It is the ability to get what you want through attraction rather than coercion or payments. It arises from the attractiveness of a country's culture, political ideals or policies. (…) Seduction is always more effective than coercion and many values like democracies, human rights, and individual opportunities are deeply seductive.' (Nye 2004: Preface p. x)

[57] I am grateful to Martin Mahony for helpful discussions and for pointing to me the usefulness of this concept.

While the distinction between hard and soft power can be questioned[58], the notion is still useful to point out why a country would want to host an organization such has IPBES. Germany has reinvented itself in particular following the reunification by promoting multilateralism and by facilitating the functioning of a wide range of international and intergovernmental organizations (e.g. Duffield 1998; Baumann 2002). In this context, Bonn has become a 'hub' for the coordination of UN organizations with a particular focus on sustainable development and has become a site of politico-epistemic orchestration for world environmental politics.

In recent years, studies in STS and in the emerging geographies of science have contributed to show that knowledge-claims always emerge in local contexts and that their credibility is constructed in many different ways. For example, historical geographies of science have documented how place matters for the credibility of knowledge, and how these practices have changed over time (Shapin 1998; Livingstone 2003). Historian of science, Kohler, has contrasted different ways in which 'place' and credibility relate to each other in different disciplines. Drawing attention to the development of ecology in North America, he suggests that - unlike lab-disciplines in which credibility is gained through the erasure of place – ecologists working in the field had to find other ways to produce credible knowledge claims, develop their own standards, and invent new 'practices of place'(Kohler 2002). Of particular interest for the analysis developed here is the work by sociologist Gieryn who studied how some particular places have the ability to lend credibility to claims. Developing the notion of 'truth spot' he shows how buildings, or cities, contribute to the credibility of epistemic practices (Gieryn 2002; Gieryn 2006). Exploring the epistemic geographies of the IPCC, Mahony argued that paying attention to the localization of some particular spaces – 'boundary spaces' – was key to understanding the co-production of science-policy relations (Mahony 2013a).

[58] According to Nye: 'Hard and soft power are related because they are both aspects of the ability to achieve one's purpose by affecting the behaviour of others. (…)Soft power resources tend to be associated with the co-optive end of the spectrum of behavior, whereas hard-power resources are usually associated with command behaviour. But the relationship is imperfect. For example, sometimes countries may be attracted to others with command power by myths of invincibility, and command power may sometimes be used to establish institutions that later become regarded as legitimate.' (Nye 2004:7)

Beyond the setting of the lab, or the field, this study sets out to explore how the choice of a particular place to host IPBES was made and whether this particular location matters. While some studies have paid attention to the diverse, formal and informal roles, played by the Secretariats of global organizations (Jinnah 2010; Jinnah 2011; Jinnah 2012; Siebenhüner 2007), to date no study has explored whether their geographic location matters and, if so, how. Drawing my attention to the case of IPBES, I explore how a place which is assumed as 'not mattering' actually matters. I suggest that the location of IPBES in Bonn can be understood as a case of co-production between the 'local' and the 'global': the localization of IPBES in Bonn simultaneously contributes to the constitution of Bonn as the 'global' United Nations (UN) city of Germany and this, in turn, has effects for the production of 'global' biodiversity knowledge. I argue that the ability of Bonn to become such a place relates to its own history and to a particular political project developed in particular in post-reunification Germany. This political project can be understood as a socio-technical imaginary – that is 'collectively imagined forms of social life and social order reflected in the design of nation-specific and/or technological projects' (Jasanoff & Kim 2013:120) – and has now consequences for the ways in which both IPBES and Bonn are being mutually constituted.

The remainder of this chapter is organized as follows: section 6.2 describes the process leading to the selection of the IPBES Secretariat, section 6.3 explores the construction of Bonn as the 'UN city of Germany' and section 6.4 pays attention to the ways in which biodiversity knowledge is made from and in Bonn. Section 6.5 discusses what this means for IPBES and for the production of 'global' biodiversity knowledge and offers some concluding comments.

6.2 Selecting Bonn and imagining IPBES elsewhere

6.2.1. Selecting Bonn

The decision to host IPBES in Bonn was taken by IPBES delegations in Panama, in April 2012, during the plenary meeting which led to the official establishment of IPBES. Several host cities were in competition including:

- Bonn (Germany)
- India (no specified city)
- Nairobi (Kenya)
- Paris (France)
- Seoul (South Korea)

Within IPBES, the role of the Secretariat was depicted as purely administrative (Box 6.1) and emphasis was placed on the fact that this unit does not have any power: it should be a neutral space focused on facilitating the work of IPBES. In this respect, several interviewees emphasized that its location therefore did not really matter as long as the host country does not interfere with it. To be credible, the Secretariat should not be perceived as 'owned' by anyone. In this respect, the staff of the Secretariat is meant to represent the organization (i.e. IPBES) and not any country in particular.

However, there was also the informal agreement that if the Chair of IPBES was from a 'Global North' country, then the Secretariat had to be in the 'Global South', and vice-versa. This can be interpreted as tacitly recognizing that – although the Secretariat of IPBES is depicted as a powerless and neutral unit – its location does matter, at least at a symbolical level. Consistent with this view is the fact that when this decision was taken it was part of a political process and different types of arguments were put forward by candidates (section 6.3.2). Later on, once Bonn had been chosen, Germany also refrained from nominating experts for the diverse subsidiary bodies of IPBES (MEP and Bureau).

The choice of the place to host the IPBES was made by vote at the IPBES plenary meeting organized in Panama. In the beginning France was one of the favourites since the French government (under Chirac's second mandate) had a leading role in the origins of IPBES, in particular with the organization of the 2005 'Biodiversity: Science and Governance' and the IMoSEB process (see Chapter 5). However, there was then a change in presidency (Sarkozy being elected President in 2007) and the support for IPBES was not the same. Not all French ministries were willing to support IPBES so in financial terms the French bid was eventually less generous than the German and Korean ones. The Indian application was somewhat undermined by the fact that it did not specify any city to host IPBES and the application of Nairobi was often perceived as too closely associated with UNEP, which is hosted there. This meant that the two favourite cities were Bonn and Seoul. IPBES delegations finally selected Bonn as the place to host IPBES, although with little to choose between it and Seoul:

> 'After the first round of voting, there was no clear majority winner and India was removed from the ballot as the country receiving the fewest votes. After the second round there was still no majority, and France was removed from the ballot. Following the third round, there was no majority, and Kenya was removed from the ballot. In the fourth and final round, Germany won with 47 votes while Republic of Korea had 43. The plenary gave a round of applause to all five countries involved in the competition.' (ENB 2012, Vol. 16, n°102, p2)

Box 6.1 – Role of the IPBES Secretariat (Source: UNEP/IPBES.MI/2/9)

19. The secretariat will have the following indicative administrative functions, acting under the direction of the Plenary:

(a) Organizing meetings and providing administrative support for meetings, including the preparation of documents and reports to the Plenary and its subsidiary bodies as needed;

(b) Assisting the members of the Plenary, the Bureau and the Multidisciplinary Expert Panel to undertake their respective functions as decided by the Plenary including facilitating communication between the various stakeholders of the Platform;

(c) Facilitating communication among any working groups that might be established by the Plenary;

(d) Disseminating public information and assisting in outreach activities and in the production of relevant communication materials;

(e) Preparing the Platform's draft budget for submission to the Plenary, managing the trust fund and preparing any necessary financial reports;

(f) Assisting in the mobilization of financial resources;

(g) Assisting in the facilitation of monitoring and evaluation of the Platform's work.

20. Furthermore the secretariat may be tasked by the Plenary with undertaking technical support functions, such as providing relevant assistance to ensure that the Platform implements its work programme. Such potential functions need to be developed following discussion of the work programme and would be implemented under the direction of the Plenary.

6.2.2 Imagining IPBES elsewhere

Before the formal decision on the location of the Secretariat, each potential host country had to prepare some background information and fill in a form, prepared by UNEP (in charge of the interim Secretariat), requiring some information on different aspects including: (i) Local facilities and conditions, (ii) Features of the office site and related financial issues, (iii) Legal framework, and (iv) Other relevant information. For this reason, each of these applications was somehow standardized by the UNEP categories. An analysis of these documents[59] is, however, useful to reveal the different ways in which each of these diverse places attempted to picture themselves as perfect locations, or perhaps credible 'truth-spots', for IPBES.

To a certain extent, the five places portrayed in the bids shared some similarities. In each of them, the host country described how appropriate the city (or country in the case of India) was to host IPBES. In this respect, much emphasis was placed on the fact that all these places were well-connected to the rest of the world, could easily accommodate international conferences, and were also safe and cosmopolitan. All the candidates also insisted on their continuous efforts and commitments to biodiversity science and policy, explaining how they have supported IPBES and other international environmental agreements, while also implementing innovative biodiversity policy within their territory. However, these bids also differed in several aspects and in what follows, based on my analysis, I summarize these differences along four lines of demarcation (see Table 6.1 below):

- Presence of biodiversity in the country (bidding to host the IPBES Secretariat) *vs.* scientific knowledge on biodiversity in the country
- Ability to mediate between developed and developing countries
- Presence or absence of international and United Nations organizations in the city
- Material facilities and financial support

Biodiversity vs. Scientific knowledge on biodiversity

Both India and Kenya strongly insisted on the megadiverse nature of their territories. Their respective bids emphasized that since IPBES aims at tackling the loss of

[59] The full corpus of documents used in this chapter is available in Appendix 1.

biodiversity and the degradation of ecosystem services then it would make sense to host the IPBES Secretariat in a megadiverse country, where most biodiversity is actually located[60]. In contrast, both France and Germany strongly emphasized not their megadiverse nature, but rather the fact that they strongly support scientific research on biodiversity and have access to a wide range of experts. For example, France argued that hosting IPBES in Paris would allow fruitful connections between different research institutes and facilitate the work of IPBES.

Ability to mediate between developed and developing countries

While both Kenya and India insisted on their mega-diverse nature, emphasizing the extent of the biodiversity located within their territory, they also underlined that as developing countries they would be appropriate mediators to foster negotiations between countries of the 'Global North' and the 'Global South'. In particular, the Kenyan bid underlined that situating IPBES in Nairobi would allow IPBES to be credible to developing countries. South Korea also positioned itself as an appropriate mediator and recalled that South Korea was now a donor country and could support IPBES financially.

UN presence vs. UN absence

Another marked difference between the five applications regards the ways in which they related, or not, to the UN system. In this respect, France and Germany strongly insisted on the fact that they were international cities already hosting a wide-range of UN organizations and that IPBES would therefore be quickly immersed in a network of relevant actors and institutions that would benefit its work and facilitate synergies. The German application insisted on the fact that in Bonn these international organizations were mostly gathered on the same site, the UN Campus, where IPBES would be located. Nairobi also insisted on its proximity with UNEP and on the fact that this spatial connection would greatly benefit the work of IPBES. On the contrary, the South Korean

[60] Arguably, biodiversity is everywhere – studies about ordinary nature and urban nature are flourishing. Yet, ecological studies have also constructed categories, for example with the notion of 'hotspot', contributing to constitute 'biodiversity' (understood here in terms of species richness) as mostly concentred in tropical countries; and suggesting that mega-diverse countries are mostly in South America, Africa and Asia and that biodiversity conservation actions should be prioritized towards these regions (Myers et al. 2000; Brooks et al. 2002)

government formulated the opposite argument: precisely because there is no UN organization in the city, nor in this region, it would make sense to host IPBES there. It would stimulate biodiversity research and policy in South East Asia and be a sign of recognition for South Korea – which has contributed to the formalization of one of the IPBES funding documents (the 'Busan Outcome') by convening an intergovernmental conference in June 2010.

Material facilities and financial support

Finally, a fourth line of demarcation between the five candidates relates to the specific material facilities and financial support that would be given to IPBES. Here it is worth underlining that India, in contrast to the other countries, did not specify a city in particular. In terms of financial support, Germany and Korea are the ones who provided the most generous bids, whereas India and Kenya did not specify what their financial contribution would be. On the day of the vote there was also a small dramaturgical event: Germany announced orally much more money than the amount written in the original offer and this took the Korean government by surprise. Korean representatives thought that this was unfair and asked for the vote to be made a second time, which happened, but the result remained unchanged.

Summary

The analysis of the five bids suggests, although sharing some similarities, different ways in which credibility was constructed. In contrast to megadiverse countries which emphasized that locating IPBES in their territory would make sense for this reason, France and Germany both emphasized the wide-range of scientific expertise on biodiversity available in their territory. Moreover, both also insisted on their central positions, suggesting that they were *already* international cities hosting a wide range of UN organizations. In contrast, Seoul underlined that precisely because it is not a UN city yet, then it would make sense to host IPBES there. Nevertheless, Bonn, the former capital of Western Germany, and now constituted as the 'UN city of Germany' finally won the bid.

Table 6.1 Comparative view of the five candidates willing to host IPBES **(continued on the next page)**

	Bonn (Germany)	India	Nairobi (Kenya)	Paris (France)	Seoul (South Korea)
Biodiversity vs. Scientific knowledge on biodiversity	'With over 100 research establishments, Germany has for many years made a key contribution to the study of biodiversity and its sustainable use. It was also one of the initiators and co-financers of the Economics of Ecosystems and Biodiversity (TEEB) study. This has created an important instrument and a vast network of experts, which will play a key role in IPBES's work'	'The interest [of India in hosting IPBES] is based on the megadiverse nature of the country, availability of enormous intellectual, technical, legal and policy expertise relating to biodiversity, the leadership role India has played in developing pro-active natural, regional and international policy on biodiversity, its ability to link science based policy making in the country, and support to other developing countries'	'Kenya is a mega biodiversity rich country with a wide variety of species of flora, fauna and microbes. (…) Biodiversity is the main foundation for social and economic development in the country. It is the basis for Kenya's tourism sector as well as being a source of food, energy, medicinal herbs and timber products. (…).'	'Nearly 4300 scientists have been identified, mainly in life sciences but also within engineering and social sciences. If nearly 30% are located in the Paris area, their fields of study in France and around the world are very diverse. They work mostly on terrestrial systems (80%), whether agricultural, forest or urban'	'Since Seoul is home to a majority of research institutes, universities, industries, governmental organizations, and non-governmental organizations in Korea and is a center of scientific research on biodiversity and ecosystems in Korea, it will be able to provide necessary support for the current and future work of IPBES.
Ability to mediate between developed and developing countries		'As an important global player, India has good diplomatic relations with all the countries in the world, many of who have their full-fledged representation in India. India has always maintained a friendly and equitable relationship with countries in the world and is seen as a level-player in diplomatic relationship and issues. This strength of India is the biggest positive for its pitch to host the IPBES Secretariat'	'[Hosting IPBES in Nairobi] will also demonstrate the confidence and support of the international community for developing countries to play key role in international environmental governance within the framework of sustainable development.'		'Korea's unique role on the international stage of finding common ground between developed and developing countries will also be highly beneficial for the fulfilment of IPBES objectives. (…). Korea was in a favourable position to facilitate international cooperation between developed and developing countries at major global forums on development aid since Korea has transformed itself from a recipient to a donor country.'

	Bonn (Germany)	India	Nairobi (Kenya)	Paris (France)	Seoul (South Korea)
Presence/absence of United Nations organizations	'The former German capital and now a UN city, Bonn is an ideal local for IPBES. Eighteen UN organisations working in the field of environmental protection, climate change and nature conservation are currently based in Bonn, the vast majority of them on the UN campus on the Rhine in what was formerly the government district. Ministries and other government agencies, as well as 150 international and internationally operating organisations and NGOs working predominantly in biodiversity conservation and development cooperation are also based in Bonn.'		'Locating IPBES Secretariat in Nairobi would provide with an opportunity to benefit from expertise as well as that of many biodiversity related UN agencies with a strong presence in Nairobi.' 'The 'green city in the sun', is a cosmopolitan city which gathers numerous international organizations such as UNEP, which has been leading the negotiations leading to the establishment of IPBES.'	'Paris has the 2nd highest concentration in the world of headquarters and secretariats of international organizations, with 1919 locations, behind Brussels and before Washington, London and New York'	'The Korean government is convinced that Seoul, the capital of the Republic of Korea that is turning itself into an international hub of biodiversity researches and activities, is an ideal place to achieve the goals of IPBES. In addition, given that no United Nations environmental or biodiversity-related organizations are located in Asia, establishing IPBES Secretariat in Seoul will greatly promote biodiversity research and policy development in the region, thereby contributing to mainstreaming of biodiversity and ecosystem service issues in the international science and policy arenas.'
Material facilities and financial support	On the UN campus near the Rhine river, close to numerous actors operating in the field of environmental governance 1million € as annual contribution	The application does not specify a city in particular but states that 'India has infrastructural facilities' Financial contribution not specified but subsidies for conference facilities and general service staff	Next to the UNEP building 'The decision on financial support will be made once the plenary has taken its decision'	500sq. meters. In the Palais de Chaillot 'facing the Eiffel Tower and at the heart of a long-standing diplomatic and scientific network, near the headquarters of UNESCO and the largest office of the UNEP outside Nairobi' 500 000$ over 3 years	600 sq. meters in the Seoul Global Center Building, Jongmo district (business district situated downtown) 3 million US dollar/year, bonus for capacity-building for developing countries

Source: Information compiled in this table comes from two UNEP information documents (UNEP/IPBES.MI/2/5 and UNEP/IPBES/2/5/Add.1) bringing together the different offers made by governments to host IPBES. These were circulated to IPBES delegations before the choice was made. No entry means that the bid did not cover this item. Both references are listed in the corpus of documents available in Appendix 1 (p276).

6.3 Making Bonn the United Nations (UN) city of Germany

Bonn is nowadays a medium-size city of about 310,000 inhabitants. In contrast to other major UN cities, such as New York or Paris, it is significantly smaller and does not have the status of a capital city anymore. The closest airport is situated in Cologne, the neighbouring city (situated 25 km away), much bigger in terms of population size. Yet, since 1996, Bonn is being constituted as the 'UN city of Germany' whose motto is 'Working towards Sustainable Development Worldwide' and the number of international organizations based in the city has kept on increasing since the early 1990s (Table 6.1). In what follows, I argue that the location of IPBES in Bonn is better understood when placed in the broader context of the particular historical events that have animated Germany, and Europe, since the end of WWII. A particular socio-technical project was enacted in post-reunification Germany and is not limited to, but has articulated Bonn as a key place for its implementation. This project places Germany has a leading country to address sustainable development issues at a global scale, and Bonn as one of the key places from where this task can be coordinated. In particular the website 'UN in Bonn' recalls:

> 'Bonn is Germany's centre for international co-operation and a leading sustainability cluster. The German UN City hosts 18 UN secretariats and organisations with some 1,000 employees - the Secretariat of the UNFCCC being by far the largest. With its own UN campus located directly on the most beautiful section of the banks of the Rhine in Bonn, the confederation of UN organisations is a wonderful place to work. In addition, these UN organisations benefit from the synergies and potential offered by the Bonn international cluster. Various United Nations University institutions highlight Bonn's internationally significant role as a place of study and learning for the issues of international co-operation, development, and sustainability. Bonn has played host to United Nations organisations since 1951. Since 1996, however, the number and variety of organisations has increased rapidly. Germany attaches great importance to the presence of the United Nations.' (*Source*: Website UN in Bonn[61])

[61] http://www.bonn-international.org/city-of-bonn/un-in-bonn.html , last accessed Sept. 17th 2015.

Bonn is a city with multiple meanings. While being constituted as the 'UN city of Germany', it used to be the capital of Western Germany and was once referred to, by former chancellor Helmut Kohl, as a symbol of 'conspicuous modesty'[62]. Recently it is also being increasingly performed as the 'capital of biodiversity' (see section 6.4). Before turning to the particular ways in which biodiversity knowledge is made in and from Bonn it is worth recalling the historical events that have animated Germany, and have had resonance worldwide, since the end of the second world war (WWII) (see Table 6.2). In the aftermath of WWII, Germany was separated into four occupations zones, each of them under the control of one of the Allies – including British, French, American, and Soviet authorities. Situated in the Soviet occupation zone, Berlin was also split into four different areas. With the start of the Cold War (1947), Germany got caught between the 'West' and the 'East' and separated in two distinct Republics.

Table 6.2 Landmark historical events in Germany (1945-1990)

Events	Chancellors of (West) Germany and their political party[63]
1945 - End of WWII and partition of Germany and Berlin **1947**- Start of the Cold War **1949**- Bonn becomes the capital of the Federal Republic **1961**- Construction of the Berlin Wall **1989** - Fall of the Berlin Wall **1990** - Reunification of Germany	Adenauer (1949-1963), CDU Erhard (1963-1966), CDU Kiesinger(1966-1969), CDU Brandt (1969-1974), SPD Schmidt (1974-1982), SPD Kohl (1982-1998), CDU Schröder (1998-2005), SPD Merkel (2005-now), CDU

The Federal Republic of Germany, also known as the 'Bonn Republic' was formed in 1949 and adopted Bonn as its capital city. Before Bonn was chosen, several cities including Stuttgart, Kassel, Frankfurt and Bonn were in competition and parliamentary debates were organized around this question. Stuttgart and Kassel were rapidly dismissed, the first one was perceived as in poor condition financially, while the second was perhaps perceived as being too close to the Soviet Union. Several reasons have been advanced by historians to explain why Bonn was chosen: first the fact that it was

[62] Helmut Kohl publicly used this expression in a speech given in July 1999. See for example: http://www.washingtonpost.com/archive/politics/1999/07/02/germans-leave-bonn-behind/5f4a7dac-067f-487b-b860-cc87538e2070/ (last accessed January 12th, 2016).

[63] CDU: Christian Democratic Union of Germany (liberal conservative) ; SPD: Social Democratic Party of Germany

in the British occupation zone and that the British government strongly supported this option and second, the fact that Chancellor Adenauer was from Cologne and very attached to his native region. Third, at that time the move of the government to Bonn was meant to be provisory, and since Bonn was small many thought that it would be easier to move back to Berlin later – as opposed to Frankfurt which was a much bigger city, being already a financial centre, and potentially a real competitor for Berlin (Uelzmann 2011; Barnstone 2014). It has been argued that precisely because it was perceived as a quiet provincial town without much financial and political power, Bonn was chosen:

> 'Bonn was picked as an urban zero, a small Catholic university town where no mob would ever gather, a stone's throw away from Adenauer's base in Cologne. The intention was to isolate politics in a bureaucratic capsule from the influence of any popular life. It succeeded all too well.' (Anderson 2011)

The construction of the Berlin wall (1961) soon contradicted hopes of a quick reunification and Bonn served as the capital city of the Federal Republic, being then nicknamed the 'capital village', for more than 40 years (1949-1990). It is in this context that Bonn, which during this time became also full of consulates and embassies, captured the imagination of English writer John Le Carré who published a spy novel (*A Small town in Germany*, 1968) in which referring to Bonn he wrote:

> 'It's just a small town in Germany. You can no more slice it up than you can the Rhine. It plods along, whatever the song says. And the mist drains away the colours.' (Le Carré, 1968:121)

Following the fall of the Berlin wall (1989) and, soon after, the reunification of Germany (1990), arguments arose among German officials regarding whether the Ministries and Parliament should move back to Berlin. These debates opposed those who had become attached to Bonn as the capital city and, for different reasons, had come to like and appreciate this place, and those who supported Berlin and believed that such a move was necessary as it would symbolize the reconciliation of the country. A parliamentary vote settled this question and, with very little difference between the two camps (337 vs. 320), it was officially decided that the government and Parliament ought to move back to Berlin (Cowell 2011; Anderson 2011)[64]. This transfer was delayed for several years and took place gradually. Even today several federal ministries, including the Ministry for the Environment, Nature Conservation and Nuclear Safety, the Ministry of Education and Research, the Ministry for Economic Cooperation and Development and the Ministry of Food, Agriculture and Consumer Protection, still have offices in Bonn, and several countries still have their embassies in the city.

Some defenders of Bonn were worried that should the government move back to Berlin Bonn would then be marginalized and disappear from the map. But this did not happen and both academic literature (e.g. Laporte 2011) and newspaper reports often emphasize the 'success story' of Bonn following Germany's reunification[65]:

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[64]As the historian Perry Anderson explains: 'When the Wall finally came down, Bonn became the theatre of an astonishing spectacle. Far from the Constitution being automatically respected, a massive campaign was mounted in the West to keep Bonn as capital of the unified country. As the assembled parliamentarians prepared to vote on the issue, the town for the first time became a caricature of what it has set up to avoid: a cauldron of self-interested passions as shop-keepers, cab-drivers, not to speak of burly local MSs, refused service to abused or threatened any deputy who had declared in favour of Berlin. When the vote came, it spoke volumes for the egoism of the western political class. Kohl and Schäuble, the architect of absorption of the East, spoke for Berlin. Brandt, in the most courageous speech of his career, rightly compared the prospect of remaining in Bonn to the notion of a French government clinging to Vichy in 1945. But the majority on both their benches was shamelessly ready to break the promise of the Constitution. The SPD actually voted to stay in Bonn by the wider margin (126 to 110; CDU/CSU 164 to 154). The hostility of the Catholic south to a transfer of the capital to the Protestant north was predictable enough. But, strikingly, more rapacious even than Bavaria in its resistance to a move was the over-weight province of the North-Rhine Westphalia, clinging to Bonn as a honeypot of local prebends. Honour was saved only by the Liberals and PDS, whose decisive majority in favour (70 to 27) created the final narrow margin (338 to 320) for Berlin. This was a moment of truth, casting a sharp retrospective light on the Bonn Republic. Left to their own devices, the western deputies would never have moved back to Berlin – they voted by a thumping majority to stay in Bonn (291 to 214).' (Anderson 2011, electronic book, no page number available)

[65] On the other hand, many other German cities suffered from the reunification and experienced decline including Berlin: 'Ironically, however, Berlin has suffered a sharp economic decline since unity. Even after the formal decision to move from Bonn, resistance delayed the transfer of government by nearly a decade. Meanwhile, after Berlin because a 'normal' Land with the end of the Cold War, tax-payers in the West saw no reason to continue its privileges, and once subsidies were cut, industries left – while in the East, unification triggered a general industrial collapse, engulfing Berlin as much as anywhere else. The results are stark. Since 1989 the population has fallen, with an exodus surrounding the countryside; 200 000 industrial jobs have been destroyed; growth is currently negative; bankruptcies are twice the national average, and unemployment is running nearly 20%. A few international companies have set up their local HQs in Berlin, but virtually no major German corporation has made the move. Incredibly, with less than a year to go before the arrival of the whole paraphernalia of government in the city, housing prices have actually been dropping. *(Ibid)*

> ‘Fortified by federal aid worth almost $2 billion, and by the decision to locate the headquarters of Germany’s privatized postal and telecommunications industries in Bonn, along with several United Nations agencies, Bonn has prospered. The population has risen from 310,000 to 318,000, the number of jobs in the city and the surrounding region has increased by 14,3% to 285,000.’ (*New York Times*, June 23rd, 2011)

While relocating ministries and deputies to Berlin, leading German authorities have repeatedly emphasized their willingness to support Bonn in its transition and, simultaneously, to position Germany as a leading nation on the world stage on the broad topic of sustainable development. The willingness to host international and UN organizations in Bonn can be traced back to shortly after the reunification and explicit statements following the Rio Summit on Sustainable Development (1992). In 1992, an article of the New York Times entitled ‘New York City Fights to Keep 4 UN agencies from moving’ explains that Bonn now finds itself with empty buildings and that German officials are willing to rent them to several UN organizations currently hosted in New York. Since then newspapers articles and press releases have been regularly issued on this topic, reporting in particular on the transformation of Bonn into a global city (Box 6.2).

Box 6.2 – Examples of newspapers' headlines and press releases on Bonn and the United Nations

New York City Fights to Keep 4 U.N. Agencies From Moving

Continued From Page 21

government of Chancellor Helmut Kohl had offered three of the United Nations agencies – the Development Program, the Fund for Population Activities and the Development Fund for Women – rent-free accommodations in Bonn, $184 million in relocation costs and a substantial increase in Germany's voluntary contributions to the world organization.

City officials said the Development Program was the largest of the agencies, with 1,050 employees, while the Fund for Population Activities had 250 employees and the Development Fund for Women 30 employees. All three deal mainly with third world development.

To cushion the impact of the move on employees, the German government has also offered free German language lessons for those who make the move, officials in Germany said.

The reunification of Germany and the prospective move of the nation's capital to Berlin later in the decade would deprive Bonn of a large bureaucracy that has sustained the city throughout the postwar era.

Empty Buildings

It would also leave Bonn with dozens of empty government buildings – including a new Parliament, whose construction was begun before reunification vote last year – and with thousands of empty homes and apartments now occupied by government officials and employees, not to mention the loss of business ranging from restaurant meals to office supplies.

To fill that void, the German government has mapped ambitious plans to develop Bonn as a center for international agencies, including United Nations and perhaps even European Community agencies. Mr. Kohl's government has already decided to leave the German Ministry for Development Aid, its foreign aid agency, in Bonn when the rest of the bureaucracy moves to Berlin.

The date of that move has not yet been determined, but the government has said it would probably be in time for Germany's 1998 Parliamentary elections.

Chancellor Kohl is believed to have made the German offer to the United Nations agencies on May 5, when he was in New York to speak at a convention of American newspaper publishers. Mr. Kohl is scheduled to be in New York again from June 6 to June 9 to meet with Jewish leaders and attend to other nonstate business.

The Argument to Stay

Crain's said the three agencies considering Germany's offer now pay a total of $14 million a year in rent to landlords in New York.

Ms. Kimball said that Mr. Sullivan was "personally charged with overseeing the efforts to keep the United Nations agencies in New York City." Mr. Sullivan replaced Deputy Mayor Sally Hernandez-Pinero, who became chairman of the city Housing Authority, and assumed office on May 1, shortly before City Hall learned the city was in danger of losing major agencies of the United Nations.

That the city suddenly finds itself in competition with a foreign government is "not really surprising," she said. "New York City regularly competes with London, Paris, Hamburg, Bonn and other cities because we are an international city," she said. "And because we are an international city, we like to think the nations of the world look to New York City first."

1

Germany

The shifting heart of a nation

2

BERLIN

As Germany prepares to move its government from Bonn to Berlin, our departing correspondent asks what the move means for Germany's future

HAD Helmut Kohl filled a removals van and taken himself to Berlin right after German unification seven years ago, things might have been different. No doubt the parliament in Bonn would have peevishly followed the chancellor, and the "Berlin republic" which Germans await with mounting fascination—and no little anxiety—would by now be a familiar place. One thing the long wait has not produced is a clear idea of how Germany as a country will change with the transfer of government now almost sure to be completed in 1999.

As Bonn starts packing its psychological containers, the guesswork grows more interesting. Some of it is predictable. A Ger-

GERMANY

A Former Capital Stakes Its Future on Science

3

Robert Koenig

Most of the politicians have left for bustling Berlin, but scientists are hoping to keep Bonn from becoming a post-Cold War backwater

BONN—When reunified Germany moved its capital back to Berlin a few years ago, this placid city seemed poised to fade into obscurity. Instead, Bonn is seeking to redefine itself as one of the country's foremost science cities. Last week, the cornerstone was laid for a $100 million edifice, the Center of Advanced European Studies and Research (CAESAR), which is now rising on the banks of the Rhine. Bonn's 183-year-old university, once known primarily for its law and liberal arts faculties, has been pouring resources into its medical and natural sciences departments. The federal government's science and education ministry and the main research granting

Reinforcing the United Nations in Bonn

6

Handing-over of the key to the UN Climate Change Secretariat

The German government has further strengthened Bonn's status as an important United Nations location: today, Wednesday 31 October, the German government officially handed over the building complex Altes Abgeordnetenhochhaus to the Climate Change Secretariat, the largest of the UN organisations based in Bonn. This is a significant step towards establishing a single UN campus in Bonn. Minister of State at the Federal Foreign Office Michael Georg Link, State Secretary at the Federal Environment Ministry Jürgen Becker and State Secretary at the Federal Ministry of Transport Rainer Bomba joined Rita Ruoff-Breuer, President of the Federal Office for Building and Regional Planning and Dr. Jürgen Gehb, Spokesman of the Board of the Federal Agency for Real Estate, in the symbolic handing-over of the key to the United Nations.

BONN PERSPECTIVES: BMZ AND FEDERAL CITY OF BONN SIGN COOPERATION AGREEMENT FEDERAL CITY OF BONN AND GERMAN DEVELOPMENT MINISTRY JOIN FORCES TO STRENGTHEN BONN AS A CENTRE OF SUSTAINABLE DEVELOPMENT

States News Service, July 21, 2011

BERLIN -- The following information was released by the Federal Ministry for Economic Cooperation and Development (BMZ) of Germany:

5

Hans-J'rgen Beerfeltz, State Secretary in the Federal Ministry for Economic Cooperation and Development (BMZ), and the Lord Mayor of the Federal City of Bonn, J'rgen Nimptsch, today in Bonn signed a memorandum in which they commit themselves to strengthening Bonn as a United Nations city and a centre of international cooperation, development, and sustainability.

In a joint initiative that is supported by the federal state of North Rhine-Westphalia and involves various Bonn-based players, they want to further strengthen Bonn as a centre of expertise on issues concerning our global future, and enhance Bonn's international profile.

No Longer the Capital, But a Global Destination

4

The New York Times, June 19, 2008

Someone forgot to turn out the lights in Bonn.

Sources:

1. ***New York Times*, May 25th, 1992**
2. ***The Economist*, May 24th, 1997 (p26, issue 8018)**
3. ***Science*, 8 June 2001 (Vol. 292 no. 5523 pp. 1827-1829)**
4. ***New York Times*, June 19th, 2008**
5. ***States News Service*, July 21st, 2011**
6. **Press release, German Environment Ministry, October 31st, 2012**

In 2006, the UN campus was formally inaugurated in Bonn:

> 'In 1996 – almost exactly 10 years ago – the blue UN flag was hoisted for the first time at 'Haus Carstanjen', on the banks of the river Rhine in Bonn. (…) Twelve UN organizations are now represented here, and we are inviting others to join them. It is the explicit wish of the entire Federal Government to see the UN host city Bonn develops further, with a special focus on environment and development. This process, which began in Rio, can only benefit from further strengthening.' (Angela Merkel, opening ceremony of the UN campus, Bonn, 11 July 2006)

The willingness to position Germany as a leading nation on sustainable development is also associated with a high-level of investment at the national level in research geared most particularly towards scientific research and innovation. This central role attributed to science is well-emphasized in an editorial in *Science* written by current German chancellor, and also PhD in physical chemistry, Angela Merkel:

> 'The German government recognizes that our future lies in a knowledge-based society founded on freedom and responsibility. This is what enables Germany to rise to the challenges of today's world, be they national or global, or economic, social, or ecological in nature. That is why the promotion of science, research, and innovation is one of my top priorities. (…) German science and research have a long and proud tradition that we must cultivate and build on. We want to offer German science and research conditions that rival the best in the world. Our benchmarks are excellence, internationality and freedom. With our new 6-billion euro program to fund innovative beacon projects, we are investing more than ever before in top-flight science and research. (…) Germany's future depends on first class research, creative talent, high quality education and training that are geared towards international standards as well as a fair deal for everyone, irrespective of social or ethnic background, who is willing to contribute to our society.' (Merkel 2006:147)

This means that the constitution of Bonn as the 'UN city of Germany' can be placed in the broader context of a political project that sought to position Germany as a leading country on sustainable development. It is a project that simultaneously attributes much importance to science, in particular 'sustainability science'[66] and innovation. In this sense, this political project resonates with what bears some similarities with the

[66] 'Germany is also one of the leading nations in terms of the opportunities to study sustainability sciences, and to do research in this field, which is proven in this guide. The guide lists 325 opportunities to study sustainability, and furthermore recorded 200 research institutes that focus on sustainability. In contrast to this the Association of University Leaders for a Sustainable Future (ULSF), (…), records far less opportunities to study in countries such as Australia, the Netherlands, Canada, Norway, Ireland, Sweden, Italy (…)' (Federal Ministry of Education and Research, Study and Research on Sustainability in Germany, 2009:2)

concept of socio-technical imaginary which underlines how science and policy, and politics, mutually shape each other.

Here one could speculate on why and how was this particular project enacted? In this respect, it is worth remembering that following WWII Germany was not allowed to have an army so fostering international collaboration, as well as encouraging scientific developments, can be interpreted as a strategy to retain some power and influence through a priori noble and pacific means. Consistent with this view is the fact that 'science' is also traditionally often pictured as a neutral, and apolitical, activity guided by ideals of 'universality' and representing the 'view from nowhere' (Shapin 1998) and therefore being a 'neutral' territory. Reflecting on the role and use of science in international politics, Miller suggests that precisely because science was perceived as an apolitical, ideology-free, activity, it was used by the United States, here in the field of meteorology, to promote democratic values:

> 'American efforts to promote scientific and political cooperation in the postwar era were intimately related. American foreign policy-makers perceived the production, validation, and use of scientific and technological knowledge and skills as intertwined with the pursuit of a free, stable and prosperous world order. American perspectives on the use of science and technology in postwar international politics were based on a model that implicitly linked the pursuit of science to a liberal world order' (Miller 2001:173)

While, as explained above, the case of Germany is historically different, it resonates to a certain extent with Miller's account in that it is also an example of how science and international cooperation can be used to maintain influence without openly acknowledging it, as suggested here:

> 'Germany's tendency to bury its power and influence in international institutions, chiefly the European Union but also the United Nations and the North Atlantic Treaty Organization, allows it to exert its influence without tempting accusations of revanchist ambitions after the two world wars.' (NYT, June 19th, 2008)

This strategy resonates well with the notion of soft power. While according to Nye there are different ways of achieving soft power, he underlines the key role that international institutions can have in this process[67], in particular the UN system: 'the UN is not the only source of legitimacy in world politics, but its universality, legal framework, and relative attractiveness do give its votes and pronouncement a considerable degree of legitimacy' (Nye 2004:95). Indexes of 'soft power' have been developed and according to recent rankings inspired by this notion, Germany currently features in the 2nd position[68].

Historically, and in contrast to other countries, it is also worth underlying that the Green Party (Die Grünen) has also been relatively strong in Germany (e.g. Anderson 2011), and therefore the country's positioning on sustainable development can also be interpreted as an attempt to reflect to a certain extent the public support to environmental concerns. More critical readings also underline that the leading role played by Germany in the field of international environmental politics was facilitated by the industrial collapse of East Germany following the reunification and that the 1990 baseline adopted in climate negotiations allowed Germany to reduce its emissions of greenhouses gases without having to adopt drastic policies (Rüdig 2003)[69].

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[67] 'The soft power of a country rests primarily on three resources: its culture (in places where it is attractive to others), its political values (when it lives up to them at home and abroad), and its foreign policies (when they are seen as legitimate and having moral authority). (…) Institutions can enhance a country's soft power. For example, Britain in the nineteenth century and the United States in the second half of the twentieth century advanced their values by creating a structure of international rules and institutions that were consistent with the liberal and democratic nature of the British and American economic systems: free trade and the gold standard in the case of Britain; the International Monetary Fund, the World Trade Organization, and the United Nations in the case of the United States. When countries make their power legitimate in the eyes of others, they encounter less resistance to their wishes. If a country's culture and ideology are attractive, others more willingly will follow. If a country can shape international rules that are consistent with its interest and values, its actions will more likely appear legitimate in the eyes of others (Nye 2004:10-11). Nye goes on: 'In addition to its attractive culture and domestic policies, Europe also derives soft power from its foreign policies, which often contributes to global public goods. Not all European policies are far-sighted – witness its protectionist common agricultural policy, which damages farmers in poor countries – but Europe gains credibility from its position on global climate change, international law, and human right treaties (Ibid, 80).

[68] For example, an article published in *The Economist* in July 2015 suggests that the 'Big Softies' are 1. Britain, 2. Germany, 3. The United States and 4. France. (See Appendix 1).

[69] According to Rudig: 'In other areas, too, Germany played a leading role in international environmental politics. In climate policy in particular, Germany pushed for ambitious targets at EU and international level. Germany benefited the outcome of German unification: the collapse of East German industry and the closure of polluting power stations gave the new unified Germany a major bonus as 1990s was the baseline for the measurement of the reduction of greenhouse gas emissions. Germany thus dramatically reduced its GHG emissions in the early 1990s. the fact that this reduction was the unintentional result of

Nowadays Bonn is being constituted as the UN city of Germany. The official guidebook 'United Nations in Bonn' recalls:

> 'The continuing consolidation of the UN presence in Bonn serves as a visual symbol of international cooperation and will foster further collaboration and interaction.' (Guide UN in Bonn, 2014, p6)

However, more than a simple visual symbol, the constitution of Bonn into a global UN city is made visible in its spatial organization and in the urban landscape. As the move to Berlin finally happened, several buildings were liberated in the administrative district of the city and these empty spaces were gradually converted into offices for different UN organizations. Since 1992, the number of UN organizations hosted in Bonn has kept on growing (see Table 6.2). The facilities that used to be dedicated to ministries and deputies of the Federal Republic are now largely used for the purposes of UN-related organizations and events. The UN campus, where all UN organizations based in Bonn work 'virtually under the same roof' used to be at the core of the administrative district of the Federal Republic. The 'Langer Eugen' tower, formerly used to host the offices of deputies, is now the key building of the UN campus where most organizations are concentrated – and hosts the Secretariat of IPBES (See Box 6.3)[70]. Similarly, the former Parliament of the Federal Republic, situated within walking distance from the UN campus, has been turned into 'Bonn World Conference Centre' and, to date, two out of the three official IPBES plenary sessions took place in this building.

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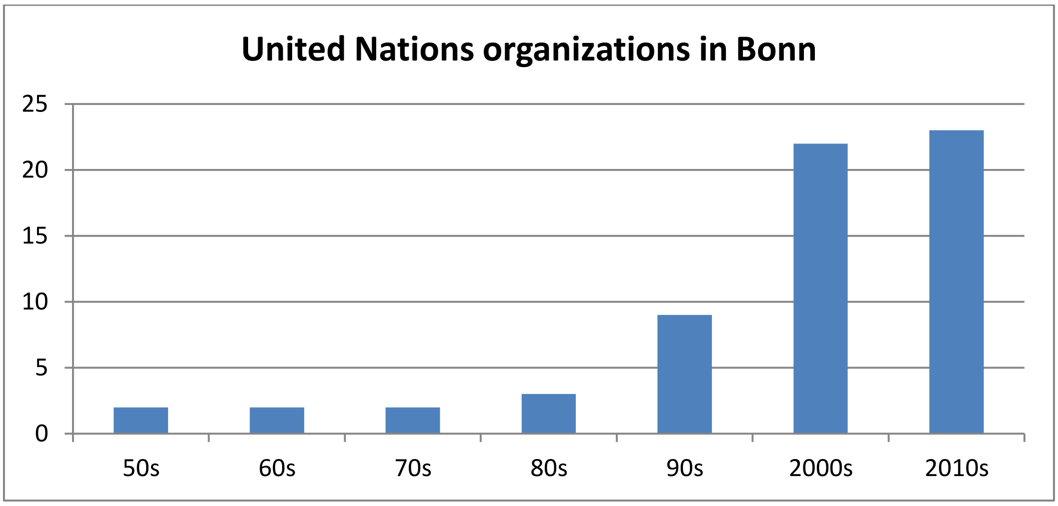
economic collapse in East Germany after unification rather than the result of an active climate policy with substantial sacrifices did not stop German ministers claiming leadership in this field.' (2003:253)

[70] This spatial transformation was also materialized by the construction of the fence around the UN campus, which is now an extraterritorial zone, and at the time there were some popular demonstrations against the construction of this fence.

Table 6.3 – Number of UN organizations hosted in Bonn



Source: Table compiled after information provided in the official guidebook 'United Nations in Bonn' (2014) published by the Common Information Unit of the United Nations Organisations in Bonn.

Box 6.3. Map and pictures of the United Nations campus in Bonn

Left: **Langer Eugen (UN Tower).** The building, inaugurated in 1969, was conceived by functionalist architect Egon Eierman (1904-1970). As explained in an exhibition dedicated to Eiermann 'the high rise parliament building was an architectural expression of democracy (…). As an archichectural expression of early post-war democracy Eiermann's concept was of logic, purity and clarity' (Source: Eiermann's biography). *Below*: **Bonn World Conference Centre (during IPBES-1),** formerly Parliament of West Germany**.**

Above: Map situating the UN campus with list of organizations hosted there (including the location of the IPBES Secretariat) and Bonn World Conference Centre (*Source*: edited from Googlemap)

6.4 Biodiversity knowledge in Bonn: Bonn as the 'capital of biodiversity'?

The globalization of Bonn is associated with local effects, triggering in particular the emergence and mobilization of environmental networks. In addition to United Nations organizations, hundreds of other environmental organizations operate in Bonn, in a pattern that bears some similarities with the concentration of lobbies in Brussels near the institutions of the European Union. The purpose of this section is to examine more closely the diverse biodiversity-related institutions based in Bonn and to describe the different ways in which biodiversity knowledge is made from this particular place. As outlined in the German application, placing IPBES in Bonn means embedding it in a place in which actors and networks operating in the field of biodiversity research and policy are already burgeoning.

Bonn had become a centre of biodiversity-related institutions and networks well before the establishment of IPBES. In the field of biodiversity, relevant multilateral environmental agreements hosted on the UN campus (see list on map in box 6.3) include in particular the Secretariat of the Convention on the Conservation of Migratory Species (UNEP-CMS, also known as the 'Bonn Convention' 1979), the Secretariat of the Agreement on the Conservation of Small Cetaceans of the Baltic, North-East Atlantic, Irish and North Seas (UNEP/ASCOBANS, 1991), the Secretariat of the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (UNEP-AEWA, 1995) and the Secretariat of the Agreement on the Conservation of the Population of Europeans Bats (UNEP/EUROBATS, 1994). The Secretariat of the United Nations Framework Convention to Combat Climate Change (UNFCCC, 1994) is also hosted in Bonn. While hosting these diverse agreements, the city plays a key role in facilitating their functioning by convening all year long numerous international conferences. Additionally, Bonn has hosted regularly conferences of the Convention on Biological Diversity (CBD) (e.g. First Ad-Hoc Open-ended Working group on Access and Benefit Sharing of the CBD, 22-26 October 2001; CBD, COP-9, 19-30 May 2008, Bonn; COP-MOP, 12-16 May 2008), of the CMS (CMS COP7 MOP2, AEWA, 18-24 September 2002), as well as two of the three first official IPBES conferences (IPBES-1, 2012; IPBES-3, 2013).

In particular, the high concentration of biodiversity-related organizations grouped in the city has given rise to an emerging network – the Biodiversity in Bonn Network (BION) network – which describes itself as 'a network of biodiversity stakeholders in the UN city of Bonn'. The construction of the network was initiated in 2011 by two German natural scientists, Prof. Erdelen (ecologist, formerly working at UNESCO) and Prof. Barthlott (botanist) and formalized in October 2013. The geographical proximity between all these organizations appears as one of the main elements explaining the creation of the network. As stressed by a representative of the BION network (Prof. Weigend):

> 'The city of Bonn is characterized by a unique concentration of local, regional, national, and international stakeholders active in the various aspects of the research on and conservation of biodiversity. More than 45 partners – ranging from university research groups to local international NGOs, funding agencies and government departments provide complementary profiles for whole range of issues related to biodiversity. The recent establishment of both the IPBES Secretariat and the Global Crop Diversity Trust[71] in the city of Bonn has elevated the international component to a new level. (…) The local high density of stakeholders was so far not necessarily paralleled by a corresponding degree of stakeholder integration. It was therefore high time to bring these stakeholders together and initiate a common platform for communication and discussion.'

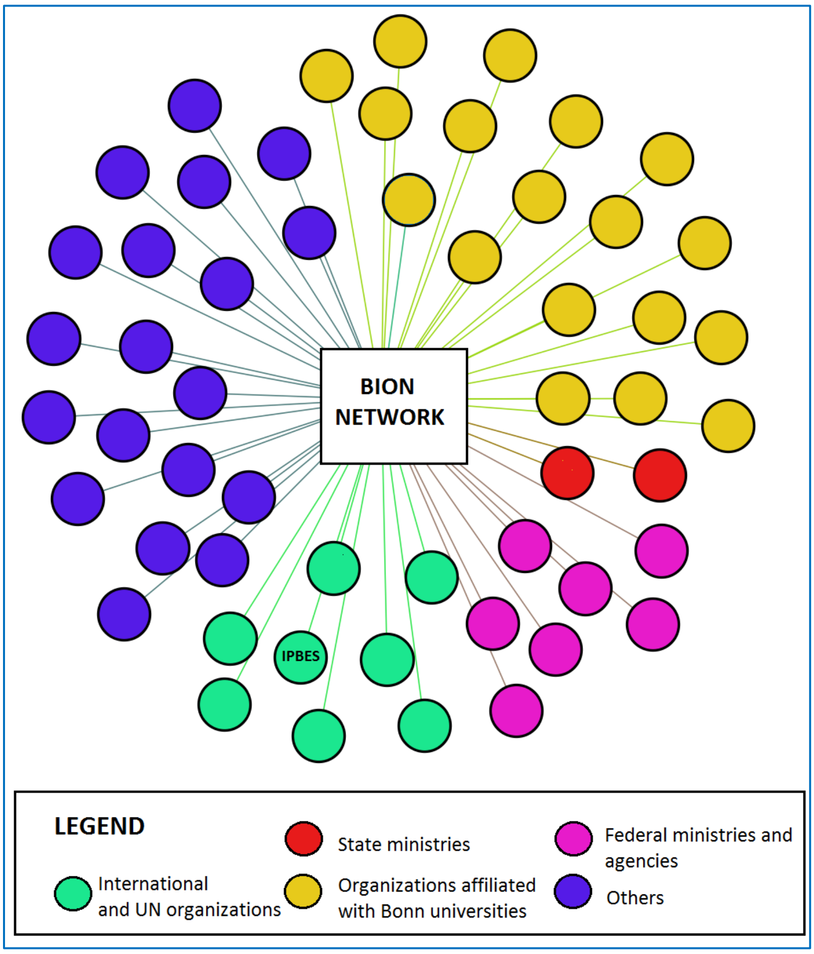
The purpose of the network (BION) is to:

> '[increase] mutual knowledge and understand and foster synergies among the whole range of institutions and organizations. Through this multidisciplinary network approach BION aims at improving the interactions between society, science and politics at local, regional, national and global levels. BION wants to foster innovative and pilot approaches and to establish a 'think-tank' with its partners and stakeholders worldwide.' (Booklet issued by the BION Secretariat, Sept. 2014)

[71] The Global Crop Diversity Trust is the international organization that manages the Svalbard Global Seed Vault (situated in a Norwegian island), a technological, and contested, project whose ambition is to freeze all existing varieties of seeds in case a major catastrophe hit the Earth. In terms of order of arrival, the decision to host IPBES in Bonn was made in April 2012 while the decision to host the Global Crop Diversity Trust was made before.

A striking feature of the BION network is the heterogeneity of the organizations which are part of it. The network gathers around 55 organizations including numerous institutes affiliated with Bonn University, a number of Federal Ministries and agencies, two State Ministries, about fifteen international and UN organizations, including IPBES, and a number of other organizations including businesses and think tanks (see Fig. 6.1).

Figure 6.1 Members of the network 'Biodiversity in Bonn' (BION Network)



(*Source*: Data extracted from BION website, visualisation made using Gephi)

In September 2014, the first conference of the BION network was organized gathering around 250 participants, mostly from organizations based in Bonn or Germany. The conference started off with an opening speech by the Mayor of Bonn, Jürgen Nimptsch, emphasizing that Bonn was now the 'capital of biodiversity'. Other participants referred to Bonn as a 'micro-IPBES at the city level' or underlined that 'Berlin is the political capital, Frankfurt the financial capital, and Bonn the capital of biodiversity'.

During this event there was an interesting dynamic between formal presentations by different speakers, of the diverse BION institutions, with little connections and explicit links between them, and the willingness to find some common ground between all these Bonn-based institutions. In contrast to some conceptions of networks which emphasize that one of the main features that hold them together is the existence of shared values and norms (such as with the notion of 'advocacy coalition', Sabatier 1988), here the connection seems to have first emerged due to a very particular local dynamic (as was made clear by the initiators of the BION network). Indeed, these organizations are very diverse in terms of their relations with 'biodiversity' and work at multiple scales. While some of them operate locally, in Bonn, at the municipal level, others manage development projects internationally, in developing countries. This means that beyond their common geographical anchor all these organizations are connected to 'biodiversity' in very diverse ways: the notion of 'biodiversity' may perhaps here be understood as a 'boundary' concept.

Despite this heterogeneity, there is a willingness to find some common ground between these organisations as illustrated by the fact that the first BION conference concluded with a joint declaration of the participants of the BION network. This declaration stressed the need for 'urgent, concerted, multidisciplinary, cross-cutting action in order to contribute to stalling or reversing the global loss of biodiversity' and emphasized that members of the BION network should 'pool their knowledge and expertise to support national and international strategies' while 'providing an information hub and think tank for a wide range of topics related to biodiversity'[72]. This particular example suggests that biodiversity knowledge is nowadays made in and from Bonn in multiple ways. Bonn, as a place, facilitates connections and interactions between local networks and international organizations such as IPBES in a manner which, in the field of biodiversity, has no obvious equivalent elsewhere[73].

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[72] Declaration of the 1st International BION Conference 'Biodiversity Today for Tomorrow': http://www.bion-bonn.org/de/downloads/1-bion-konferenz-dokumente-und-vortraege/bion-conference-declaration (last accessed July 21st, 2015)

[73] More generally at the national level Germany also contributed to the initiation and coordination of numerous biodiversity science-policy initiatives such as the TEEB study whose purpose was to value biodiversity and ecosystem services. The TEEB was launched by Germany in coordination with the European Commission, in 2007. While coordinating this study globally, Germany was also one of the most

For example, during the first BION conference the head of IPBES Secretariat was invited to give an opening speech and when asked about the relations between IPBES and BION, a coordinator of the BION network underlined:

> 'The question on creation of dynamics in BION is easy to answer. The election of Bonn as seat of the IPBES Secretariat was made – beside other aspects – because Bonn is already an UN city and we have so many players in the field of environment, biodiversity and development at all levels (around 150 organizations). So the need of a network to organize these players was realized long time before IPBES moved to Bonn and the establishment of both at the same time was just a coincidence; i.e. IPBES was not the determining factor for BION. But the money comes from the same division in the Environment Ministry… that means, everything is somehow related here in Bonn.' (Coordinator of the BION network)

Although there is no direct causal relation between the location of IPBES in Bonn and the creation of the BION network, the two are connected both materially and discursively. The 'coincidence' mentioned in the quote above fits neatly into a broader pattern of co-production.

6.5 Discussion and Conclusion

What is Bonn for IPBES? What is IPBES for Bonn? Does it matter that IPBES is hosted in Bonn? Why would it matter?

As emphasized in section 6.2, the role of the IPBES Secretariat is depicted as purely administrative and it is meant to be a neutral and powerless entity, an 'administrative lackey' (Jinnah 2012). From this perspective, as long as the host country respects a neutral attitude and does not interfere more than any other country with the Secretariat then, in the vocabulary of IPBES, its location does not matter. Here an analogy can be drawn between the location of laboratories in scientific practices and

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dynamic participants, producing 4 TEEB studies at the national level for which the UFZ centre based in Leipzig acted as a scientific coordinator (the main TEEB conference being organized there in March 2012).

the location of the Secretariat for IPBES. As argued by several STS scholars, laboratories through their standardized features allow ‘universal’ knowledge to emerge while the labs themselves disappear in the process. Their location should be of no consequence because through their standardized features laboratories are constituted as being the same everywhere (Galison & Thompson 1999; Kohler 2002; Henke & Gieryn 2007)[74]. Similarly, one could argue that Bonn is to IPBES what laboratories are for scientific knowledge: a ‘laboratory’ whose location is irrelevant. In this sense, Bonn is meant to be for IPBES a ‘non-place’ or a placeless place (Augé 1995). For example the fact that Germany is not a megadiverse country should be of no consequences. From this perspective, what matters is rather the ability of Bonn to be perceived as a credible location by all parties involved in IPBES so that the Secretariat can be trusted worldwide and ‘act at a distance’ to coordinate and facilitate the work of IPBES. The question then is: to whom is Bonn credible? And would IPBES be more or less credible if its Secretariat had been located elsewhere?

Since IPBES delegations have collectively decided to host IPBES in Bonn it can be argued that Bonn has successfully managed to establish itself perhaps as a credible ‘truth-spot’ (Gieryn 2006) for IPBES. At the most basic level, this choice could be understood as resulting from the fact that Germany is the country which has provided the most generous funding, by putting ‘money on the table’, as well as offering appropriate material conditions. While this is certainly true, this case also suggests that the location of IPBES in Bonn is better understood when taking into consideration the particularities of Germany’s history and political culture. In particular, the material presented above suggests that the particular dynamics and historical events that have taken place in Germany since the end of WWII as well as the features of the place that Bonn *already* was, before the location of the IPBES Secretariat, are relevant to contextualize the location of IPBES in this place.

Over the past 30 years, Bonn has become a ‘hotspot’ of international environmental organizations, gathering Secretariat and headquarters of more than 20 UN organizations, hundreds of NGOs, research centres and think-tanks, and hosting

[74] While constructed as ‘placeless places’, these STS studies underline that it does matter where laboratories are located.

numerous international conferences all year long. Since 1996, date of the opening of the UN campus in Bonn, the city calls itself the 'UN city of Germany'. For the German government, Bonn illustrates the commitment of the country to support sustainable development worldwide. Bonn has therefore become a node in the world of environmental governance, and contributes to the production and circulation of environmental knowledge in multiple ways. For IPBES, it means embedding the organization into a place that is attached to a particular socio-technical imaginary, whose ambition is to contribute to earthly politics. Moreover, Bonn's motto 'Working towards Sustainable Development Worldwide' is illustrative of a project underpinned by what is perhaps, as Miller puts it, a 'unitary globalist imagination': 'since the end of WWII, new and emerging institutions of global governance have depended crucially on a unitary globalist aspiration – and on scientific and other expert model to fashion this imagination – to shore up their legitimacy as instruments of global power' (Miller 2009a:156). This suggests that the concept of truth-spot also finds its limits here: as defined by Gieryn it refers to how some places are used to lend credibility to knowledge-claims. Arguably, IPBES is not solely about 'truth' but rather about the constitution of knowledge perceived as politically relevant, about actionable knowledge. In this sense, Bonn is for IPBES something more than a 'truth-spot', perhaps a 'consensus-spot' or a site of politico-epistemic orchestration.

The location of IPBES in Bonn can be understood as a case of co-production in which Bonn and IPBES are being mutually constituted. The location of IPBES in Bonn can be read as reinforcing a pre-existing dynamic and stimulating it. Localizing IPBES in Bonn means reinforcing the 'global' dimension of the city, and this has effects for the production of biodiversity knowledge both locally and globally. New networks are emerging locally and these are connected to 'global' science-policy settings including IPBES. This also affects the identity of Bonn which is now increasingly being performed as the 'capital of biodiversity'. At the conceptual level, this case demonstrates the value of a performative and relational understanding of place:

> 'Places are not made once and for all in the sense that place making processes will in the end deliver a finished product: the place. Instead, places are always

> emerging, in the process of becoming. Rather than made, places are performed in practices. A performative perspective on place making highlights the practices involved in performing a place as well as the context, specificities, contingencies and temporalities involved in this performance. It is also attentive to power relations, including the more subtle, nuanced and hidden forms of power involved in the performing places (Thrift 2003). Therefore place 'need to be thought of as brought into being through performances and as performative articulation of power'. (Gregson & Rose 2000: 434).' (Buizer and Turnhout, 2011:532)

The constitution of Bonn as the 'UN city of Germany' is an example of place making, it shows how the diverse meanings attached to a place can change and evolve. Moreover, Bonn is now performed by some as the capital of biodiversity. This suggests that there is an iterative relation between Bonn and IPBES, and Bonn as much as IPBES is being constituted in this process. An important question relates as to how this affects, in return, the credibility of Bonn as a site of politico-epistemic orchestration and its ability to act an authoritative or legitimizing place for IPBES.

What does this mean for the production of 'global' biodiversity knowledge? And what is the significance of this case in relation to IPBES' ambitions to 'open-up'? In terms of 'opening-up' this case points towards the difficulty of moving beyond already established 'centres' of governance resulting from particular power relations. For example, the fact that Bonn was already constituted as a global city, in contrast to Seoul, which insisted on its absence of UN organizations, was important. Other studies have documented the difficulty of correcting existing asymmetries between 'centres' and 'peripheries', for instance in the field of global health with the production of pharmaceutical knowledge (Pollock 2014). Here, locating IPBES in Bonn reinforces the presence on the map of a city and a country that is already having a leading role in world environmental politics but it does not add another city to the map. In this sense it also reinforces existing inequalities in terms of geographical distribution between centres and peripheries – here for the specific case of global environmental politics.

This may have both symbolic and practical consequences for IPBES and the production of biodiversity knowledge. In this respect, the recent development of the Biodiversity in Bonn network (BION) is particularly relevant. As mentioned above, the idea of the BION network pre-existed the establishment of IPBES in Bonn. Yet, the BION-network is now registered as an observer to IPBES conferences, and IPBES itself is registered as a member of the BION network. To date, mobilization within IPBES is much stronger in Europe and participation in IPBES conferences suggests that participation of actors and organizations of the 'Global North' is more important. For examples during IPBES-1, 46% of participants in the delegations were from European countries and among observers 84% were from Europe or North America (with 41% of observers being from Germany alone, see Appendix 5). Numerous efforts are also being coordinated, in particular by the UFZ Centre in Leipzig, to organize biodiversity knowledge and expertise in Europe (Carmen et al. 2015) – an effort which to date has no parallel elsewhere.

While I do not suggest that because IPBES is hosted in Bonn it will only 'articulate Northern views', I suggest that this particular location may facilitate some connections, while hampering others, and have consequences for the kinds of knowledges situated within IPBES. In particular, as IPBES aspires to achieve an even participation between developed and developing countries, the location of IPBES in Bonn may also facilitate the participation and involvement of actors geographically close-by, hence reinforcing pre-existing asymmetries and inequalities between developed and developing countries in terms of access to, and engagement with, 'global' environmental organizations.

Chapter 7 – Framing global biodiversity: IPBES between Mother Earth and Ecosystem Services

This chapter is based on[75]:

Borie, M., & Hulme, M. (2015). Framing global biodiversity: IPBES between mother earth and ecosystem services. *Environmental Science & Policy*. **54**, 487-496

7.1. Introduction

In seeking to provide policy-relevant knowledge to tackle the loss of biodiversity and degradation of ecosystem services, IPBES builds on previous initiatives carried out in the field of biodiversity, outstanding examples of which (at a global scale) include the Global Biodiversity Assessment (GBA, 1995) and the Millennium Ecosystem Assessment (MA, 2005). However, while becoming increasingly in demand, the design and execution of global expert organizations have also been contested (e.g. Scoones 2009). IPBES seeks to build on previous experience by designing a new type of science-policy interface, tailored for biodiversity issues, but also with a good balance between developed and developing countries and build on a broad knowledge-base: inclusive of natural sciences, social sciences, and indigenous and local knowledges (IPBES 2012). This call to adopt an innovative institutional design, and more inclusive processes, has been formulated by both practitioners and academics (Koetz et al. 2011; Hulme et al. 2011; Turnhout et al. 2012). To draw on Stirling's metaphor (2008), in many respects IPBES aspires to 'open-up' and to encompass a broad range of actors and knowledges.

While competing framings and discourses about biodiversity are expressed in these global settings, IPBES has also adopted a single conceptual framework to support its

[75] Data collection, analysis and writing for this chapter were conducted by me under the oversight of Professor Mike Hulme.

work. Yet, this process was punctuated by many debates, in particular around the notion of 'ecosystem services' and the adoption of the framework was far from easy. The conceptual diagram underwent numerous metamorphoses. This Chapter investigates the development of the IPBES conceptual framework during the period 2012-2014. In analysing the development of this framework, this case study seeks to build on social science and STS studies scrutinizing the governance of global environmental expertise (e.g. Hulme & Mahony 2010; Beck et al. 2014). In light of its ambition to provide a global overarching vision, the construction of this framework provides an opportunity to examine how IPBES attempts to accommodate multiple, and often divergent, perspectives on biodiversity in practice.

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

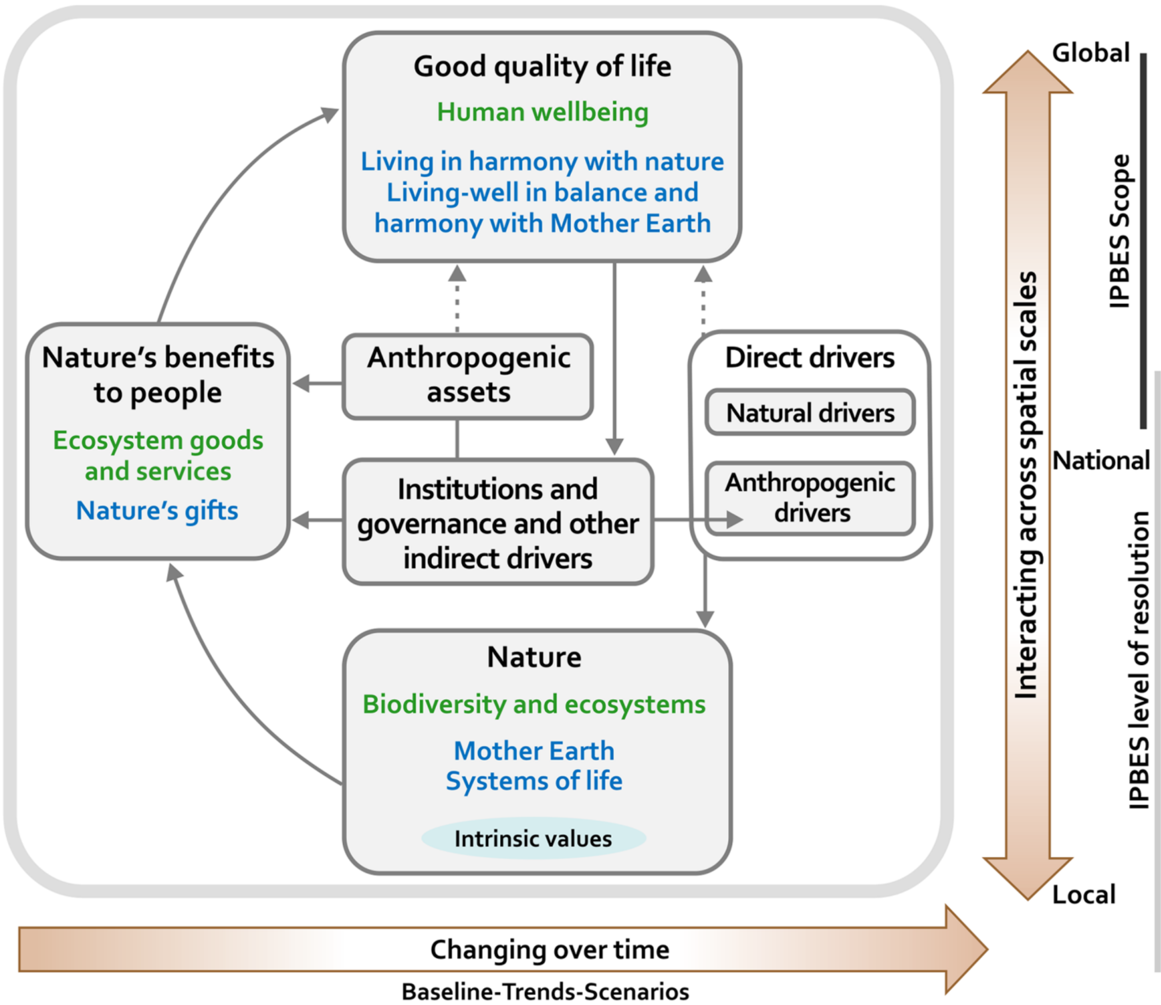
> 'A concise summary in words or pictures of relationships between people and nature. (…) [It] provides common terminology and structure for the variables that are of interest in the system of interest.' (UNEP 2013a:11)

According to the IPBES website[76], the purpose of this framework is to 'support the implementation of all four functions of the Platform – knowledge generation, assessment, policy support tools and capacity-building. [It] helps to ensure coherence and coordination among these four functions'. When it was presented during IPBES-2, three distinctive features of this framework were highlighted: (1) in the process leading to its adoption efforts were made to be inclusive of different voices in order ensure credibility and legitimacy; (2) the IPBES framework placed 'institutions' and not 'nature' at the centre stage, hence highlighting the importance of socio-political aspects to adequately manage biodiversity and ecosystem services; and (3) the framework

[76] http://ipbes.net (last accessed, October 15th, 2015)

embraced different knowledge-systems by means of a colour code. For this reason, it has been referred to as a 'Rosetta Stone': 'the conceptual framework can be thought of as a kind of Rosetta Stone that highlights commonalities between diverse value sets and seeks to facilitate crossdisciplinary and crosscultural understanding'(Díaz et al. 2015a:1).

Fig 7.1. **Conceptual Framework of the Intergovernmental Platform on Biodiversity and Ecosystem Services** (Reproduced after Diaz et al. 2015a; 2015b, with permission from the authors).



The adopted framework is summarized in a diagram (Figure 7.1) representing the relationship between humans and nature by means of six boxes connected with arrows. A colour code is used to represent different perspectives on biodiversity: black is used for the categories that are perceived as consensual (e.g. Nature, Nature's benefit to people, Good quality of life); green is used to represent the view of actors framing biodiversity in terms of ecosystem services (e.g. Biodiversity and ecosystem, Ecosystem goods and services, Human well-being); and blue is used to represent the view of actors framing biodiversity through the concept of Mother Earth (e.g. Mother Earth, Systems of Life, Nature's gifts, Living in harmony with nature). More details on these two framings will be given in sections 7.3 and 7.4 of this Chapter.

Previous initiatives in the field of biodiversity assessments have also adopted a common conceptual framework. The most prominent example of these is the conceptual framework of the MA. This was organized around different categories of ecosystem services - i.e., supporting services, regulating services, provisioning services and cultural services (MA 2003; Carpenter et al. 2009) - and it acted as an important reference point for many participants involved in the IPBES process. In contrast to this initiative, IPBES operates in intergovernmental settings and shares numerous similarities with the IPCC, being often been referred to as an 'IPCC-like mechanism for biodiversity' (Larigauderie & Mooney 2010). The plenary - the Assembly of states' delegates[77] - is the main decision-making part of IPBES governance structure and its work is supported by two subsidiary bodies: a Bureau in charge of performing administrative functions as defined by the plenary, and a Multidisciplinary Expert Panel (MEP) in charge of performing scientific and technical tasks.

More specifically, in this chapter I ask whether, and how, debates amongst participants about the nature of knowledge, the relationship between humans and nature, and about the meaning of 'ecosystem services' were reconciled through this process. This serves to discuss what is achieved by the IPBES conceptual framework and whether it could prove itself a boundary object. I approach the IPBES conceptual framework both as a process and as a product and my objective is twofold. First, by focusing on the process that led to the framework's adoption, I seek to reveal the debates and difficulties that surrounded its conception and, second, considering the framework as a product, I ask the following questions: what ontological, epistemic or political settlement does this framework achieve? Findings highlight the multiple ways in which the science-policy interface is being imagined and reveal some of the challenges awaiting biodiversity governance as ontological and epistemic plurality is embraced at a global scale.

[77] In January 2016, IPBES gathers 125 States.

The remainder of this chapter is organized as follows: Section 7.2 presents the main events and participants involved in the development of the IPBES conceptual framework. Section 7.3 focuses on the content of the debates and in particular on a controversy between participants framing biodiversity in terms of 'ecosystem services' and those framing biodiversity in terms of 'Mother Earth'. Finally in Section 7.4 I discuss how different perspectives were accommodated in the IPBES conceptual framework and whether it might be understood as a boundary object (see Chapter 3). Some concluding remarks are offered in Section 7.5. Sources of data and methods used to develop this case study are presented in Chapter 4, and the full list of material is available in Appendix 1.

7.2. Following the IPBES conceptual framework

Although framed as a scientific task, the making of the IPBES framework was a collaborative process inclusive of heterogeneous groups: natural scientists, social scientists, MEP experts, IPBES Bureau members, representatives of indigenous and local knowledge, United Nations officers, States delegates. In this respect, the IPBES framework is much more than a flat or static diagram: each category and its relationships to the other boxes were carefully, or acrimoniously, crafted. As Fyfe and Law explain:

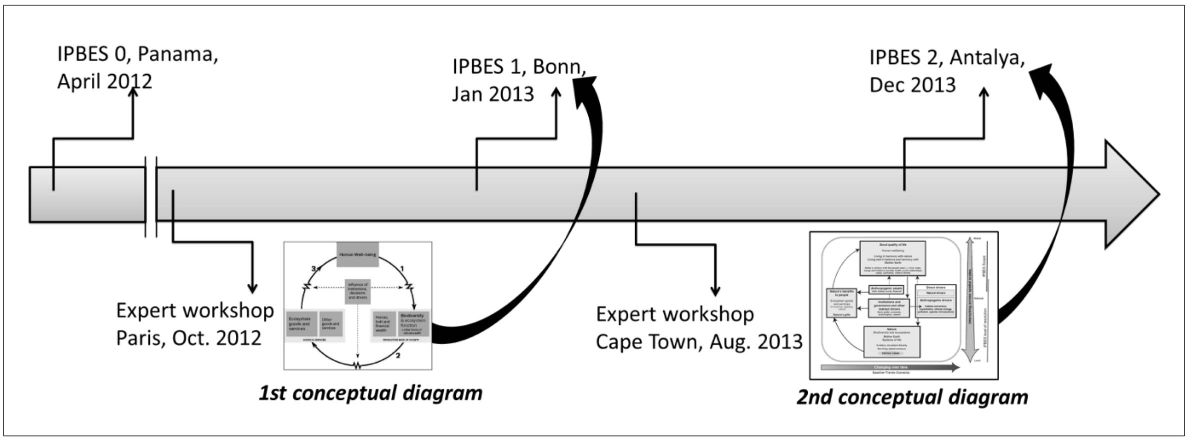
> 'A depiction is never just an illustration. It is the material representation, the apparently stabilised product of a process of work. And it is the site for the construction and depiction of social difference. To understand a visualisation is thus to inquire into its provenance and into the social work that it does. It is to note its principles of exclusion and inclusion, to detect the roles that it makes available, to understand the ways in which they are distributed, and to decode the hierarchies and differences that it naturalises.' (1988:1)

Drawing on ANT, each inscription in the IPBES framework can be understood as resulting from a successful attempt by an actor, or group of actors, to convey their view and convince other groups. This entails understanding the IPBES diagram as representing, by means of these inscriptions, several successful translations. Throughout the process, the choice of the categories to be used, as well as the terminology and the direction of arrows, was at the core of difficult debates. The controversy around the notion of ecosystem services is only the most visible aspect of the numerous debates that animated the construction of the conceptual framework. Therefore to understand how this framework was formed it is important to consider the process that led to its adoption and the dynamics animating its production.

7.2.1. From Panama to Antalya: overview of the process

Following the decision to establish IPBES, made in Panama in April 2012 (Fig. 7.2), representatives of Member States gave the United Nations Educational, Scientific and Cultural Organization (UNESCO) the mandate to start reflecting on the conceptual framework for the Platform in collaboration with the International Human Dimension Programme (IHDP), DIVERSITAS and the Institute for Sustainability and Peace of the United Nations University. At that time IPBES was at a very early stage in its development and while it had been agreed that IPBES would have two subsidiary bodies (the Bureau and MEP), members of these bodies had not yet been nominated.

Fig. 7.2 Chronology of main events punctuating the development of the IPBES conceptual framework, April 2012 to December 2013.

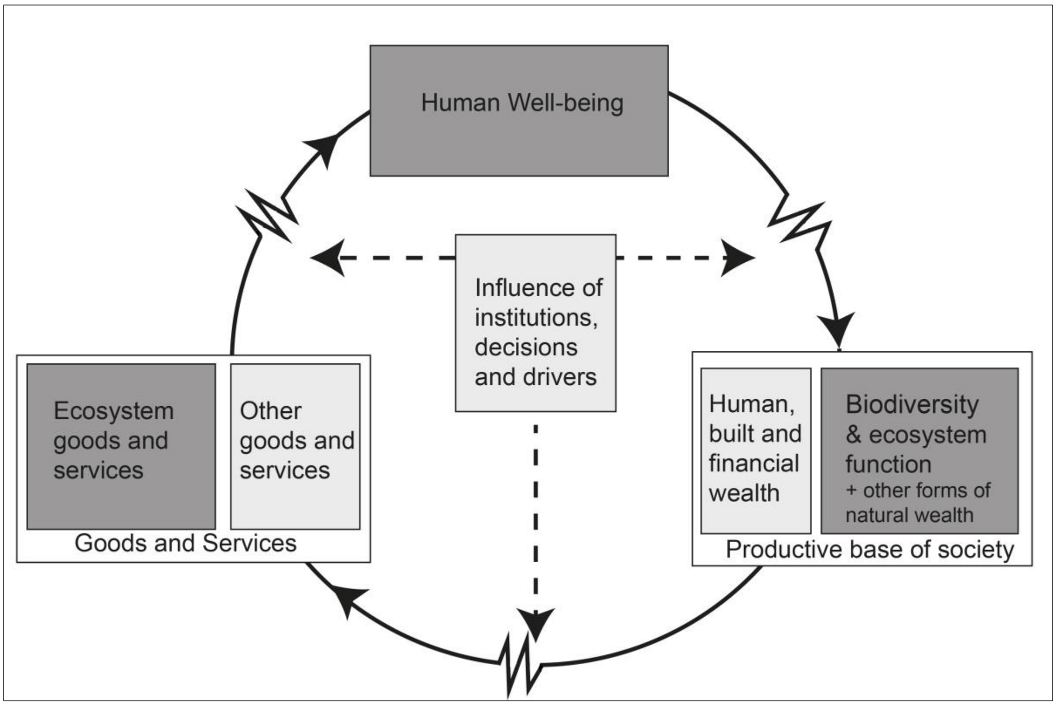


Under the auspices of UNESCO, an expert workshop gathering of around 30 participants was convened in Paris in October 2012. Following this event, the first conceptual diagram (Fig. 7.3) was presented in Bonn, in January 2013, during a side-event of the first official plenary session of IPBES (UNEP 2013a). The second major workshop took place in Cape Town, South Africa, in August 2013 (UNEP 2013b).

7.2.2. The Paris workshop

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

Fig. 7.3 First conceptual diagram, outcome of the Paris workshop in October 2012 (Adapted from UNEP 2013a:9 with permission)



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

7.2.3. The inter-sessional process and Mother Earth

After the Paris workshop, the proposed conceptual framework was made available online and open for comments to IPBES Members States and to civil society organizations[78]. This process allowed several positions to be made visible: some delegations welcomed the suggested framework (e.g. India), some expressed moderate criticisms, many remained silent, and the delegation of Bolivia, supported by other South American delegations from the ALBA[79], strongly advocated against it. The Bolivian delegation rejected the suggested framework and put forward an alternative proposal based on the idea of "Mother Earth". After the IPBES Plenary in Bonn in January 2013, arguments arose between participants supporting the initial Paris framework and those advocating for an alternative proposal. As emphasized by some participants in the Paris workshop:

> 'There was a clear divide between what we drafted as a conceptual framework for discussion at the Bonn plenary meeting and there were many comments especially coming from countries like Bolivia that really clashed with the conceptual framework that we were proposing.' (I 28)

> 'It is a completely different framing and they were very concerned and they raised this at the Bonn meeting, we missed out on Mother Nature completely.' (I 30)

In Bonn, the experts of the MEP and members of the Bureau were nominated. For the MEP, five experts were selected for each United Nations region (Western Europe and Others Group, Eastern Europe Group, Latin American and Carribean Group, Asia-Pacific Group, African Group) (see also Chapter 8). The task of continuing the work on the conceptual framework was then formally handed over to these freshly nominated MEP members who had to address the comments and deal in particular with the Bolivian contestation. Two MEP members, Sandra Diaz (Argentina) and Sebsebe Demissew (Ethiopia) played a particularly significant role in the process by acting as co-chairs in the Cape Town workshop, in August 2013. This second major workshop can then be seen as an attempt to find an agreement between these diverging voices. In the context of IPBES governance, States have the executive power and consensus is generally the

[78] In total 27 written comments were received and made available online, these included 13 reactions by States and 12 by stakeholders.

[79] 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.

rule for decision-making (it is always the case on matters of substance, and in most cases on matters of procedures, see IPBES rules of procedure, rule 36). This means that for the process to move forward an agreement needed to be found between all States' delegates, and in this case more particularly with the Bolivian delegation.

7.2.4. The Cape Town workshop

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

However, the characteristics and dynamics of the two events were very different (Table 7.2). To access the Cape Town workshop participants had to be nominated by a government and the selection process was more formal and less flexible than for the Paris workshop. Only a small number of experts (three)[80] were present at both workshops. In addition to these experts, a significant number of MEP and Bureau members of IPBES were also present at the Cape Town workshop:

> 'One of the problems at this meeting was that there was 30 experts plus a lot of MEP members plus a lot of Bureau members so it was a very big meeting and the roles of these different groups were not entirely clear.' (I 30)

Moreover, the Cape Town workshop took place after the contestation by Bolivia and this affected its agenda as well as the list of participants. For example the head of the Bolivian delegation, who was not in Paris, was present at Cape Town the workshop. Between the two events, the framework underwent numerous changes and there was an unknown number of intermediary drafts.

[80] Anantha Duraiappah (economist, IHDP), Unai Pascual (environmental economist, DIVERSITAS) and Georgina Mace (ecologist, DIVERSITAS).

Table 7.2 Main characteristics of two landmark workshops

	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	29-31st, October 2012 Paris, France	25-26th, 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 the IPBES Plenary 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)	• Experts *(31)* • Observers *(8)*	• Experts selected by the MEP *(23)* • Representatives of the IPBES workshop on Indigenous and Local Knowledge Systems[81] *(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)

(Information compiled in this table comes from the official reports of each workshop, see UNEP2013a, 2013b)

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

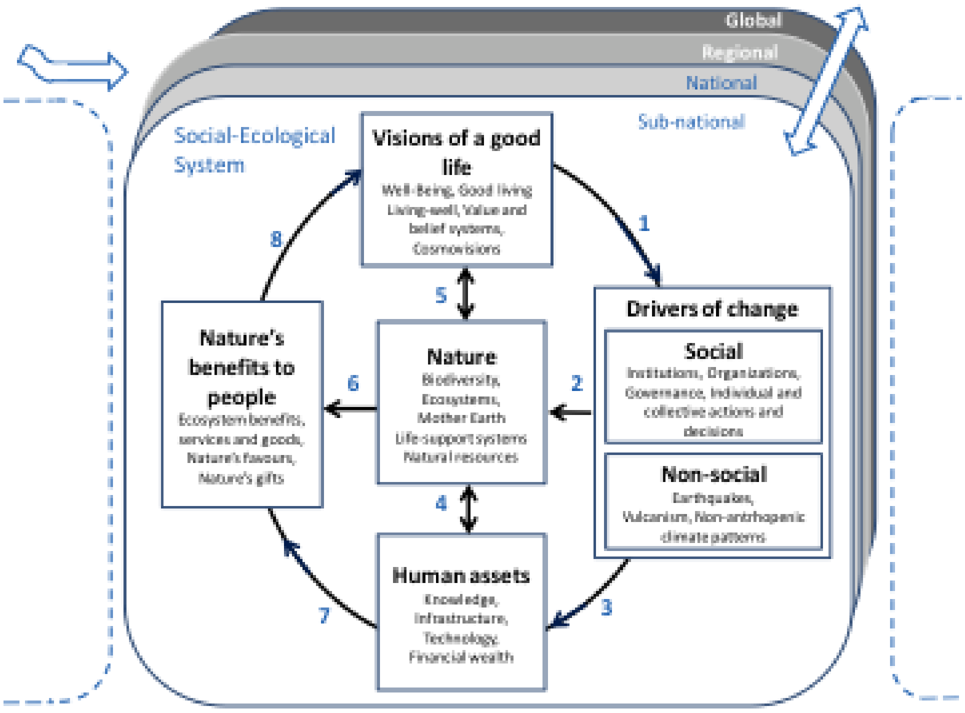
7.3. Developing the IPBES conceptual framework

7.3.1. A successful translation: social scientists and 'institutions'

[81] It is worth reflecting here as well on what is meant by 'representative': in the Cape Town workshop the three people in charge of representing ILK were an associate programme officer at the CBD, a researcher working at the CSIRO research Centre in Australia and a programme officer of the United Nation University. It is therefore tempting to suggest that these representatives are not particularly people with very different worldviews of nature.

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. Importantly, some versions of the diagram, including the one presented at the start of the Cape Town meeting (Fig. 7.4) placed 'nature' in the centre.

Fig. 7.4 Conceptual diagram presented at the start of the Cape Town workshop



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[82] 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 2011a; Palsson et al. 2013; Sörlin 2013). This

[82] See Convention on Biological Diversity (CBD), 2010. Aichi Biodiversity Targets for 2011–2020. http://www.cbd.int/sp/ targets/ (last accessed October 15th 2015)

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.' (I 28)

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 (e.g. in agriculture) that may have harmful effects on ecosystems. This argument was successful and most of the experts already involved in the MA 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 aspires to put in equivalence two different systems: a utilitarian one focused on ecosystem services and a holistic one based on the idea of Mother Earth. However, from a more critical standpoint, having institutions at the centre can also be interpreted as reflecting, implicitly, more strongly the utilitarian worldview since it gives a predominant role to humans and governments – with the finality of IPBES being 'human well-being'.

7.3.2. A contested category: ecosystem services

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

> 'There is a philosophical discussion about whether ecosystem service is an anthropocentric idea as opposed to a pancentric idea and some of these indigenous knowledges are very much based on a pancentric view, in other words the value is intrinsic in nature and not in the human use of nature. (…) I agree that this can be believed, but we are humans and the only possible way we can perceive is through our humanness. In other words, if there is value in nature outside of human perceptions, by definition we cannot engage with it because the only way to engage is through human perception. So to some extent this debate is displaced, it is not a practical way.' (I 29)

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

7.3.2.1. The Bolivian critique

The major criticism of the Paris diagram was articulated by the Bolivian delegation, led by Diego Pacheco, an anthropologist by training. The Government of Bolivia has been questioning the concept of ecosystem services since its arrival in the IPBES process (in 2009) and advocating similar positions in other forums of environmental governance (e.g. IPCC, Convention on Biological Diversity). Other South American delegations were supportive of this view, but it was the Bolivian delegation who formulated and advocated most vehemently for an alternative, more holistic, framing:

> ‘The Plurinational State of Bolivia disagrees with the content of the proposed conceptual framework because it only represents the views, visions and approaches of the Western modern society and it is completely biased towards a particular vision of biodiversity which is the one related to the commodification of nature.’ (Alternative Bolivian proposal 2013:2)

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

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

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

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

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

> 'An instrument to guide the relationship between human beings, biodiversity and environmental functions, and help to create linkages for the articulation between indigenous knowledge systems of indigenous people and the modern science.' (Alternative Bolivian proposal, 2013, p15)

While criticizing ecosystem services on the basis of its utilitarian grounding is common – many States including in the western world thought that the Paris diagram was too utilitarian, Mother Earth's advocates immediately connected it with a particular global imaginary, that of hegemonic capitalism. Concurrently, ecosystem services appear here to be a way to hand western science a predominant role in IPBES while also placing IPBES at the service of a particular understanding of nature.

7.3.2.2. Preserving ecosystem services

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

For example, many thought that the way in which 'supporting services' was defined in the MA was not entirely satisfying:

> 'Supporting services ends up being a bit of a problem because this is really just fundamental ecological things, this is what ecosystems will do even if people

> were not here (nutrient cycling, water cycling,…), they do that all by themselves, so in a way it's part of nature itself, it's part of biodiversity, so they were always slightly awkward [in the MA]. You had to make it the underpinning and then when you do valuation it is difficult. Now, they are hidden in here somewhere: 'life support systems', and that is where supporting services have gone and there is generally agreement amongst ecosystem services people.' (I 30)

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

> 'The problem with cultural services is that they end up being the same thing as intrinsic value if you are not really careful. So the way this works is, intrinsic value in theory is the value of something irrespective of the human use of it, so pigeons for themselves, or nature for itself, what that means is that you can't make any decisions about it.' (I 30)

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

> 'This notion that ecosystem services are the benefits that people get from nature is fairly independent of any ideology. The opponents of that tend to argue that it is a capitalist notion but I don't see it as a capitalist notion, I think there are things that you get and some come from nature, that does not make it a capitalist view or an exploitationist view.'(I 29)

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

> 'I understand where it is coming from but the key drivers of this are political and have a lot to do with the emergence of the promotion of indigenous knowledge

> systems particularly in parts of South America as a counter to what is seen as a western ideology. (…) When you start trying to unpack that at the level of the conceptual framework it typically emerges that the conceptual framework that emerges is just the one that is actually provided in the scientific circles but with different words attached.' (I 29)

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

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

7.3.3. Mediating experts: 'No one wants to commodify nature'

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

> ’I was playing some sort of bridge, bridging between Bolivia and other scientists, so that other scientists could understand that the Bolivian delegation wanted to be very constructive but they also wanted to show that their view and IPBES and the conceptual framework was developing in a different way. I was acting as a diplomat trying to broker a deal between the scientific community and delegations like the Bolivian one and at the end it worked really well.’ (I 28)

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

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

> ‘There is quite a lot of refusal to understand the meaning of the words. You can go through that explanation over and over again and people still oppose and revert to their former positions, even though they have agreed that their position is not that different. (…) You can’t call them ecosystem services but you have to call them ‘nature’s benefits’, and you know, what are nature’s benefits to humans if not ecosystem services?’ (I 29)

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

7.4. Discussion: what does the framework achieve?

7.4.1 Articulating multiple perspectives

This absence of convergence – the lack of an agreement over a singular framing – is illustrated by the very fact that a colour coding device was deemed necessary. The controversy between Mother Earth and ecosystem services experts can be understood as resulting from efforts by these two groups to constitute their own framing with what perhaps bears some similarity with an *obligatory passage point* (Callon 1986). Each group refuses to give up its framing for the same reason: they are each perceived as too political by the other group. In this respect, the colour coding device – blue for Mother Earth, green for ecosystem services – appears as a solution to create an agreement out of disagreement, to create a consensus out of dissensus:

> 'Text in green denotes the concepts of science; and text in blue denotes those of other knowledge-systems.'(IPBES-2 Final report 2014:3)

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

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

> '*Nature* in the context of the Platform refers to the natural world with an emphasis on biodiversity. *Within the context of science*, it includes categories such as biodiversity, ecosystems, ecosystem functioning, evolution, the biosphere, human kind, shared evolutionary heritage and biocultural diversity. *Within the context of other knowledge-systems*, it includes categories such as Mother Earth and systems of life.' (UNEP 2014: 41; emphasis added).

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

7.4.2 A boundary object?

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

As outlined in this definition in Chapter 3, one of the key dimensions of boundary objects is that they allow interpretive flexibility. They can be embedded with different meanings by distinct groups of actors. At the same time, they are necessary to ensure collaboration despite heterogeneity. The IPBES framework aligns with these criteria; while no consensus could be found at the inception of the process, the colour code allows different interpretations to co-exist. It also makes possible the continuation of IPBES work by providing a common framing for different groups of actors with multiple concerns. In this respect it stabilizes interactions between these groups and ensures that they can still work together:

> ‘The process of getting there was not easy, it was a very interesting process of negotiation between scientists who wanted to make very relevant points but who also had to compromise to be able to maintain a coherent and unified vision by many different types of scientists and people with very different understandings.’ (I 28)

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

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

> ’To some degree it was a political solution because of, say, Bolivia, but actually now I quite like it. I think it talks to some degree to indigenous people, I think there is some people in Japan that think much the same – ‘harmony with nature’, it certainly hopes to talk to Bolivia and a few other countries, not just Bolivia, and I don’t think it sacrifices intellectual rigor at all. So I actually rather like it and to be honest it was an evolutionary process.’ (I 31)

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

7.5. Conclusions

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

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

However, during this process there were important tensions between the willingness to adopt a single, consensual, framework and to overcome contestation and accommodate different perspectives on the same diagram, a colour coding system was used. This clever device allows both perspectives to be made equally visible and legitimize them both. In doing so, the IPBES conceptual framework performs two important roles: (1) it acts as a stabilizing device, rather than an epistemic one, between groups of actors – while potentially hiding conflicts and dissent 'under the carpet'; (2) it recognizes explicitly multiple knowledge-systems (scientific knowledge and traditional and indigenous knowledge) and their equivalence – while essentializing their differences. If the framework proves itself to be a 'boundary object', it should facilitate the inclusion of different forms of knowledge, although as discussed in section 7.5, some ambiguity remains as to how this can be achieved.

This study of the making of the IPBES framework also suggests that the ecosystem services approach is not uncontested and resonates more strongly in some places, in particular Europe and North America, and transnational scientific networks than in others - South America and in parts of Asia (e.g. Japan). Similarly, Mother Earth may find an audience in South America while being contested or subtly resisted elsewhere. While the approved framework recognizes both perspectives symmetrically, an outstanding question concerns their potential asymmetry in practice: is 'Mother Earth' a marginal position, a site of friction on the fringes of a vast 'technological zone' (Barry 2006) constituted by ecosystem services? Or is 'Mother Earth' a powerful counter-narrative to the assumed hegemony and utility of ecosystem services? IPBES is still at an early stage of development and it remains to be seen how these different perspectives will be enacted in epistemic and policy practices. Preserving this plurality of knowledge, captured in the IPBES conceptual framework, may well be the most important challenge for a democratic governance of global biodiversity. However, as will be elucidated in Chapter 8, on the making of the IPBES Multidisciplinary Expert Panel, there is a gap between the ambitions of the IPBES conceptual framework and the forms of knowledge and expertise that were included in this expert body.

Chapter 8 – Making the IPBES Multidisciplinary Expert Panel

8.1. Introduction

In 2006, conservation biologist Michel Loreau and colleagues published a landmark paper entitled 'Biodiversity without representation' in which they called for the development of an IPCC-like mechanism for biodiversity (Loreau et al. 2006:442). Unlike climate scientists, who had the IPCC, it was argued that ecologists lacked a similar organization that would make their voice and knowledge more visible in the international arena. From this perspective, the establishment of IPBES can be read as signalling the institutionalization of a permanent organization of expertise in which ecological sciences would play a key role. However, unlike the IPCC in its early years, IPBES aspires to design a model of expertise ostensibly open to a wide range of disciplines – not only ecology but also engaging economics and social sciences and knowledge-systems with different epistemologies, while achieving a geographical balance. In this respect, IPBES claims to be a knowledge platform rather than a scientific platform (e.g. UNEP 2010). As documented in Chapter 7, IPBES has also adopted an innovative conceptual framework which aspires to bring together multiple framings of biodiversity by 'explicitly embracing different disciplines and knowledge-systems (including indigenous and local knowledge) in the co-construction of assessments' (Díaz et al. 2015:1).

In light of these aspirations, this chapter studies the constitution of the first IPBES Multidisciplinary Expert Panel (MEP), the scientific and technical body of IPBES, for which 25 experts were selected for a 2-year period in January 2013. The MEP is charged with performing the scientific and technical functions of IPBES – a role which includes in particular coordinating the implementation of the IPBES work programme as well as contributing to the selection of authors participating in the diverse IPBES working groups (UNEP 2012a). These working groups are organized in a manner akin to the IPCC's working groups: they are coordinated by coordinating lead authors (CLA) and also involve lead authors (LA) and contributing authors. Each IPBES deliverable is meant to be overseen by two members of the MEP (UNEP 2015d). The MEP has therefore both epistemic and coordination functions. Moreover, it is one of the most visible bodies of IPBES: while being directly related to IPBES knowledge-practices, it also has a symbolic role to establish the credibility of IPBES in front of multiple audiences (Montana & Borie 2015). In this chapter, I focus in particular on the early debates surrounding the design of the MEP and on the contentions animating the nomination and selection of these experts to address the questions: How was the MEP constituted? Whose expertise was included and rendered authoritative within the MEP? Has the MEP met its principles of diversity and inclusivity?

IPBES has adopted principles ostensibly acknowledging that addressing biodiversity loss and ecosystem services degradation requires diverse forms of knowledges and expertise. In particular, in April 2012, after the official establishment of IPBES in Panama, delegations agreed on the following principles to guide the development of the MEP:

- Recognition and respect for the contribution of indigenous and local knowledge to the conservation and sustainable use of biodiversity and ecosystems;
- Recognition of the unique biodiversity and scientific knowledge thereof within and among regions and the need for the full and effective participation of developing countries and balanced regional representation and participation in its structure and work;
- Taking an interdisciplinary and multidisciplinary approach that incorporates all relevant disciplines, including the social and natural sciences;
- Recognition of the need for gender equity in all relevant aspects of its work;
- Addressing terrestrial, marine and inland water biodiversity and ecosystem services and their interactions. (UNEP 2012a:5)

However, in 2012, delegates did not manage to agree on the permanent structure of the MEP and, in a pragmatic move that would allow IPBES to get started with its work, decided to set up a provisory MEP: 'An interim arrangement for the membership of the Panel will be put in place until the final regional structure and expert composition of the Panel is determined by the Plenary. The interim membership will be based on equal representation of five participants from each of the five United Nations (UN) regions and the arrangement will be in place for not more than a two-year period in order to allow the final regional structure and expert composition to be agreed at a session of the plenary' (UNEP 2012a:4). In January 2013 in Bonn, during the first official plenary session of IPBES, the five UN regions selected the 25 experts of this interim MEP.

Following the public announcement of the members of the first MEP, there were some mixed statements from observers and outside commentators:

> 'Many insiders are worried that the IPBES bureau and multidisciplinary expert panel — IPBES's core governance institutions — are already too skewed towards conventional scientific voices and government ministries, and are failing to represent more diverse voices and communities in developing countries' (SciDev 2013)[83].

The remainder of this chapter is organized as follows: I first trace the early debates surrounding the institutional design of the MEP and around the processes to nominate experts (section 8.2) and then turn towards the composition of the first MEP (section 8.3). These lines of inquiry serve to document who was actually recognized as a 'biodiversity expert' within IPBES as the organization sought to implement an inclusive model of expertise. Contrasting the composition of the first interim MEP with the principles of inclusivity and diversity advocated by IPBES, in particular regarding gender and disciplinary balance, I find that there is a significant gap between the ambitions of IPBES and the forms of knowledge and expertise actually rendered authoritative in the MEP. The material presented in this chapter comes from participant observations during IPBES-1 and IPBES-2, interviews, and document-analysis including in particular an

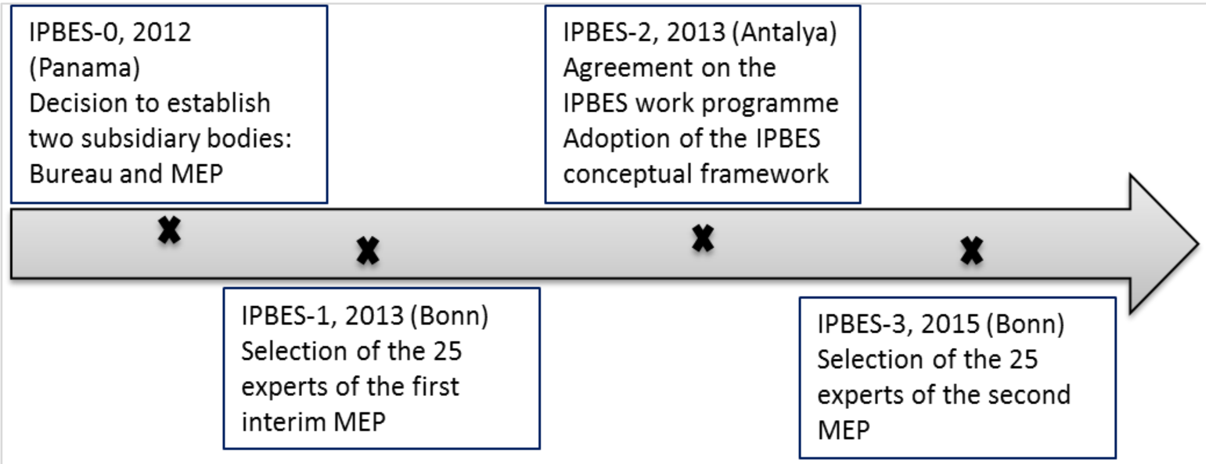
[83] Online article : http://www.scidev.net/global/biodiversity/news/global-biodiversity-panel-urged-to-heed-local-voices.html (published on 3.05.2013, last accessed 7.07.2015)

analysis of all the CVs[84] of both the nominated and selected experts for the MEP. I also rely on the comments formulated both by delegations and stakeholders that were posted online on the IPBES website, in which these expressed their views regarding how experts for the MEP should be nominated and selected (see also Chapter 4 for more details on the sources of data and corpus of documents in the annex).

8.2. Constituting the Multidisciplinary Expert Panel

Before turning to the composition of the first interim MEP (section 8.3), this section gives an account of the diverse contentions animating the early stages of the MEP in particular surrounding its institutional design and the processes to nominate experts. A chronological overview of the main events leading to the constitution of the first interim MEP is given in Figure 8.1.

Figure 8.1 Chronological overview of main events surrounding the constitution of the MEP



8.2.1. Contentions around the design of the MEP

8.2.1.1. Designing the MEP

The idea of a 'Multidisciplinary Expert Panel' emerged during the IPBES conference in Panama (see Fig 8.1). At first two major options, which were pre-framed in an official document circulated by UNEP, were debated (Table 8.1).The first proposed option

[84] These CVs were all posted online, on the IPBES website, prior to the IPBES plenary in Bonn in January 2013.

(Option 1), inspired by the governance structure of the IPCC, was to establish a large Bureau that would perform both administrative and technical functions. It would include government representatives and scientists, and also potentially representatives from NGOs, the private sector and multilateral environmental agreements. The second proposed option (Option 2) was to establish a small Bureau for administrative tasks and a science panel for scientific and technical tasks (UNEP 2012b). A third option - that of a Multidisciplinary Expert Panel - emerged as a compromise between these two alternatives during IPBES-0.

Table 8.1 Initial options for the institutional arrangements of the MEP

Option 1	'One subsidiary body would be established, which would be an expanded Bureau of the plenary. This body would perform [both administrative and scientific functions]. The Bureau would include the Chair, four Vice-Chairs and additional members in a manner respecting geographical, gender and disciplinary balance. The Bureau might also include additional stakeholders, such as representatives of MEAs, UN agencies and intergovernmental organizations as observers.' (p4)
Option 2	'Two subsidiary bodies would be established. In this option the plenary might establish a small Bureau comprising only the Chair and Vice-Chairs that would oversee the administrative functions listed above. The science panel would be established in a manner respecting geographical, gender and disciplinary balance. The science panel might also include additional stakeholders, such as representatives of MEAs, UN agencies and intergovernmental organizations as observers.' (p5)

(*Source:* UNEP.IPBES MI/2/3)

In favour of the first option were delegates (e.g. Mexico, Norway, Cuba) advocating for a structure that would allow for more dialogue between the different communities existing at the science-policy 'interface'. In particular, the European Union advocated for the idea of IPBES as a 'network of networks' (see Chapter 5) and suggested Option 1 may push forward this vision and facilitate the engagement of civil society organizations (IISD 2012). Delegates worried about financial costs were also in favour of this option that they perceived as more cost-effective. In favour of Option 2 were delegates concerned about the scientific independence of the Platform – in order to be credible, so it was argued, the administrative and scientific bodies of IPBES should be clearly separated.

This latter view was also advanced by stakeholders representing the scientific community, for instance by the International Council of Science Unions (ICSU) and DIVERSITAS. A notable proportion of respondents of a survey conducted under the oversight of different scientific organisations and NGOs (including DIVERSITAS, IUCN, UNU, IHDP) and targeting predominantly social and natural scientists – the Global IPBES Assessment Survey – also reached the same conclusion. Among the 2237 respondents to the survey, 47% preferred having two distinct subsidiary bodies (Sinnathamby 2012). Following a workshop in Tokyo (Japan) dedicated to the 'Assessment function' of IPBES, an information document was released outlining this position (UNEP 2012d), namely that having an institutional separation between the administrative and expert functions of the Platform would reinforce the independence and the credibility of the IPBES. These two options can be interpreted as reflecting different ways of organizing science-policy relations and different types of co-production. While on the one hand Option 2 reflects a traditional, linear, conception of science-policy relations in which scientific activities should be clearly demarcated from other activities, Option 1 reflects perhaps a more interactive vision.

However, while in the initial proposal (UNEP 2012a) a 'scientific' panel was mentioned[85], some delegates argued that the Platform should be interdisciplinary and open to different types of knowledge, a position also supported by representatives of indigenous and local peoples and by most observers involved in IPBES. For this reason, while many delegations (e.g. Brazil, Indonesia, Japan, the United States) were supportive of the creation of two subsidiary bodies, for the sake of scientific independence, they also suggested that it was necessary to move beyond a narrow understanding of scientific expertise – an idea which had already been agreed upon in previous IPBES meetings (see also Chapter 5). For example, Australia emphasized that a 'scientific' panel may not facilitate the inclusion of political and social scientists. At the end of the conference in Panama, delegates agreed on a third option that was drafted by the Chair, Robert Watson, and colleagues in order to find a compromise between these different sensibilities. They proposed to set up two different subsidiary bodies, one of them being the Bureau and the other the 'multidisciplinary' expert panel – in an

[85] 'In the beginning it was only about science, science, science.' (I12)

attempt to convey the ambition of the Platform for considering different types of knowledges and expertise. In this context:

> 'Multidisciplinary connotes an approach that crosses many disciplinary boundaries, knowledge systems and approaches to create a holistic approach, focusing on complex problems that require expertise across two or more disciplines. Multidisciplinarity arises when scientists (including natural and social scientists), policy and technical experts, natural resource managers, other relevant knowledge-holders and users, interact in an open discussion and dialogue giving consideration to each perspective.'(IPBES 2012:17)

Following the decision of having two distinct subsidiary bodies, a representative of a scientific network, namely DIVERSITAS, commented:

> 'Now we have two structures, a Bureau in charge of performing administrative functions and the MEP for scientific and technical tasks. It is obvious that the two bodies have to talk sometimes but everything that is scientific or technical must be done independently from political discussions. This is a very important point because in the SBSTTA of the CBD, which is supposed to be a scientific body, there are actually only political representatives. So we have concluded that we could not have an independent scientific body operating under a political envelope. We had to be careful with this.' (I1, own translation)

This quote suggests that, as emphasized above, having two subsidiary bodies was perceived as necessary to keep epistemic concerns separate from administrative and political duties. It also points towards the fact that within IPBES, the case of the CBD SBSTTA, which has been described as 'too political' and 'not scientifically independent' (Koetz et al. 2008; Laikre et al. 2008) serves here as an important reference point. Numerous scholars have also underlined the need for IPBES to be scientifically independent to achieve credibility (Görg et al. 2010; Larigauderie & Mooney 2010; Vohland et al. 2011) and indeed this is one of the principles adopted by IPBES early on. However as will be reflected in section 8.2.2 what this means in practice is open to diverse interpretations.

There was also a general consensus over the idea of regionalizing the MEP: experts should be nominated according to 'regions', instead of globally, and a balance between experts from the 'Global North' and the 'Global South' should be achieved. In this respect, IPBES acknowledged that achieving global credibility requires global participation. However, there was no agreement over the permanent processes that should be used to select these experts and the criteria to be adopted were disputed. For example, how should experts be selected and by whom? Should the nomination of experts be made by governments or should observers, such as NGOs and research institutes, be able to nominate as well? These are addressed in the sections that follow.

8.2.1.2. Regionalizing the MEP: 'regions' in dispute

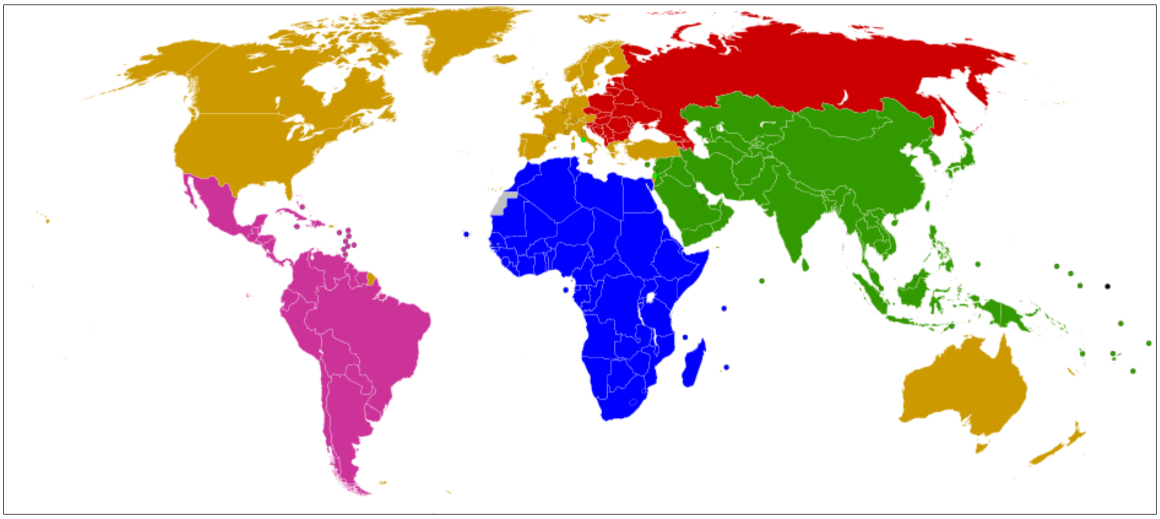
There was a general agreement among delegations that the MEP should be constructed around regional quotas (UNEP 2012e). Two different rationales were mobilized to support this idea: (i) adopting a regional structure for the MEP would be more consistent to account for the 'place-based' nature of biodiversity issues and facilitate the implementation of a multi-scale approach, as already initiated by the MA (UNEP 2012c); (ii) a regional structure would facilitate the inclusion of different kinds of expertise such as indigenous and local knowledge holders, or nature managers with practical knowledge. However, if the general idea of regionalizing the MEP was not disputed, the delineation of the 'regions' to be used to support this process triggered many difficulties. In particular there was a debate as to whether to use the UN regions, based on political boundaries and following the borders of Nation-States, or alternative, biogeographic regions, whose boundaries would also take into consideration ecological criteria. In the absence of a consensual alternative, delegations reverted to the *status quo* and adopted the classification of regions in use in the UN system.

The United Nations classification of regions

The interim solution adopted for the first MEP consisted in selecting five experts for each United Nations region (Fig. 8.2). In contrast to biogeographic regions, the United Nations classification of regions is based on political boundaries which largely reflect the diplomatic alliances of the Cold War era. For this reason, Eastern European countries have their own group while Western European countries are gathered separately, along with countries such as the United States, Canada, Australia and New Zealand. The grouping of countries varies slightly in different UN organizations; the one in use in UNEP (which IPBES drew upon) defines 5 major regions (Fig. 8.2):

- African Group (54 States)
- Asia-Pacific Group (53 States)
- Eastern European Group (EEA, 23 States)
- Latin American and Caribbean Group (GRULAC, 33 States)
- Western European and Other Group (WEOG, 28 States)

Figure 8.2: United Nations regional groups (*Source:* Wikipedia)[86]



In the context of IPBES, these regional groupings were challenged for being outdated and based on alliances and power relations that have since shifted, as well as for not taking into consideration the distribution of biodiversity and ecosystem services. The United Nations classification of regions was not perceived as satisfactory by many States, and several delegations (e.g. Brazil, Bolivia, India) called for an alternative system that would take into consideration biogeographic boundaries to nominate experts.

Following the Panama meeting, UNEP was asked to explore possibilities for an alternative approach and released an information document ('Regional structure and

[86] I here include a map from Wikipedia as the official IPBES documents did not include a map but rather a table. The information presented on this map is consistent with the UN groupings presented in these official documents (see UNEP 2012c).

composition of the MEP', see UNEP 2012c) whose purpose was to explore alternatives to the UN system. It reviewed regions in use in different UN organizations, other MEAs as well as in other assessments processes. This document emphasized that the geography of biodiversity does not overlap with political boundaries:

> 'The distribution of biodiversity, whether of genes, species or ecosystems does not respect political boundaries, and, for example, high proportions of species in continental regions span many countries and even regions in the case of migratory species. Similarly the geographic scope of ecosystem functions and the services they provide may cross political boundaries, with, for example, forests in one country being a significant factor in ensuring healthy water supply and wetlands in a neighbouring country and functioning in regional climate regulation.' (UNEP 2012c:3)

However, this document also emphasized:

> 'There is no agreed 'geography' of biodiversity and ecosystem services, as the classifications and systems that have been defined and used by a wide range of scientists and other experts, and in various policy processes, are based on different interpretations and serve different purposes.' (UNEP 2012c:3)

Beyond political boundaries: a biogeographic proposal

In an attempt to move beyond political boundaries, a proposal to regionalize the MEP was put forward by the Brazilian delegation. This proposal also stressed that:

> 'From a biological and evolutionary standpoint as well as synergy of actions and similarity of problems regarding biodiversity/ecosystem services conservation and restoration, IPBES should adopt a regional framework based on biogeographic regions.' (Brazilian proposal 2012:1)

The Brazilian proposal was based on a map delimitating eight biogeographic realms (Fig. 8.3). For each of them three researchers should be nominated including a natural scientist, a social scientist and an expert with experience of science-policy interfaces.

The total of these 24 experts would then form the MEP. These regions would be closely associated with UN organizations and be used in regional assessments:

> 'Each biogeographic region should have one node that can use the infrastructure of one of the four UN agencies linked to IPBES (i.e. UNEP, UNDP, UNESCO and FAO) present in the region. IPBES regional node would be responsible for promoting scientific and political support throughout its biogeographic region, coordinating the regional assessment on biodiversity and ecosystem services.' (Brazilian proposal 2012:1)

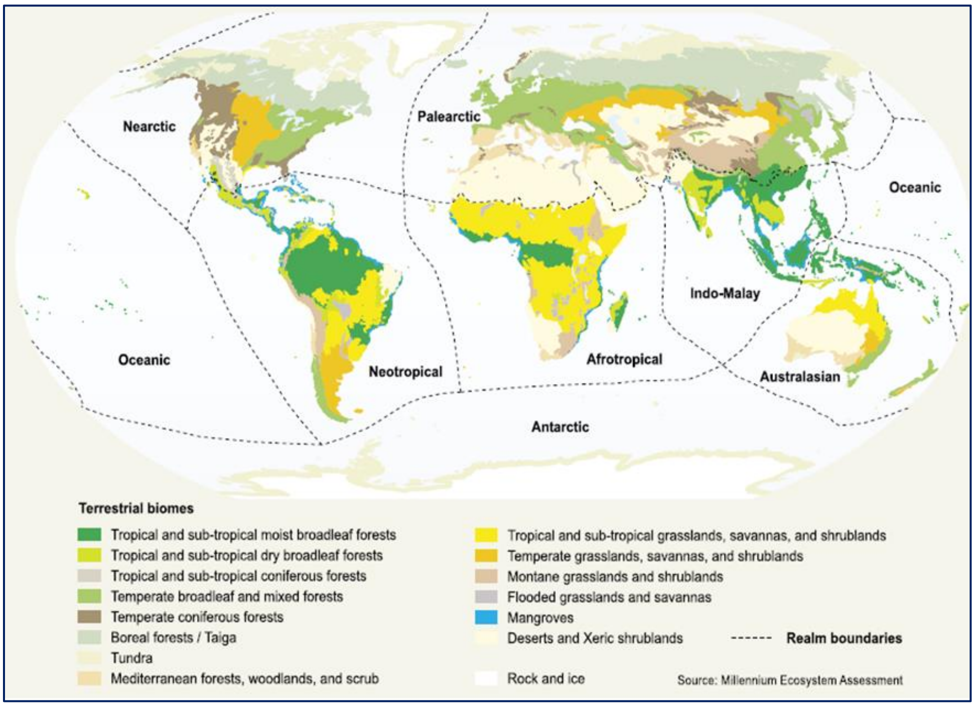
The map used in the Brazilian proposal appears to have interesting origins, drawing together changing meanings over time and across places. It can be traced back at least to the work of British naturalist Alfred Russel Wallace (1823-1913) as he was trying to understand the origins of life and species' distribution on Earth[87]. Later on, this map was refined by conservation biologists, in particular working for IUCN and WWF, as a way to advance the conservation agenda and facilitate priority-settings, that is to try and identify how should those biogeographic units be delineated and which ones should be protected first (see Olson & Dinerstein 1998; Olson et al. 2001). This map was then also used in the Millennium Ecosystem Assessment (2005) in order to assess the characteristics and trends of biodiversity and ecosystem services in the different biogeographic realms.

Within IPBES, the Brazilian proposal can be read as an attempt to re-order experts' nominations according to different criteria, moving beyond political boundaries while being attentive to the distribution of biodiversity as well as to geopolitical concerns, as illustrated by the inclusion of UN organizations in each suggested region. Countries supportive of biogeographic regions argued that this would make the MEP more independent, allowing to separate scientific work from national interests (ENB 2012)[88].

[87] Wallace is regarded as the founding father of biogeography. He also worked with Darwin on the theory of natural selection (see Camerini 1993).

[88] 'Brazil, supported by the US, preferred biogeographic regions, saying the MEP required independence from national interests to maintain its role, whereas the interests of countries would be preserved in the plenary where formal decision-making will take place.' (ENB 2012:16)

Figure 8.3 The eight biogeographic realms used in the Brazilian proposal



(*Source*: Millennium Ecosystem Assessment, 2005)

Therefore, while regionalizing the MEP was generally consensual, there was no consensual agreement over an alternative to the UN system. For example, Japan frequently emphasized that as some UN regions are much more populated than others then demographic considerations should be included in the criteria for selection. This would mean allocating more experts to the most populated regions – or that the Asian region instead of following the UN classification should be split into two distinct regions separating 'South and East Asia' from 'West Asia'. Megadiverse countries[89], in contrast, emphasized that regional differences in biodiversity richness should be taken into consideration:

> 'The proposed MEP regionalization does not consider the distinction between countries holding higher degrees of biodiversity and hotspots with respect to those that have lesser biodiversity and hotspots. Paradoxically, countries with less biodiversity on the world are better represented than countries that have higher biodiversity.' (Bolivian comment, 2012)

[89] Megadiverse countries are the countries which are considered as hosting the most biodiversity in the world, when biodiversity is understood in terms of species. This group includes 17 countries (e.g. Brazil, Colombia, India, Indonesia, Malaysia) which are often referred to as 'biodiversity hotspots' (see Medail & Quezel 1999).

India was also supportive of this view:

> 'With respect to the representation of regions on the MEP, the key issue is whether the MEP should comprise the same number of MEP members for each region, irrespective of the number of IPBES Members in the region; or whether the MEP should comprise varying numbers of experts for each region (…). India is of the view that in order to have a more balanced yet effective representation that takes into account biogeographic approach and biodiversity richness, the MEP may have varying members across regions depending upon the number of countries, and richness of biodiversity in the region.' (Indian comment, 2012)

The debates over the regionalization of the MEP suggest that 'regions' were immediately interpreted in light of what they implied in terms of experts' representation and balance as well as in what they meant for biodiversity. The choice of common criteria to delineate the boundaries of alternative regions embedded both political and epistemic concerns that were deeply entangled in delegates' interpretations of alternative options. This suggests, as underlined in other STS studies (e.g. also Miller 2007; Brown 2009) that experts, although this was not explicitly acknowledged, were perceived as representing not only 'science' or 'knowledge' but also their respective countries. Although the UN classification system of regions was perceived as unsatisfactory by many States, in the absence of alternative agreement, delegations reverted to the *status quo* and decided to adopt the UN classification of regions as a pragmatic solution[90].

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[90] Some States also argued that the lack of an alternative to the UN system was not that important. If experts were selected according to UN regions, it would not prevent them from organizing themselves in a different way when implementing the IPBES work programme. The UK was supportive of this view: 'We think it is important to understand that any regional structure that is agreed for the MEP should not necessarily need to be applied to all elements of the work programme of IPBES. Different geographical structures could be used for implementation of the work programme according to the task in hand. The MEP regional structures are intended to ensure geographical balance in expertise and should not be a constraint on the organisation of the work of the Platform.' (UK comment, 2012)

8.2.2. Contentions around the processes to nominate experts

In addition to the discussions regarding the regionalization of the MEP, one of the most controversial aspects revolved around the particular processes through which experts should be nominated and in particular who should be allowed to put forward the name of a candidate: should the nominations be made by governments only or should observers, such as NGOs and research institutes, be able to nominate as well? If only governments can nominate, what does it mean, for example, for traditional and indigenous knowledge holders, who, by definition, do not feel represented by any State?

Conflicting interpretations of these questions materialized most clearly in the context of the discussions surrounding the drafting of the IPBES rules of procedure. To a certain extent, these rules can be regarded as the 'Constitution' of IPBES: they define the institutional design of the Platform, the specific functions attributed to each subsidiary body, the criteria for distinguishing and classifying a 'Member' (i.e. having voting rights) from an 'Observer' (i.e. the ability to attend the conferences without voting rights), and, of particular interest for the question addressed in this chapter, the processes to nominate and select experts. While during the IPBES conferences scientific discussions on 'biodiversity' did not explicitly take place, scrutinizing the production of these rules allows to understand whose expertise is being legitimized in IPBES, which directly relates to who can be regarded as a 'biodiversity expert'. In other words, the 'local' work conducted by delegates within the confines of the IPBES conference venues directly influences whose expertise is recognized 'globally' – reflecting the observations of others that 'global' norms emerge *somewhere* (Cook & Ward 2012; Weisser 2014).

Importantly, these IPBES rules have to be agreed upon in Plenary by consensus. Until delegates manage to find an agreement on a common wording, disagreements are made visible in the text by using square-brackets, a way to signify that the topic will be further debated until consensus is reached. This was the case for the nomination of MEP experts:

> **Rule 27** <u>Candidates for the Panel are to be proposed by members [and observers]</u> of the Platform for nomination by regions and election by the

> Plenary. In the event that a region cannot agree on its nomination the Plenary will decide. Taking into account disciplinary and gender balance, each region will nominate five candidates for membership to the Panel. (IPBES Rules of Procedure 2013:8)

As observers were advocating for 'opening-up' nominations to non-State actors, there were different positions among delegations; these largely reflected a divide between developed and developing countries. Different visions of what IPBES should be were made visible: a strictly intergovernmental process under the control of governments vs. a more 'open' process allowing observers to nominate.

Independently of the position upheld, delegations repeatedly emphasized that the MEP should not be 'contaminated' by politics. In particular, many European countries were in favour of allowing observers to put forward the name of potential candidates for the MEP. This was perceived as an important condition to ensure that observers were able to self-organize without having to go through governmental channels, therefore ensuring the scientific independence and credibility of IPBES. For the UK, allowing observers to nominate was perceived as necessary to gain trust from scientists, and stimulate the mobilization of scientific networks, as well as to ensure the scientific quality of IPBES:

> 'What is at stake is the confidence of our scientists. It is important for the independence of the Platform as well as to mobilize the full range of expertise that is available.' (UK, Bonn, January 2013)

In addition to these concerns, several participants emphasized that allowing observers to nominate experts was necessary for practical reasons:

> 'I am a representative of an international organization and I cannot go to 150 focal points in States to nominate experts so that's why it's important for us to be able to nominate experts.' (Representative of the International Biogeography Society, Antalya, Dec. 2013)

Observers in favour of 'opening-up' nominations also argued that it would provide more flexibility, allowing possible gaps in expertise to be filled (for example by identifying experts that are not connected to governmental channels) and therefore facilitating the mobilization of the best range of expertise:

> 'Stakeholders acknowledge and see as crucial that governments identify, nominate, and select relevant experts for the IPBES work**.** In addition to this, stakeholders through their networks of scientists and other knowledge holders are also able to identify complementary relevant experts, which will increase the pool of experts to be considered for the delivery of the work programme.
>
> For this reason, the stakeholders present at this meeting strongly recommend that the necessary procedures are put in place in order to allow observers to nominate experts to be taken into consideration when selecting those that will coordinate and participate in the development and review of the assessments that are going to be included in the work plan.' (Stakeholder statement, IPBES-1, January 2013)

The latter statement also refers to the fact that in the vocabulary of IPBES, stakeholders are expected to implement the work programme of the Platform. However, many of them wish to be associated not only with the outcomes but also with the decision-making processes which would, in particular, include having voice in the framing of the IPBES work programme and suggesting experts. Concurrently, as delegations were debating processes to nominate experts, many observers were advocating for a 'stakeholder engagement strategy' that would facilitate their engagement with IPBES. Although this item was on the IPBES agenda, a member of the IPBES interim Secretariat mentioned that 'the atmosphere [was not] stakeholder friendly'. This comment suggests that other issues were perceived as more urgent for delegations and the priority was not to discuss the strategy.

In contrast, States in favour of restricting the expert nomination process so that governments would be the sole actors able to nominate for the MEP, insisted on the intergovernmental nature of the Platform: if IPBES is an intergovernmental process then all decisions should remain in the hands of governments. Some States (e.g. China, Argentina) expressed concerns over the possibility that some experts may be nominated without their consent or that they may become dependent upon experts from other regions, as emphasized by a representative of Guatemala during IPBES-1: 'We would not like to be dependent upon experts that are external to us'[91].

While drafting the IPBES rules of procedure much work was done to ensure that the MEP remained under the scope of governments, yet delegations simultaneously insisted on the need to keep the MEP scientifically independent. For example, during the IPBES-1 plenary sessions delegations recurrently insisted on the need to keep the MEP 'pure from politics' and to ensure its scientific independence:

> 'Bureau and MEP should be independent and members of the MEP should not be in the Bureau and vice-versa.' (China)
>
> 'The MEP should be independent.' (Peru)
>
> 'The MEP was created to be scientific and independent. The MEP should self-organize as necessary.' (USA)
>
> 'The MEP should not be prescriptive in its work.' (Canada)
>
> 'The MEP is a strictly scientific body. We should be careful not to ask the MEP to perform functions that go beyond its nature. The process must let political considerations in the Bureau not for the MEP.' (Brazil)
>
> 'The MEP should not be mandated with tasks that have a political content.' (Argentina)
>
> 'It is not easy to detach science from politics but the MEP should be seen as a tool.' (South Africa)

This means that multiple types of boundary work (Gieryn 1983), sometimes seemingly contradictory, were being performed by delegations: while insisting on the importance of scientific independence for the MEP, many delegates simultaneously attempted to keep the nomination process under control. For some, this was perceived as a paradox,

[91] This quote, and all the ones below, comes from my fieldwork notes from IPBES-1 (Bonn, January 2013).

as suggested by Robert Watson when chairing a working group in charge of finding an agreement on the nominations of experts:

> 'You keep saying you want the MEP to be independent but you keep trying to control them!' (Robert Watson, IPBES co-chair)

These disagreements concerned the nomination of experts for the MEP but also for the larger experts groups meant to carry out IPBES work programme. During IPBES-2 (Antalya, 2013), this was one of the major controversies. There was again a strong polarization between countries. While those mostly from Western Europe and Scandinavia were strongly in favour of opening-up nominations to observers; others, grouped under the label G-77 (a coalition of developing countries including Brazil, India, China) strongly supported maintaining nominations under the scope of governments. For some, maintaining all expert' nominations under the scope of governments was unacceptable as it would make the selection of experts in IPBES more constrained than in the IPCC. As a result, it was decided that only States would be able to put forward the name of potential candidates for the MEP and no concession seemed possible on this aspect. However, for the larger expert groups[92], an intermediary compromise was found and it was decided that observers would be able to put forward up to 20% of candidates and that the MEP would then select appropriate experts from this 'pool of experts'.

Here a reflection on what is meant by 'scientific independence' is useful. For many Western delegations, allowing observers to nominate experts was perceived as necessary to ensure the scientific credibility of IPBES, hence echoing a conception of 'self-organizing' science in which scientist should be granted a high-level of autonomy and be, to some extent, allowed to self-govern freely (Polanyi 1962). This view, which is perceived as safeguarding the authority of science, was in particular defended by Robert Watson, co-chair of IPBES, which is perhaps unsurprising as he is a scientist by training, having a PhD in atmospheric chemistry. Other observers, representatives of scientific delegations, were often supportive of this position and expressed disappointment over the compromise mentioned above:

[92] These larger expert groups are those in charge of writing and editing each of the IPBES deliverables, in contrast to the MEP they mobilize a much greater number of experts.

> 'They don't establish a science-policy interface but a policy interface with science at their service and that is not good.' (Representative of the SCB, Dec. 2013)

However, for many developing countries, allowing observers to nominate was not necessarily perceived as allowing IPBES to be more independent. On the contrary, it would potentially make them dependent upon 'Northern' experts (as emphasized in the quote from the delegation of Guatemala above). From this perspective, allowing observers to nominate was perceived as a risk that could make IPBES Northern dominated, and potentially biased towards the views of the 'Global North' as most (conventional) scientific expertise is concentrated there, hence echoing a critique which is often formulated against 'global' organizations (Biermann 2001; Biermann 2006; Ho-Lem et al. 2011). These debates over the particular processes to nominate MEP experts suggest that there were again divergent views regarding how science-policy relations should be organized within IPBES. As a consensus needed to be found for IPBES to move forward, delegations decided that the MEP experts would be nominated by governments only. It is worth noting here that while the MEP is meant to be the knowledge body of IPBES, scientists and knowledge-holders themselves actually had little voice in this process. They were able to express their views but in the drafting of the IPBES rules of procedures, decision-making power belonged to delegations only. In other words, boundary work was performed by delegations in liaising with other actors in the processes of drafting the IPBES rules.

8.3. Analysing the first interim Multidisciplinary Expert Panel

8.3.1. Examining the nomination and selection processes

Throughout IPBES-1 in January 2013, delegates of each UN region met separately to negotiate the name of the five experts to be put forward for their respective region. Before that, each delegation had been able to name five potential candidates and, as explained above, only governments were able to propose an expert. This means that the composition of the MEP was guided by a multi-layered process. First at the national level, governments selected and nominated potential experts for the MEP, then during the IPBES plenary process the five UN regions selected for each region five experts from their respective pools of nominees. Officially, the following criteria were used to guide both the nomination and selection processes of the MEP members:

> '(a) Scientific expertise in biodiversity and ecosystem services with regard to both the natural and social sciences, and traditional knowledge among the members of the MEP;
> (b) Scientific, technical or policy expertise and knowledge of the main elements of the Platform's work programme;
> (c) Experience in communicating, promoting and incorporating science in policy development processes;
> (d) Ability to work in international scientific and policy processes.'
> (Source: UNEP 2012b, based on rule 24 of the rules of procedures for IPBES Plenary)

These criteria were drafted collectively by States' delegates and reflect a conception of expertise in which experts are not selected only according to their epistemic skills, that is their contributory or substantive expertise, but also according to their ability to navigate between different worlds, in particular to mediate between 'science' and 'policy'. This echoes a conception of expertise in which experts are also selected according to their ability to act as 'translators', hence echoing Collins' notion of interactional expertise which puts the emphasis on the ability of experts to interact with participants who do not have the same contributory expertise: '[interactional expertise] is 'the expertise in the language of a specialism in the absence of expertise in its practice' (Collins & Evans 2007:28). These guidelines also reflect on conception of expertise as 'value-free' (see Pielke 2007) in which experts are not intended to represent anything but their own expertise, and, although their respective UN regions are taken into consideration, place-based affiliations should not matter. As explicitly stated in the UNEP guidelines:

> 'Experts are not intended to represent any particular Government or region. They are to be elected on the basis of their personal capacity and expertise.' (UNEP 2012a:4).

Consistent with this view, it is worth underlining that during the Bonn plenary conference (IPBES-1) where the selection of experts was made, most of the negotiations were carried out 'backstage' in meeting rooms not accessible to observers. In contrast the names of the 25 selected experts were announced 'frontstage', in the plenary, once an agreement had been found among the different UN regions. This means that the selection of MEP members was staged, being performed in the micro-settings of the conference centre. The micro-politics of expertise were not directly observable and the geographical and political considerations behind the selection of experts were kept secret. This can be interpreted as preserving the idea mentioned above that experts only represent themselves, embodying the 'view from nowhere'. As emphasized by other authors (e.g. Hilgartner 2000), which have underlined the ways in which experts' credibility can also be understood as a performance: there was a dramaturgical dimension in the selection of the MEP experts. Within IPBES, the fact that all negotiations surrounding the selection of the MEP experts were kept backstage and not made publicly visible can also be interpreted as a way to reinforce the idea of a scientifically independent MEP in which MEP experts only represent 'science'.

However, the composition of the Bureau and the composition of the MEP were not approached as two completely independent tasks: when composing the MEP, who was already in the Bureau mattered, and vice versa. It was clear that the selection of experts for both the Bureau and the MEP was a highly political process. Moreover, place-based and regional affiliations were important in the selection of MEP members. As a representative of UNEP explained:

> 'The reality is that when governments are involved in the selection process, their primary focus is on sub-regional balance, and then they look at the expertise. This is true of every region, Europe, Australia, North America, the primary focus of the governments when selecting who goes to the IPBES MEP is sub-regional balance. There is a massive challenge in moving beyond the geographic balance

issue to selecting the best available experts; you need a range of disciplines, perspectives. (...) From the governments the priority is geographical balance, but from the scientific community the focus is on scientific excellence.' (I34)

In the process leading to the selection of MEP experts there were important regional differences between the five UN regions, and the criteria outlined above also gave rise to diverse interpretations.

8.3.1.1 Regional differences in the selection and nomination of MEP experts

In total 89 experts were nominated by States for selection during IPBES-1 with an uneven distribution of candidates across the five UN regions:

- Africa: 19 candidates
- Asia-Pacific: 20 candidates
- Eastern Europe: 6 candidates
- Western Europe and Other Groups: 32 candidates
- Latin America and the Caribbean: 12 candidates

The overall number of experts which may have applied for the MEP in their own country (at the 'pre-nomination stage'), but whose name had not been put forward by delegations is not known to me, but would have obviously been higher than 89 (potentially hundreds). For additional insights, I would have needed details on the particular process for each country. I was able to access this information, as an example, in the case of France, but not for all IPBES countries. My analysis here is primarily concerned with explaining how 89 experts went down to 25 experts in the MEP. However, it is important to underline that this first level of selection/nomination, or filtration, at the national level, is key to understand how the pool of nominees (N=89) was formed (see section 8.3.1.2).

Even though regional representation was achieved by selecting five candidates for each UN region, there were major differences between and within these regions. More than 30% of experts were nominated by States from the WEOG group while for the Eastern

Europe region there was initially less candidates than available places and Eastern Europe delegations struggled to find a sufficient number of candidates (Kovács & Pataki 2016). As noted by an interviewee from the IPBES Secretariat:

> 'It is very worrying as it sounds like there is absolutely no interest in [the Eastern Europe region], they did not participate in the negotiations so we are trying to change that… and that's why potentially the next IPBES meeting will be in Turkey. We need to have a geographical balance but also a disciplinary one but for this we need more mobilization'. (I1)

It is also worth underlining that there was great heterogeneity in the ways experts were recruited at the national level. For example, in the UK, a call for nominations was circulated by a governmental advisory body, the Joint Nature Conservation Committee[93] explicitly seeking applications of potential candidates meeting the diverse criteria outlined above. In France, the process was inspired by the UK and a call for nominations was circulated over the summer preceding the selection of MEP members. However, the practical circumstances characterizing the circulation of this call triggered some discontent, for example some potential candidates thought that there was not enough time to apply and that it lacked transparency. This means that the contingencies characterizing the circulation of these calls, the nature of the agencies in charge of handling them as well as the particular audiences that were targeted are key to understanding how experts were recruited.

In the French case, a civil servant involved in the selection of MEP nominees also underlined the difficulty of reaching a common agreement between the diverse governmental ministries following IPBES. In France three ministries (Environment, Research and Foreign Affairs) are overseeing the participation of France in IPBES and representatives of these different ministries had to reach a consensus on the nominees. In total 38 candidates applied for the MEP (Table 8.2) and following numerous inter-ministerial negotiations, France put forward the name of three male ecologists, two of

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[93] The Joint Nature Conservation Committee is 'the public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation. (…) JNCC itself is a forum that brings together the UK's four country conservation bodies.' (*Source*: http://jncc.defra.gov.uk)

them being members of DIVERSITAS, with two of them having had wide-ranging experience with the IPCC and one of them having participated in the MA.

Table 8.2 Applications for the MEP in France (total of 38 applications)

Disciplinary background	Gender
Natural sciences: 58% Social sciences: 26% Economics: 8% Other: 11%	Men: 79% Women: 21%

Different processes were used to reach out towards potential experts for the MEP in different countries. In the French and UK cases, calls for nominations were circulated while in many other countries (e.g. Hungary, China, Zimbabwe), potential MEP members were directly contacted by their governments. In such instance, connections between government channels and potential experts largely explain how the pool of nominees was formed. For example, reflecting on how and why he was nominated, and selected, an expert of the African region explained:

> 'I was directly contacted by the Government and they asked me if I would be interested to take on this position. My profile is a bit different from other MEP members, and I am new to IPBES, but I think I was selected because I have a lot of experience in interacting with different networks, I am able to interact with people…I am not purely academic, my credentials are a bit different… but I understand well governance issues, and I worked at the local level as well, I had lots of interactions with farmers, doing participatory plant breeding.' (I22)

8.3.1.2 Conflicting conceptions of credible expertise

In the process leading to the selection of the first interim MEP diverse interpretations of the criteria outlined above were also made visible. In particular, while the MEP was meant to be multidisciplinary and inclusive of other knowledge-systems, some ambiguities remained regarding how such an objective should be achieved. As noted by a member of a European State's delegation:

> 'Following Panama, there were different views regarding who could be an expert in the MEP. It seems to me that there are several interpretations of

> *multidisciplinarity*. For some, it means natural and social sciences scientists, for other it means also traditional and indigenous knowledge holders. It is quite a sensitive topic. Does it mean nominating ethnologists or anthropologists with knowledge on other cultures? Or nominating directly an indigenous knowledge holder?' (I5, own translation)

This tension was particularly visible with the issue of traditional and indigenous knowledges. For instance, in their position paper, ICSU, in the name of the scientific community, stated that other knowledge systems should be represented by including an academic, or academics, with knowledge on other knowledge systems. In contrast, representatives of indigenous knowledge holders argued that indigenous knowledge holders should represent themselves:

> 'The present rule says *scientific expertise in biodiversity and ecosystem services with regards to the natural and social sciences and traditional knowledge* so this means scientific expertise on traditional knowledge. We want to change that, we want to delete that and have a second provision which says *indigenous knowledge and local knowledge and expertise among the members of the panel*. So this is indigenous knowledge as a distinct system of knowledge. Not under the scientific expertise but as a distinct expertise.' (I12)

There were contradictory interpretations regarding how indigenous and local knowledge should be accounted for in the MEP. There was willingness among representatives of indigenous people participating in the IPBES discussions to represent themselves – as the same interviewee puts it:

> 'Most indigenous people don't feel represented by their States and they want to organize and represent themselves'. (I12)

However, such a position was perceived as not being compatible with the mainstream conception of scientific credibility. For example, an ecologist nominated for the MEP explained:

> 'On [the question of indigenous knowledge] I am with the ICSU position which says that you cannot have a non-scientists in the MEP but you can, and you should have, social scientists with proper scientific credentials, who understand other knowledge systems. It is perhaps going to be discussed and one has to see how the MEP is to be discussed but my personal view is that it will not be functional if you have actual stakeholders, I mean representatives of particular interests in the MEP, it will be dead. It should be a strictly scientific approach.' (I13)

In other words, nominating a traditional knowledge holder in the MEP would make it 'too political' and put the scientific credibility of the structure at risk. Related to this problem is the fact that other forms of knowledge may not be validated through conventional peer-review processes and demand alternative modes of validation (Tengö et al. 2014). Moreover, of the 89 experts nominated for the IPBES MEP by governments, there was no 'ILK holder'[94]. While such tension was more visible in the case of other knowledge systems, the same kinds of problems regarding credibility can to some extent be identified in the case of social sciences. For instance, when asked about the process leading to the selection of experts in his home country, an ecologist member of a European delegation suggested that this was not surprising at all:

> 'Of course the government was not going to nominate social scientists; it was only a verbal message. It would be perceived as too risky.' (I16)

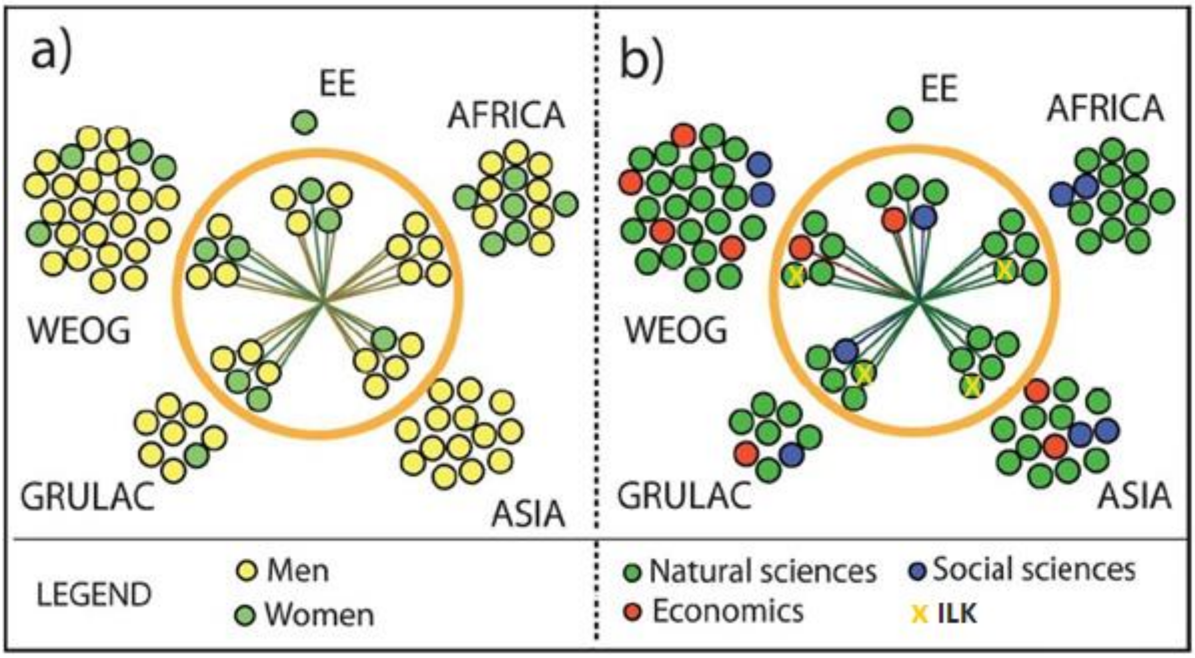
This suggests that while the MEP was meant to be 'multidisciplinary' there was a gap between the principles advocated by IPBES and its composition. In the section below, using data from the CVs of all MEP nominees, I analyse more closely the composition of the first interim MEP.

[94] I use this term here in opposition to a conception of conventional scientific expertise, as from a STS standpoint it could be argued that we are all 'ILK holders'.

8.3.2 Who is in? Who is out?

Analysing the composition of the first interim MEP in regard to the principles of gender and disciplinary balance advocated by IPBES, the first MEP was characterized by an imbalance in both cases, being highly skewed towards male natural scientists (Fig. 8.4). Although regional balance was achieved mechanically, by nominating five experts for each UN region, these regions themselves were contested. The first interim MEP therefore manifests important differences between and within the regions. This can perhaps be seen most visibly in the case of the Asian region for which disagreements between delegations from North-East and South-East Asia resulted in the nomination of 10 experts with a one-year rotation each (instead of 5 for a 2-year period).

Figure 8.4. Composition of the interim MEP for a) gender and b) disciplines for each UN region (N=89)



Inner cluster: selected experts for the MEP (N=25), Outer clusters: all MEP nominees (N=89); Labels: AFRICA: African group; ASIA: Asia-Pacific group; EE: Eastern European group; GRULAC: Latin America and the Caribbean group; WEOG: Western Europe and Other group. Marked with a cross are the four natural scientists who were mandated with representing ILK. (Source: Own figure compiled using data from the CVs of all nominees for the MEP and made using the software of social network analysis Gephi)

Regarding gender-balance, seven women (28%) were finally selected for the MEP, with some regions having no female MEP representatives at all (e.g. Africa) despite having put forward several. Regarding multi-disciplinarity, the first MEP was highly dominated by natural scientists, forming 84% of the total, with social scientists being not represented at all in Asia-Pacific and Africa. No traditional and indigenous-knowledge holder was nominated and IPBES claimed to have accounted for ILK through ecologists having experience in working with indigenous and local communities. In particular, four MEP members (R. Thaman, P. Lyver, E. Perez and R. Mpande) were later tasked with organizing a workshop on 'The contribution of indigenous and local knowledge to IPBES: Building synergies with science'(Thaman et al. 2013). This solution was not perceived as satisfactory by representatives of indigenous people's organizations:

> 'We welcome the selection of the MEP and the start of its work. The absence of indigenous knowledge holders in the MEP is extremely disappointing and must be addressed. Lessons need to be learned in ensuring broad multidisciplinary expertise in this body. Indigenous Peoples and Local Communities should be able to nominate experts to be included in the selection process for the MEP, and inclusion of such expertise in the MEP should be guaranteed.' (Closing statement, Forum of Indigenous Peoples and Local Communities, IPBES-1, January 2013)

A member of UNEP also reflected:

> 'The Platform is still not clear on how to bridge knowledge systems, there's no clear vision amongst participants on how indigenous and local knowledge will be used in a concrete way. That's a big challenge throughout. There are no indigenous knowledge holders on the MEP, although there are one or two who have worked very closely with indigenous communities. That question will remain, whether the MEP and the expertise should be individual knowledge holders who by definition have a very local scope of knowledge, or whether the experts should be experts in working with knowledge systems, understanding the links between knowledge systems and having a much broader scope. The jury is still out on that.' (I34)

The definition of multi-disciplinarity adopted in the IPBES rules of procedures stated that the MEP should consider the inclusion of 'scientists,[…], policy and technical experts, natural resources managers, [and] other relevant knowledge holders and users' (UNEP 2012c). However, in contrast to this definition, the first MEP did not explicitly move beyond recognition of expertise other than conventional academic expertise: 84% of selected experts had a PhD and 8% (2 experts) were currently studying for one. As for the representation of ILK, the inclusion of practitioners (e.g. managers of natural reserves) and non-academic experts triggered some discussions and many delegations thought that it would be easier to include non-academic expertise in the larger IPBES working groups. However, while recognizing predominantly academic expertise, some non-selected experts thought that the number of publications, which is often regarded as a key criterion in academia, had not been given enough weight. This is consistent with the idea that, in addition to scientific excellence, other dimensions such as the ability of these experts to mediate between different worlds and to mobilize diverse networks were taken into consideration during the selection.

Additionally, Figure 8.4 shows that among the nominees put forward by States there was an overwhelming proportion of candidates with natural sciences backgrounds, and more specifically ecologists (as shown by the analysis of the CVs of the MEP nominees), with a minority of candidates from social sciences. This may reflect the fact that few social scientists have an interest in IPBES, and that very few actually applied for the MEP. In this respect, a representative from IHDP noted that much progress had been made in the past years to increase collaboration between natural and social scientists but that much more remained to be done:

> 'It is difficult to engage behavioural sciences on IPBES, but ecology and economics have done relatively well in working together. In the first meeting of the Millennium Ecosystem Assessment there were lots of misunderstandings and differences of vocabulary between the disciplines but things have improved.' (I 35)

However, this skewedness may also reflect the preferences of delegations. Social scientists may have applied for the MEP in their own country (as it was the case for France where there were 26% of social scientists among applicants) but not selected by their governments. Out of 89 nominees, only 10% (9 experts) had a background in social sciences. As a result, in the first interim MEP social sciences were little represented and there were diverging views regarding whether natural scientists were appropriate representatives for ILK. Following the selection of the first MEP, several observers (e.g. the Society for Conservation Biology, IUCN) commented that allowing them to nominate would potentially have prevented such imbalances, thereby echoing comments formulated earlier during the discussion surrounding the drafting of the IPBES rules of procedures (see Section 8.2.2):

> 'Considering the recent experience of nominating experts for the interim MEP, IUCN would like to reiterate its recommendation that observers be able to nominate experts for the MEP.' (IUCN, position paper, January 2013)

This first interim MEP was intended as an experiment, to be replaced after a 2-year period with a new Panel, selected by a different system which would draw lessons from the first one. This could have allowed, for example, a better institutionalization of the rules regarding gender and disciplinary balance, which, at this point, are used as guidelines but are not prescriptive, in contrast to regional balance which is mechanically achieved (although not without contestation) by nominating five experts for each UN region. However, no alternative consensual agreement was found and the same process was then used for the nomination of the second MEP in January 2015, resulting in the composition of a second MEP similar to the first one (Montana & Borie 2015).[95]

[95] The selection of the 2nd MEP was made in January 2015 during IPBES-3 in Bonn. This event was beyond my period of fieldwork and therefore not included in this empirical chapter. However, a colleague and I have developed a short comparison between these two MEPs and elements of this work will be presented in Chapter 9.

8.4. Discussion and Conclusions

In this section, I return to the questions that have guided this chapter and review them in light of the analysis undertaken: (1) How was the MEP constituted? (2) Whose expertise and knowledge was rendered authoritative within the MEP? (3) Has the MEP met its principles in terms of inclusivity and diversity?

At one level the constitution of the MEP is about the creation of a credible body of experts that has to meet multiple requirements. Experts were selected not only according to their epistemic skills but also according to their ability to navigate the science-policy interface and to work in international processes. The selection of the MEP experts followed a multi-layered process with a selection at national levels and then during the IPBES plenary in the five UN regions. A multi-criteria system was used to guide the nomination and selection processes, and experts had to meet governments' requirements and be perceived as legitimate and credible by those in charge of carrying out the selection. In this respect, MEP experts reflect and represent the delegations' preferences, which embedded both political and epistemic concerns. The making of the MEP is also illustrative of the difficulties surrounding the constitution of an innovative space of expertise in an intergovernmental process operating within consensus as the main decision-making mode.

In particular, the discussions over the regionalization of the MEP and the impossibility to agree on how to regionalize differently, despite the fact that the UN region classification system was perceived as unsatisfactory by many, demonstrates how constrained institutional innovation is in intergovernmental settings. On matter of processes such as for the nomination of experts, a consensus has to be found among all States for an agreement to be made. For this reason, delegates also finally decided that the nomination of experts should be made by States and not open to observers. These analyses also suggest that, as already documented in several STS studies (Ezrahi 1990; Miller 2001; Brown 2009), experts are always representative in a dual sense, even if this is not publicly acknowledged. Here, in the case of IPBES, the boundaries of alternative 'regions' were interpreted in light of what they implied not only for biodiversity but also in terms of experts' representation, in particular in terms of number of experts for each region. This political dimension of expertise is perhaps particularly marked for the MEP given that it is a small, and highly visible, expert body.

Consistent with this view is also the observation that, although much boundary work was performed to convey the idea of a ‘pure independent MEP’, the selection of experts for the first MEP was a highly political process. To use a dramaturgical metaphor, during the IPBES plenary session ‘frontstage’ everything was made to perform the separation between science and politics, whereas ’backstage’ this distinction was less clear-cut (Hilgartner 2000a; Hilgartner 2004). Paradoxically, while insisting on the need to separate science from policy and politics, delegates finally handed over some ‘political’ tasks to the MEP such as prioritizing requests for the work programme as well as selecting authors for the IPBES working groups in charge of producing each of the IPBES deliverables.

At another level, the constitution of the MEP is also about the formation of a body of knowledge that may require forms of expertise that are not necessarily included in traditional or conventional scientific expertise – going beyond traditional forms of scientific expertise. However, the boundaries of the MEP were contested and in contrast to the founding principles advocated by IPBES, the first MEP did not reach gender-balance, and was highly dominated by conventional natural science expertise. The representation of ILK in particular remains controversial because conflicting views exist regarding how non-scientific knowledge should be accounted for in the MEP. Here, other knowledge-systems are being represented by natural scientists with academic credentials who have experience in working with indigenous communities. This approach contrasts with other processes in which other knowledge-systems were represented by anthropologists (e.g. in the MA, see Filer 2009) but, as explained above, no anthropologist was selected for the MEP. Representatives of indigenous people are welcomed to participate in IPBES but as stakeholders, not as members of the MEP.

A similarity between social scientists and indigenous-knowledge holders is that their knowledge was little represented in the interim MEP. There are major differences between them (and within these two categories as well)[96], but an important similarity is

[96] By which I mean that there are also important differences between different branches of social sciences, and between different ‘indigenous-knowledge’ holders.

that they produce forms of knowledge that are not easily decontextualized: they cannot be measured and made portable as easily as in the case of quantitative sciences (Asdal 2008). As is explicit in the name of IPBES, the notion of 'ecosystem services' has gained great prominence since its promotion by the MA and it is being increasingly used as a way to package biodiversity knowledge in a form that lends itself to circulation (Ernstson & Sörlin 2013). In light of the disciplinary (im)balance in the MEP, one could suggest, following Turnhout et al. (2014), that disciplines and forms of knowledge that cannot be translated into the ecosystem services framing were perceived as less credible and 'policy-relevant', and hence, left out. At this stage it is clear that the MEP recognized more experts with disciplines simultaneously able to produce 'global kinds of knowledge' (Hulme 2010) and to embrace the ecosystem services paradigm.

These results suggest that there are competing narratives around the model of expertise to be developed in IPBES, and contradictions between IPBES principles and practices. While on the one hand the MEP aspires to be the 'view from everywhere', some of the discourses and practices performed in IPBES are also associated with a conception of science as the 'view from nowhere' (Shapin 1998) with 'value-free' experts, reflecting the linear model of expertise (see Chapter 2, section 2.3.2 and Box 2.2). In particular, in attempting to establish itself as a legitimate and credible scientific authority, IPBES struggles to move away from a conception of science and expertise as in the 'view from nowhere' and alternative forms of knowledges and expertise are perceived as less legitimate. In contrast to the (relative) inclusivity and plurality of worldviews recognized in the IPBES conceptual framework, the boundary work performed by delegations within IPBES has favoured natural science expertise as encapsulated by the two MEPs. This suggests that, to date, IPBES struggles to engage other forms of expertise, and risks reinforcing the distinction between scientific knowledge and indigenous and local knowledge. Moreover, as emphasized by Opgenoorth *et al.*: 'non-elite actors are not yet properly involved [in IPBES] (…) stakeholders are only marginally involved in the nomination procedures for the MEP (2014:159).' In the next, final, chapter I reflect and discuss further these aspects and their implications by bringing these together with the diverse elements presented in throughout the thesis.

Chapter 9 – Discussion and Conclusions

> ‘Can the world be redefined and reconstructed from the perspective of the multiple cultural and ecological practices that continue to exist among many communities? This is above all a political question, but one that entails serious epistemological, cultural, and ecological considerations.’ (Escobar 1998:76)

Drawing on STS concepts and methods, in this research I have focussed on studying a number of processes related to the emergence of a new organization of global expert advice in the particular field of ‘biodiversity’: IPBES. After having presented a range of GEAs as well as the criticisms that surround them (Chapter 2), I explained the co-productionist thinking that underlines this research. In this final chapter I summarize and reflect on the main findings emanating from my empirical chapters (Chapter 5 to 8) answering the following research questions introduced:

(1) How is IPBES being constituted? How is IPBES constituting biodiversity expertise and knowledge?
(2) Is IPBES actually ‘opening-up’ and providing an inclusive model of expertise, in keeping with its self-description and own ambitions?
(3) How does IPBES compare to previous Global Environmental Assessments (GEAs)?

Building on these questions, I then reflect on the tensions between conceiving IPBES as the ‘view from everywhere’, the ‘view from nowhere’ and ‘the view from somewhere’. I also outline some policy implications, drawing in particular on the normative recommendations provided by STS scholars advocating for a reflexive turn in the governance of global expert advice, as well as ideas for future research.

9.1. Answering the research questions

(1) How is IPBES being constituted? How is IPBES constituting biodiversity expertise and knowledge?

IPBES was formally established in 2012 as an intergovernmental organization with decision-making power belonging to nation-states. However, as described in Chapter 5, before being formally established as an intergovernmental body, numerous debates took place regarding whether a new expert organization for biodiversity was needed and multiple discourses regarding what a potential IPBES could look like existed. In particular, I have identified three ways of imagining IPBES: as an IPCC for biodiversity, as a network of networks and as a wiki for biodiversity. These different IPBESes reflected alternative ways of perceiving 'biodiversity issues' – for instance regarding what should be the relevant scale of action – while being underpinned by different conceptions of science-policy relations. An intergovernmental component was perceived as compulsory only in an 'IPCC for biodiversity'. I have also outlined that there were many sceptical voices and numerous resistances existed against the creation of a new organization. In contrast to these different ways of imagining IPBES, it was established as an intergovernmental organization with a predominant focus on the global scale. Yet, in terms of mandate IPBES adopted four functions: (1) assessments, (2) knowledge generation, (3) capacity-building, and (4) policy-support. The principles adopted by IPBES recognized the need to work also at regional scales. This indicates that almost nothing was excluded from IPBES when it was established in comparison to these diverse imaginaries of possible IPBESes.

The establishment of IPBES as an intergovernmental organization is associated in particular with two dimensions. First, in IPBES decision-making power belongs to delegations, that is to nation-states. In this respect, it is worth underlining that during my period of fieldwork most of the work conducted by these delegations was bureaucratic and consisted in agreeing upon procedures to regulate the functioning of IPBES. IPBES is therefore representative of the preferences of governmental delegations. Moreover, in contrast to 'climate' which is often depicted as a *global* public good (e.g. IPCC 2001; Grasso 2004), under the auspices of the CBD 'biodiversity' has been categorized as a *national* resource[97] (Miller 2003). This means that issues of national sovereignty are particularly sensitive for IPBES. Secondly, a related dimension is that in this United Nations intergovernmental context consensus is the main decision-making mode. In particular, the rules of procedures regulating all IPBES processes, for example to define how MEP experts should be selected, had to be agreed upon by all delegations participating in IPBES. This drive towards the adoption of consensually agreed documents also means that once a particular process has been agreed upon it is very hard to 're-open it' and to organize processes differently (as in the case of the MEP, Chapter 8). Consensus as the main decision-making mode has both strengths and weaknesses. On the one hand, since one State has one voice it means that even small States can express discontent and be heard (as in the case of Bolivia, Chapter 7) while on the other hand it may also hamper the ability of IPBES to innovate as achieving consensus often involves keeping the lowest common denominator, or maintaining the *status quo*[98]. Moreover, it means that the voices of non-State actors are not necessarily included, unless they are reflected by delegations.

A recurrent aspect relating to the constitution of IPBES is that in most instances, although it aspires to be a 'scientifically independent' organization, and to be distinctively different from the CBD SBSTTA, epistemic and political concerns could not easily be distinguished from each other. This was made particularly visible in the context of the MEP experts whose nomination and selection were conducted by delegations. Although not meant to represent any country in particular, these experts were chosen not only according to their epistemic skills. Their national affiliations also mattered in the selection process. The case of the IPBES conceptual framework also shows that despite the fact that this framework was depicted, and often defended, as a purely heuristic device, it was punctuated by politico-epistemic debates. For example the notion of ecosystem services was contested by the Bolivian delegation for both political

[97] 'Adding to the difficulty of coordinating global conservation activities, the CBD accorded all biodiversity priority-setting to national governments under the theory that biodiversity is a national resource. Although some treaty participants continue to push a global conservation agenda, their efforts have been limited primarily to providing technical assistance to help countries produce national biodiversity action plans.' (Miller 2003:9)

[98] As shown in Chapter 8, in the absence of consensual alternative to regionalize the MEP, national delegations reverted to the status quo, adopting the UN classification of regions as a basis for experts 'nominations.

and epistemic reasons (Chapter 7). As a result, the IPBES conceptual framework appears more as a stabilizing device, which can be embedded with different meanings – that is a 'boundary object' (Star & Griesemer 1989), as the Burning Ember diagram (Mahony & Hulme 2012) or the 2°C target (Cointe et al. 2011) for climate change – rather than a pure 'epistemic thing' (Rheinberger 1997). Similarly, others have suggested that ecological indicators (Turnhout et al. 2007) or the IUCN Red List of threatened species (Gustafsson & Lidskog 2013) could perform such stabilization functions for biodiversity, enabling collaboration between diverse social worlds. Here again, the fact that IPBES generally seeks consensus is relevant: there was a willingness to adopt this conceptual framework through consensual processes and I would argue that the inclusion of what might be perceived as a minority position (Mother Earth) can also be related to this particular mode of decision-making.

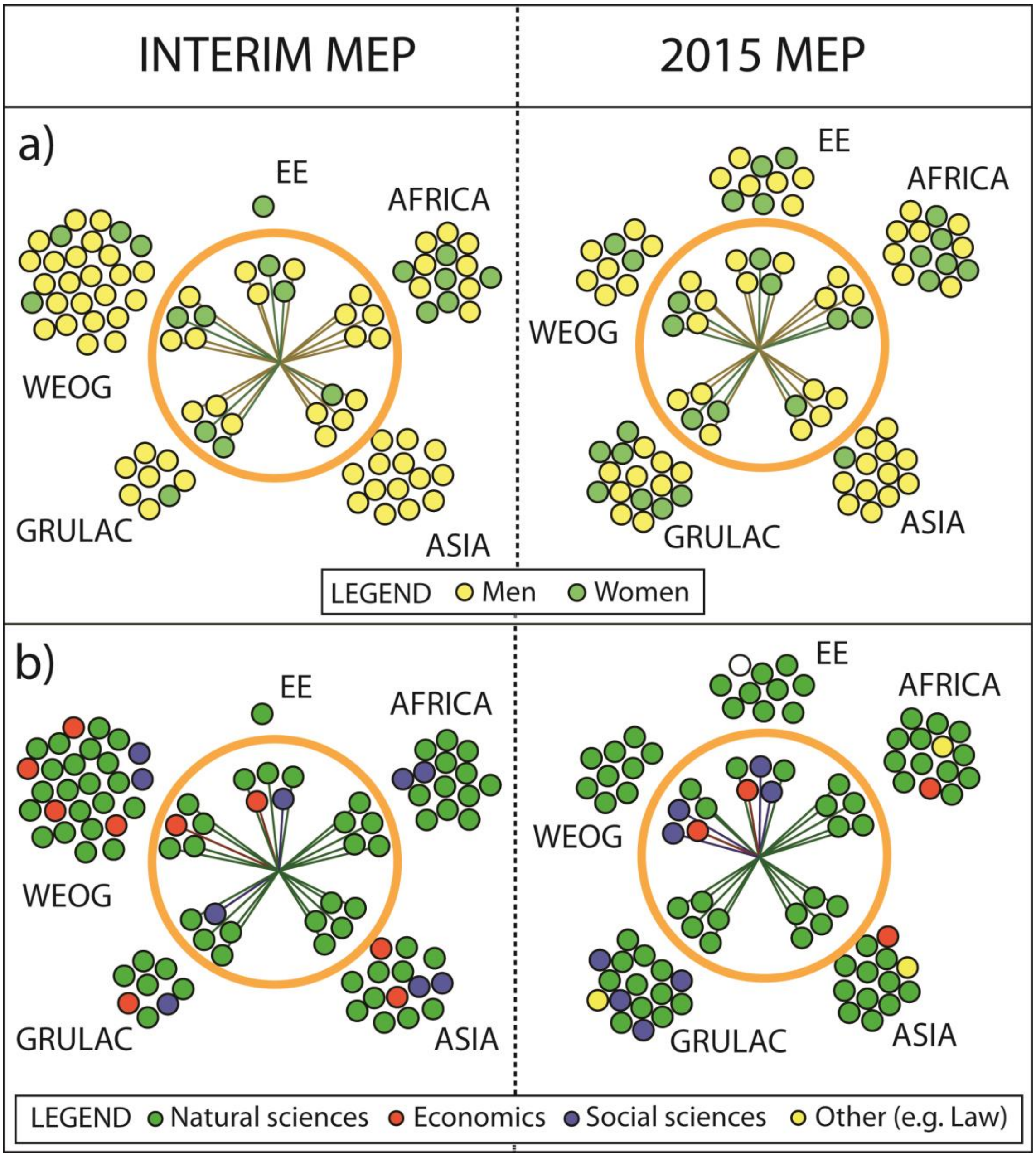
(2) Is IPBES actually 'opening-up' and providing an inclusive model of expertise?

In terms of its own ambitions, IPBES differs markedly from any previous GEAs. IPBES has positioned itself as a knowledge-platform explicitly seeking to achieve geographical balance in the representation of developed and developing countries, while being inclusive of different disciplines and ways of knowing biodiversity. These ambitions can be understood as reflecting the willingness to learn from previous GEAs while tailoring an approach relevant to biodiversity. However, in light of the debates that have animated the early stages of IPBES (Chapter 5), the search for inclusiveness can also be interpreted as a strategy to overcome those earlier conflicts and contestations. In light of IPBES's aspirations, I have chosen to focus on the development of the IPBES conceptual framework (Chapter 7) and on the constitution of the IPBES Multidisciplinary Expert Panel (Chapter 8). As documented in Chapter 7, the IPBES conceptual framework, which is meant to provide the vision for IPBES, is innovative in that it explicitly articulates diverse perspectives: 'ecosystem services' and 'Mother Earth'. These are two different ways of making sense of human-nature relationships and the framework explicitly recognizes both by means of a colour code that renders them visually equivalent and commensurable. For this reason, this framework has been nicknamed a 'Rosetta Stone', a metaphor which suggests that it has the ability to do justice to different worldviews.

This conceptual framework can to some extent be seen as an ambitious attempt to articulate ‘all disciplined ways of knowing nature, as well as conceptualizing human-nature relationships’ (Jasanoff and Martello 2004:348) – or more specifically two in this particular case. However, analysing the process that has led to its adoption also suggests some ambiguities regarding what can be expected from IPBES in practice (as will be further discussed in section 9.3). In contrast to the IPBES conceptual framework, as documented in Chapter 8, the composition of the first MEP did not really reflect diverse forms of expertise. Despite having adopted principles of gender and disciplinary balance, the first MEP in fact was highly skewed towards male natural scientists. IPBES claimed to have accounted for other knowledge-systems by nominating natural scientists having experience in working with local communities, but there were conflicting views as to whether this was an appropriate solution.

Following the selection of the first MEP in January 2013, a new MEP was selected in January 2015. This selection process also took place in Bonn and the process was very similar to the first one. Although the first one was meant to be an experiment, similar procedures were used to renew this body and the composition of this second MEP was comparable to the first. It also was highly skewed towards male natural scientists, with the exception that European regions selected more social science experts (Fig. 9.1). There could be potentially very mundane and practical reasons for this skewedness, for example if not enough social scientists or too few women applied for the MEP. However the analysis of the MEP nominees shows that in both cases some women and non-natural scientists (although in minority) were nominated (Chapter 8). Another line of explanation might be that in some regions, non-natural science expertise was not perceived as a necessity for a MEP candidate; the lack of disciplinary diversity may also reflect perhaps different regional epistemologies (see section 9.3 on ‘future research’ in this chapter).

Figure 9.1 Comparison between the composition of the interim and 2015 Multidisciplinary Expert Panel



The interim and 2015 MEP showing experts in regional groupings that were proposed (both inside and outside circle) and selected (inside circle only). Colouring shows: a) gender (colour: women - green; men - yellow); and b) academic discipline (colour: natural sciences - green; economics - red; social sciences - blue; other - yellow; white - no data available) based on most recent university training. Regional labels: Africa (African group); Asia (Asia-Pacific group); EE (Eastern European group); GRULAC (Latin American and Caribbean group); WEOG (Western Europe and Other groups). (Source: Montana & Borie 2015)

Arguably the MEP is a relatively small body of experts and IPBES is meant to mobilize much larger networks across all its working groups. Yet, these MEP experts are involved in the mobilization and selection of authors participating in the IPBES deliverables. This means that, although there is not necessarily a causal relation between the composition of the MEP and the ability of IPBES to mobilize a more diverse set of experts in its larger expert groups, MEP experts will have to be able to reach out towards networks beyond their own expertise to bring in disciplinarily and culturally diverse expertise. In other words, the fact that the MEP is dominated by natural scientists does not necessarily foreclose on the forms of knowledge being accredited – a natural science expert could, through their networks, mobilize experts well beyond their specific discipline, but it makes it more difficult. Moreover, without questioning the ability of the MEP to network beyond conventional scientific networks, the MEP also has a role to play to establish the credibility of IPBES. It is the most visible body of the organization, whose selection process is made public (e.g. before the selection of the MEP experts all their CVs were posted online). This means that the ability of the MEP to meet its principles also has a symbolic function. Not being able to do so may hamper its credibility and public identity[99].

Currently, in the development of its work programme, IPBES is trying to recruit non-academic experts. A task force on indigenous and local knowledge (ILK), coordinated by both IPBES MEP and Bureau members, has been established. This group, whose first meeting took place in June 2014 (at UNESCO, Paris), is charged with reflecting on potential ways to bring other forms of knowledge into each of the IPBES deliverables:

> 'The terms of reference for the task force specify that it be comprised of two Bureau members, three members and one back-up member of the Multidisciplinary Expert Panel, between them covering the five United Nations regions, and up to 20 additional experts on indigenous and local knowledge systems selected according to the Rules of Procedure. The task force is to be led by the MEP, in consultation with the Bureau. Governments and other relevant stakeholders submitted 120 nominations for the Task Force on Indigenous and

[99] Despite its relatively young existence, IPBES has already experienced some public controversies as some experts working for a pesticide company (namely Syngenta) were selected to participate and have important positions in the first fast track assessment of IPBES (on pollination and food production)(Le Monde, November 10th, 2014). IPBES responded to these criticisms by emphasizing that involving experts working for the private sector was part of its mandate and also adopted a conflict of interest policy, similar to the one regulating the work of the IPCC (Larigauderie 2015).

> Local Knowledge Systems. The selection process involved members of the Bureau and the Multidisciplinary Expert Panel together reviewing all nominations that had been submitted, based on examination of nomination templates and CVs for each nominee. Selections were made on the basis of excellence and relevance of candidates' expertise with respect to relevant areas of the work programme. Once selected on merit, further selection was focused on balancing of disciplinary, regional and gender diversity, as well as sectorial aspects (i.e. government and stakeholder nominations).' (UNEP 2015c:2)

Yet, to date including ILK is proving difficult and there appears to be a lack of 'know-how' to concretely account for these non-academic forms of knowledges, as in the case of the IPCC (Ford et al. 2012). As emphasized by one of the MEP members, in one of the working groups:

> 'Unfortunately, no knowledge holders from indigenous and local communities were nominated for the assessment on the diverse conceptualisation of multiple values of nature and its benefits (deliverable 3(d)). The MEP had to approach networks and organisations to find experts with this background.' (MEP expert from Eastern Europe)

Several experts participating in the IPBES working groups also commented on the fact that experts that had previously been involved in the IPCC were often asked to take leading roles in order to share their experience and knowledges on this type of processes[100].

In a fascinating book on the emergence of ecology in North America, historian of science Robert Kohler describes how ecologists had to invent 'new practices of places' to make their knowledge legitimate and trustworthy. Describing the emergence of ecological sciences in North America, Kohler explains that the affirmation of this discipline was far from a straightforward process as higher status was generally granted to lab-related disciplines. He suggests that the invention of 'border practices' in which

[100] In this respect, the procedures of the IPCC have often been used as a template (the IPCC documentation was circulated in most IPBES conferences and many processes such as those to select contributing authors, are very similar). The influence of the IPCC is also more informal: among the experts participating in IPBES those that had previously participated in the work of the IPCC are often asked to take on leading roles so as to share their experience and tacit knowledge on these processes.

'placeless' practices (labwork) and 'practices of place' (fieldwork) were mixed, have been key in allowing field biologists to affirm their identity as scientists (Kohler 2002)[101]. It seems to me that there is a parallel to develop between these historical insights on the origins of ecology and IPBES. That is, in many respects, IPBES is also trying to invent new 'border practices' to delineate a priori useful, policy-relevant knowledge, for example by attempting to adopt processes for knowledge-validation which go beyond peer-review and include grey literature (UNEP 2015d). While being also inspired by a science-driven initiative, namely the IPCC, IPBES also attempts to re-interpret it. However, the early stages of the MEP as well as the initial steps of the IPBES work programme suggests that the development of these new 'border practices', while noteworthy, is also proving difficult. This leads me to reflect, in the third research question below, on how IPBES actually compares to previous GEAs.

[101] Such conquest was not easy and Kohler reports some of the failures experienced by the first generations of field biologists. At the start of the 20th century, there was a willingness to renew the study of biology and to make it more attractive to students by adding fieldwork to the courses. There was also the idea that such a gap between lab-work and outdoor activities was somehow nonsensical and that amateur naturalists' knowledge could also benefit the study of nature. While for some biologists nature should be studied mostly through the lens of a microscope, other believed that conducting research outdoors was also a condition to renew the field. However, this implied practising science in places that are open to a whole set of influences. Whereas access to laboratories is restricted to scientists with white coats and credentials, access to the outside world cannot be that controlled. This image of fieldwork as potentially accessible to everyone contributed to the idea that field biology was somehow less credible than other lab-related disciplines. For this reason, in an attempt to defend their scientific authority, some field biologists tried to distinguish themselves from naturalists and other amateur practices by importing directly some lab-like practices into the field. This also meant judging their work through the standards used in other highly credited lab disciplines (e.g. genetics or physiology) instead of creating their own bespoke standards. At work here are different conceptions of scientific credibility, and these, as Kohler argues, can be related to the idea of place. For disciplines in which knowledge is produced in laboratories, credibility is gained through the erasure of place. This conception of scientific credibility challenges disciplines in which, as it is often the case for ecology, the places in which knowledge is produced matter. A key dimension of the work carried out by ecologists lies in their ability to read the natural world and to find the right types of places to carry out their experiments. It is through their ability to accept the unpredictable character of nature, while being able to develop "practices of place" of their own, that ecologists can produce credible knowledge-claims. A crucial aspect here lies in the gradual invention by ecologists of their own border culture, a border at the intersection between fieldwork and labwork, that has allowed them to affirm their own ways of knowing.

(3) How does IPBES compare to previous Global Environmental Assessments (GEAs)?

Here I reflect more particularly on how IPBES compares to the GEAs introduced in Chapter 2, that is the IPCC, the GBA, the MA and the IAASTD. In light of the material presented in my empirical chapters, I focus most particularly on the conceptual frameworks and forms of expertise mobilized in these, as well as on the location of their respective Secretariats.

Whether implicitly or explicitly, all GEAs act with particular frames providing a certain representation of 'the problem' at stake while delineating whose knowledge and expertise should be included in the conduct of GEAs. The case of the IPBES conceptual framework is particularly instructive in this respect. With its conceptual framework, IPBES explicitly attempted to articulate different ways of knowing biodiversity. Before IPBES, previous biodiversity and ecosystem services assessments had also adopted a common conceptual framework. Here it is worth underlining that there was a major shift in the underlying paradigm used in the GBA and the MA. Although in the MA greater efforts were put into developing an explicit conceptual framework, the GBA also acted upon a particular representation of human-nature relations and it is worth underlining that these two initiatives operated with radically different understandings of these relations.

The GBA included a conceptual diagram (Fig. 9.2) opposing 'human society' to 'biodiversity'. In doing so participants in the GBA focused on documenting the impacts of human actions on the natural world, and opposed 'society' at large, without differentiating between different countries or cultures, to 'nature'. It is in this sense that the underlying paradigm of the GBA was sometimes perceived as too 'conservationist', reflecting the concerns of Western scientists for the natural world while failing to consider the complex relationships between environmental and development concerns. In contrast, the MA articulated its work around the concept of 'ecosystem services'. This represented a major shift in the framing of human-nature relations underlying these global biodiversity assessments, and in their overarching objectives.

Figure 9.2 Conceptual framework of the Global Biodiversity Assessment: 'The interaction between human society and biodiversity' (1995:6)

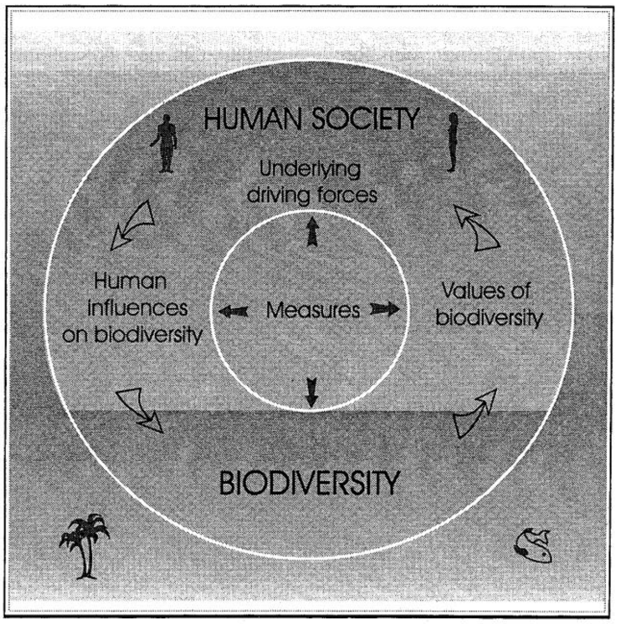
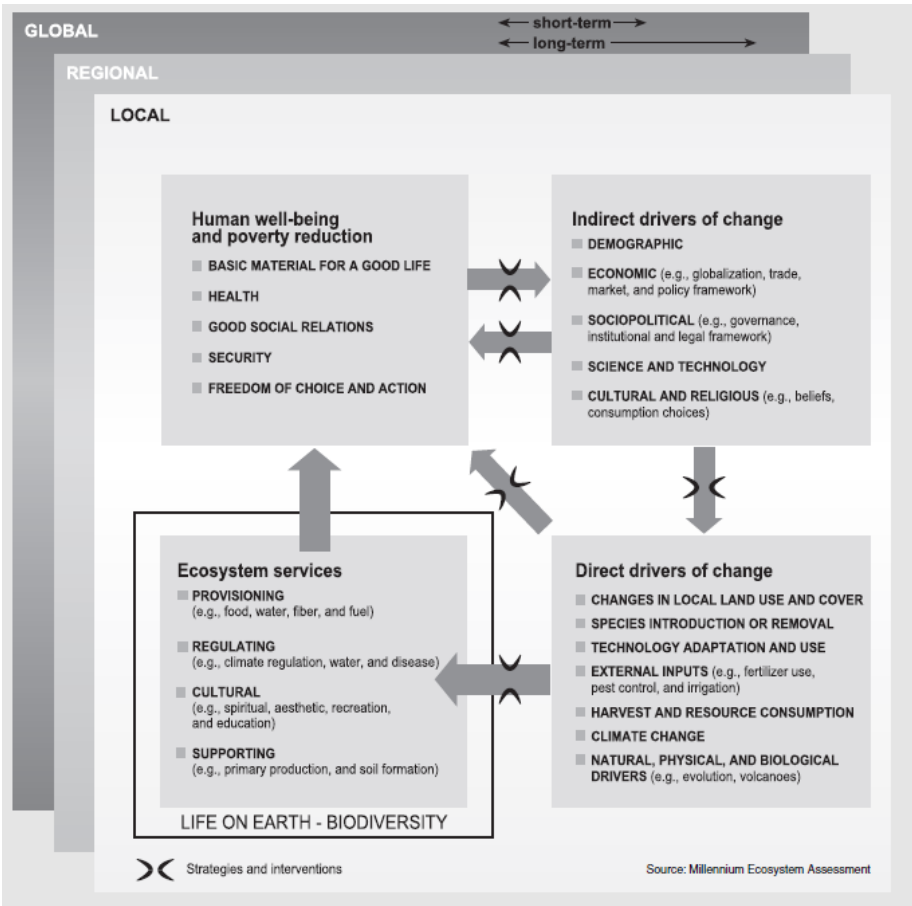


Figure 9.3 Conceptual framework of the Millennium Ecosystem Assessment (2005)



This shift can be understood considering that the GBA, as mentioned above, faced several criticisms for being too conservation-oriented. It largely overlooked the poverty and development dimensions of biodiversity issues, therefore excluding from the framing of its work critical issues of particular relevance for developing countries (Biermann 2006). This critique can also be understood against the broad range of studies that have documented the ways in which concerns about nature protection led to the eviction of local, often marginalized, communities in diverse areas (Brockington & Igoe 2006; Wilkie et al. 2006; Adams & Hutton 2007). Additionally, another major area of dispute relates to the access and use of genetic resources, in particular regarding issues such as bio-prospecting. Numerous conflictual relations between, for example, developed and developing countries, or between the interests of pharmaceutical firms and those of local communities, have been documented (Bonneuil et al. 2014).

As explained in Chapter 2, in contrast to the GBA, the MA explicitly sought to overcome a binary opposition between humans and nature, and to articulate its work in relation to the Millennium Development Goals, therefore adopting a more anthropocentric framing that would allow consideration of issues relevant for developing countries. The overall objective of the MA was 'human well-being'. In doing so, the MA produced a conceptual framework (Fig. 9.3) organized around the notion of ecosystem services. While the notion had been formulated before (e.g. Costanza et al. 1997), the MA contributed its promotion – understood as 'the benefits that people obtain from ecosystems' – while providing a typology that has become perhaps an heuristic tool guiding the work of many biodiversity and ecosystem services scientists.

In the context of the development of the IPBES framework the concept of ecosystem services was contested by different actors – most vehemently by the Bolivian delegation – but more discrete criticisms were also expressed by observers as well as by other delegations. This means that while the ecosystem services framing has become hegemonic, the approach appears by no means as consensual. An important question regarding IPBES relates to whether it will be able to open-up a space for this diversity of approaches in practice (Turnhout et al. 2013; Turnhout et al. 2014; Borie & Hulme

2015). It further raises the question of the particular metrics and standards that IPBES will adopt to include these diverse forms of knowledges.

Here, contrasting the case of the IPBES with the IPCC is also useful. While in IPBES the search for a common conceptual framework has been explicit, the IPCC has also operated under a particular framing of climate change, although more implicitly, and the 'Bretherton diagram' underpinning Earth system science is often understood as underpinning this conceptualization (NASA 1986). As mentioned in Chapter 2, according to Hulme three main elements are suggestive of the framing of climate change as adopted by the IPCC: '(1) a globalised atmosphere (…) which offered the world a single depository for greenhouse gas emissions and which opened the way for predictive climate modelling; (2) the goal of a stabilised global climate as the centrepiece of policy; and (3) the institutionalising of mitigation and adaptation as co-dependents in future global climate policy regimes' (Hulme 2008). As argued elsewhere:

> 'By placing numerical calculations of future changes in the climate system at the start of a causal chain by which climate changes, societies experience 'impacts' and then attempt to respond, the IPCC has arguably contributed to a form of climate reductionism which simplifies complex relationships between societies, weather and climate, and which potentially marks the re-emergence of a form of climatic determinism which positions climate as the chief determinant of human fortunes and futures. The dominance of this framing may explain some of the exclusions or overlooking of alternative knowledge systems (Bjurström & Polk 2011; Ford et al. 2011).' (Borie et al. 2015:9)

From a historical standpoint, it can be argued that the IPCC has tried to construct a disinterested and apolitical 'view from nowhere'. While attempting to include experts from diverse countries and seeking geographical balance among these, the IPCC has been predominantly organized around the 'hard' sciences whose expertise is mostly located in occidental countries. The knowledge-practices developed in the IPCC (e.g. numerical modelling) have contributed to the diffusion of some particular ways of understanding future climates and of making sense of climate change (Hughes 2015). In doing so, the IPCC has constantly tried to reach consensus around science and to 'speak with one voice'(Oppenheimer et al. 2007; O'Reilly et al. 2012).

This particular framing is arguably related to, and reflected in, the IPCC's organizational structure. The three working groups (WG) of the IPCC are marked by disciplinary distinctions: while WGI is charged with the 'physical scientific aspects of the climate system' and gathers mostly climate scientists, WG II focusses on the 'vulnerability of socio-economic and natural systems to climate change' and attempts to identify options for adaptation, while WG III focusses on 'options for mitigating climate change through limiting of preventing greenhouses gas emissions'. Although social scientists are involved in WGII and WGIII, the framing of climate change constituted by the IPCC relies mostly on metrics (global temperature, concentration of greenhouse gases) emerging from WGI, and participation in the IPCC is highly skewed towards natural sciences. In contrast, IPBES seeks to implement a distinct type of organization in which the composition of each working group is regulated by the principles of gender, regional and disciplinary balance, rather than simply relying on disciplinary or topical delineations.

These diverse conceptual frameworks can be thought of as instruments of co-production. They are underpinned by different normative assumptions regarding what are the problems related to biodiversity (or climate change). They act, to a certain extent, as 'structuring devices' to delineate whose knowledge should be included. In this respect, the GBA predominantly mobilized natural scientists and most of the chapters of the assessment were representative of diverse branches of ecology (e.g. population ecology). In contrast, the MA explicitly recognized that both natural and social science knowledge was necessary, in particular to document the diverse relations between 'human well-being' and 'ecosystem services'. In this respect, the social and disciplinary organization of the MA contrasts markedly with the GBA. IPBES aspires to stimulate collaborations between diverse epistemic communities even further, and explicitly attempts to provide a space for ILK. In IPBES, the search for an explicit unified conceptual framework can also be thought of as an attempt to organize collaborations between heterogeneous groups.

Turning to the location of the Secretariat of these organizations (Table 9.1), with the exception of the MA which was hosted in Malaysia, all GEAs reviewed in Chapter 2 had their Secretariat in Northern countries. Interestingly, it is worth mentioning that the current chair of IPBES, Abdul Hamid Zakri[102] is an ecologist from Malaysia, and was also co-chair of the MA (with Robert Watson). Only the IAASTD had a distributed structure that echoes the one recently adopted by the Future Earth research programme. Returning to IPBES, hosting the Secretariat in Bonn suggests that this organization remains firmly anchored in the 'Global North' and there is here no significant innovation in contrast to most GEAs.

Table 9.1 GEAs and the location of their Secretariat

GEA	Location of secretariat & Coordinating organization(s)
GBA	No explicit Secretariat but the coordination of the GBA was realized by scientists hosted in the USA, the UK and France; UNEP
MA	Penang (Malaysia); UNEP
IAASTD	Distributed secretariat with main unit in Washington (USA) and other sub-units in Roma (Italy), Nairobi (Kenya), Paris (France); FAO, UNEP, UNESCO
IPCC	Geneva (Switzerland); WMO, UNEP
IPBES	Bonn (Germany); UNEP

The location of IPBES in Bonn illustrates the difficulty of moving beyond already established dichotomies between centres and peripheries, here in the case of global environmental governance. But other studies have highlighted similar issues in other areas, such as for the production of pharmaceutical knowledge (Pollock 2014), scientific knowledge in the environmental sciences (Karlsson et al. 2007) or climate change knowledge (Pasgaard et al. 2015). According to Toussignant:

> 'One of the ways in which colonial policies, geographical imaginations, global economic inequality and intellectual property rights have helped to create and maintain peripheries is by reserving certain kind of scientific practices for locations in which wealth and power is concentrated.' (Toussignant 2013:747)

There is a geographical dimension to the idea of 'opening-up' and I would argue that hosting IPBES in Seoul (or elsewhere) might have been interpreted as such. As illustrated in Chapter 6 this may have both symbolic and concrete consequences for the

[102] Abdul Hamid Zakri studied in the US for his PhD (obtained in 1976), in addition to his role as co-chair of IPBES he also acts as a scientific advisor for the Prime Minister of Malaysia. He also acted as the chairman of the CBD SBSTTA (1997-1999) and participated in the activities of the IPCC.

production of global biodiversity knowledge. Moreover, reasoning from a co-productionist perspective, this case shows that the identities of both IPBES and Bonn are being constituted together. Anchoring IPBES in Bonn also contributes to the reinforcement of Bonn as the 'UN city of Germany' and the city is acquiring new meanings, being increasingly performed as the 'capital of biodiversity'.

While having ambitions that differ markedly from other GEAs, IPBES still struggles to adopt new 'border practices' that would allow the recognition of diverse forms of knowledges and expertise. In the section below, I discuss more particularly these ambiguities by reflecting on IPBES as the 'view from everywhere', the 'view from nowhere' and the 'view from somewhere'. I suggest that this 'somewhere' may be characterized by developing comparative insights between diverse GEAs through the concept of institutional epistemology (Borie et al. 2015).

9.2. Between everywhere and nowhere: IPBES as the view from somewhere

View from everywhere

In contrast to the IPCC, it can be argued that IPBES has so far sought to achieve rather a 'view from everywhere' characterized by the willingness to bring together diverse ontological and epistemic commitments, as reflected (partially) in its conceptual framework. The development of a stakeholder engagement strategy, which is meant to allow actors from civil society to get more closely associated with the work of IPBES, is also an innovative feature of IPBES which can be interpreted as an effort to open-up a space for non-State actors. As of September 2015, the list of registered IPBES observers was of around 280 individuals with heterogeneous affiliations including representatives of scientific organizations and research institutes (e.g. universities, ICSU, UFZ), of UN organizations (e.g. UNESCO, UNEP-WCMC, UNDP), NGOs (e.g. IUCN, Birdlife International) and of indigenous people's organizations (e.g. Tebtebba)[103].

This search for inclusivity can be seen as an attempt by IPBES to achieve global credibility and to be authoritative in front of multiple audiences and across diverse

[103] This information is based on the list of participants observers registered to IPBES as of September 2015.

cultural and geographical contexts. It also represents an effort to be representative of multiple people and places and to articulate different ways of knowing biodiversity, or making sense of human-nature relations. Yet, contrasting the relative inclusiveness of the IPBES conceptual framework with the composition of the MEP, suggests some contradictions between the forms of knowledge and expertise a priori deemed necessary to address biodiversity and ecosystem services issues and the forms of expertise and knowledge which are actually recognized in practice. Moreover, although numerous individuals and organizations are registered as observers, the involvement of these through a stakeholder engagement strategy has been limited so far. While a 'Stakeholder Engagement Forum' is in development, no funding has been attributed to this activity and these stakeholders are placed more in an end-of-pipe position rather than associated with the framing of the IPBES work programme. Their expected role is more to implement this work programme (Opgenoorth et al. 2014).

View from nowhere

While aspiring to 'open-up' its frame of reference, IPBES explicitly recognized that a broad range of diverse knowledges was necessary for its work, but this has not (yet) translated into the recognition of a broader range of experts. Although the composition of the MEP was meant to be guided by principles recognizing that IPBES should move beyond a narrow conception of expertise (understood as conventional, academic, expertise), the process leading to the selection of these experts revealed conflicting interpretations in the application of these principles. Much boundary work conducted both by delegations and scientists in IPBES was, and is still, oriented towards the preservation of a 'scientifically independent' IPBES which has to remain free of contamination by politics to be authoritative (this could most visibly be seen in the case of the MEP, Chapter 8). This suggests that institutionalizing other forms of expertise while keeping up with a certain conception of scientific credibility and authority is proving difficult.

This was most visibly seen with the case of 'ILK': conflicting views existed as to how to include these non-conventional forms of expertise. The first MEP claimed to have accounted for these through the selection of natural scientists experts with knowledge about other knowledge-systems. This means that the 'same' experts, safeguarding the authority of science, are therefore meant to represent this broader range of knowledges: the MEP remains mostly a body of experts with academic credentials. This illustrates the difficulty of drawing new types of 'boundaries' in the delineation of useful or policy-relevant expertise. Although perceived as appropriate by some, this solution was perceived as inadequate by others, in particular by representatives of indigenous knowledge holders participating in IPBES. These debates about how to account and represent non-conventional forms of knowledge were also visible in the context of previous biodiversity and ecosystem services assessments, in particular in the MA (Brosius 2006).

This boundary work is associated with a conception of science as the placeless 'view from nowhere' and with a particular conception of scientific credibility that does not favour alternative forms of expertise (e.g. ILK). Moreover, while adopting an innovative conceptual framework, IPBES also essentialized the distinction between 'science' and 'ILK', reifying them as two distinct monolithic categories. This categorization leaves, on the one hand, science as the view from nowhere, untouched, while on the other hand ILK serves to conflate all knowledge that is perceived as more placeful and not 'free from local coloration':

> 'While broadening the epistemological spectrum from 'science' to 'knowledge', international regimes have continued to invoke, and so to reinforce, the boundary between science and other forms of knowledge; only knowledge that cannot and does not aspire to the status of science is labelled local or indigenous, as against science itself, which remains putatively universal and free from local coloration.' (Jasanoff & Martello 2004:13)

Within IPBES, science and ILK are conceptualized as two distinct categories between which synergies should be developed (Thaman et al. 2013). Other authors have pointed out the ambiguities arising from IPBES's aspiration to consider ILK and suggested that while multiple forms of knowledges exist, engaging with these at a global scale might be too ambitious and turn IPBES into a 'tower of Babel of scales and cultures' (Soberón & Peterson 2015). While insisting on the need to consider local knowledge in transnational research projects, others have emphasized that engaging 'tacit knowledge' in such initiatives was highly challenging and needed time and resources

(Görg et al. 2014). So far, IPBES still needs to recognize and engage with broader networks to encourage the participation of non-conventional organizations and actors, such as amateur naturalists and practitioners, who are less connected to global science-policy settings.

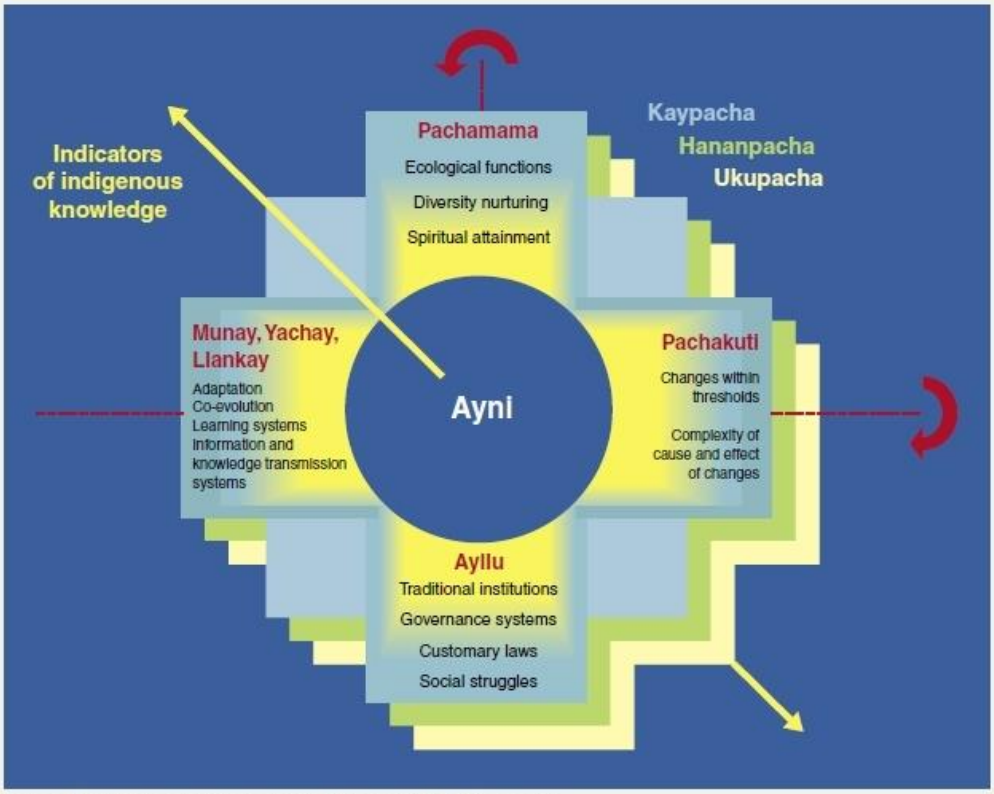
View from somewhere

Although aspiring to be globally credible and authoritative by attempting to offer a 'view from everywhere', IPBES inevitably offers a 'view from somewhere'. Ultimately, the forms of knowledges and expertise located in IPBES result from politico-epistemic disputes marked by the views and interests of those having a voice in its decision-making processes or being able to influence the preferences of delegations by participating in IPBES (by being there as an observer for example).

Characterizing this 'somewhere' therefore implies attending to the particular actors and organizations connected to IPBES. Like the IPCC, IPBES is an intergovernmental process owned by governments and these play a key role in delineating what counts as relevant expertise and knowledges. This was made most particularly visible in the selection process of the MEP experts. Although much boundary work was directed towards the preservation of a pure independent MEP, these experts were selected not only according to their scientific or epistemic credentials. They were also selected according to their ability to meet delegations' preferences which also embedded normative assumptions regarding whose expertise should be in the MEP. Regarding the IPBES conceptual framework, the fact that the critique of 'ecosystem services' found support among some government representatives is also important. In the absence of vehement critique by delegations (most particularly the Bolivian one), one can speculate as to whether the IPBES conceptual framework would have been very different from the one adopted in the MA.

In particular, it is clear that the IPBES conceptual framework is a compromise when comparing this framework, which includes Mother Earth, to the one that was adopted for a sub-regional assessment in the MA (Fig. 9.4). While this regional interpretation of the MA framework also refers to Mother Earth ('Pachamama') the diagram is completely different from the initial MA framework[104]. In other words there is no reason, based on the MA experience, that the 'ecosystem services' and the 'Mother Earth' views should fit in the same boxes of the IPBES Rosetta Stone. Some authors also stressed that the IPBES conceptual framework, by crushing together 'ecosystem services' and 'Mother Earth' in the same boxes, had failed to recognize the incommensurability between different worldviews and was associated with a neoliberal, econometric, understanding of biodiversity that could but only lead to damages on the environment (Maier & Feest 2015).

Fig. 9.4 Local adaptation of the MA framework for the Vilcanota sub-global assessment (Peru) (*Source:* MA Synthesis 2005, Chapter 6, p. 87)



Source: Millennium Ecosystem Assessment, Vilcanota Sub-global Assessment

[104] 'In the case of an assessment conducted by and for indigenous communities in the Vilcanota region of Peru, the framework had to be recreated from a base with the Quechua understanding of ecological and social relationships. Within the Quechua vision of the cosmos, concepts such as reciprocity (Ayni), the inseparability of space and time, and the cyclical nature of all processes (Pachakuti) are important components of the Inca definition of ecosystems. Love (Munay) and working (Llankay) bring humans to a higher state of knowledge (Yachay) about their surroundings and are therefore key concepts linking Quechua communities to the natural world. Ayllu represents the governing institutions that regulate interactions between all living beings (…). The Vilcanota conceptual framework also includes multiple scales (…); however, these represent both spatial scales and the cyclical relationship between the past, present, and future..'(MA 2010:106)

Moreover, grounding the study of GEAs in a pragmatic STS approach is relevant to characterize this 'view from somewhere' and understand how the consensually agreed upon knowledge-claims emanating from GEAs are manufactured. Both at the conceptual and methodological levels, the co-productionist idiom proves useful to do so. It allows to develop empirically rich accounts (or thick descriptions) of the knowledge-practices in GEAs, in a way similar to what STS scholars have done to understand scientific practices in laboratories. By refusing to take categories for granted (e.g. 'science', 'policy', 'global', 'local'), this approach allows to examine the particular debates surrounding their construction (e.g. what makes a credible expert?), to better understand how particular modes of reasoning and epistemic practices are enacted, and therefore to examine how science and policy are co-produced and with which effects. For example, in my analysis of the development of the IPBES conceptual framework (Chapter 7), I find that ANT is particularly useful to explain the struggles that surrounded the making of this device but that to explain why it was adopted the concept of boundary object, emanating from the social world framework, proves more useful, as it allows to underline the diverse meanings given to the IPBES conceptual framework, in contrast to the rigidity of the concept of immutable mobile.

As argued elsewhere, introducing the concept of 'institutional epistemologies', which perhaps echoes Douglas's notion of organizational culture (Douglas 1986), may be useful to further describe this 'somewhere' while allowing to develop comparative insights between different GEAs (see Borie et al. 2015). A preliminary comparison of these with some possible 'variables', contrasting IPBES with the IPCC, is presented in Table 9.2[105].

[105] The different dimensions presented in table 9.2 were selected to be representatives of diverse aspects in which IPBES and the IPCC relate, or differ, from each other. This work was presented at the 'Resource Politics' conference (Institute of Development Studies) in Brighton in September 2015. It can be accessed here: https://resourcepolitics2015.files.wordpress.com/2015/10/borie-et-al.pdf (last accessed December 13th, 2015)

Table 9.2: Comparing the IPCC and IPBES (*Source:* Borie et al. 2015:24-25)

	IPCC	IPBES
Consensus	Science speaking with one voice; lowest common denominator	Aim to incorporate divergent ontologies and epistemologies within consensus positions
Argumentation	Reviewer and government objections, persuasion, [minority reports]	Reviewer and government objections, willingness to do minority reporting
Conceptual frameworks	Implicit; globalism; Bretherton diagram; linear model & disciplinary hierarchy	Explicit; 'Rosetta Stone' ; multi-scalar approach; inclusivity
Modes of futuring	Scenario and pathway analysis	Scenarios and modelling; willingness to develop 'backcast' and participatory techniques
Participation	Biased towards global North and quantitative sciences despite efforts to contrary to ensure 'global credibility'	Seeking geographic, disciplinary, and cultural diversity, integration of peer-reviewed material and grey literature
Assumptions regarding valid knowledge	Peer-reviewed material	Peer-reviewed material and grey literature
Strategies of coordination/harmonisation	Uncertainty guidelines; scenario methodologies	Explicit conceptual framework; guidelines to facilitate synergies between 'science' and 'ILK'

Finally, the idea of 'somewhere' also has an explicit geographical connotation. It attends to the particular places and spaces in which IPBES is crafted (e.g. conference centres, working group sessions), but also to the places which are rendered authoritative by IPBES. For example, the location of the IPBES Secretariat in Bonn, which at first sight could be perceived as a neutral, placeless place, illustrates how GEAs, in this particular case IPBES, can become instruments through which nation-states attempt to exert a form of soft power to have influence on the world stage through non-coercive means (Nye 2005). Hosting IPBES in Bonn is not a mere coincidence and the particular history of Germany following WWII is relevant to contextualize how Bonn has become the 'UN city' of Germany – as part of a broader socio-technical imaginary – and the circumstances that allowed the IPBES Secretariat to be located there (Chapter 6).

9.3. Towards an early assessment of IPBES? Mapping challenges ahead, policy implications, and suggestions for future research

9.3.1. Challenges ahead and policy implications

IPBES aspires to prominently shape research and policy agendas in the upcoming years. Through its ‘assessment’ and ‘policy-support’ functions, IPBES aims at providing policy-relevant knowledge to multiple users and to trigger innovative regulations and policy-tools. Through its ‘knowledge-generation’ function, IPBES aims at encouraging the production of biodiversity knowledge on overlooked or unresolved topics. Finally, through its capacity-building function IPBES aims at reinforcing scientific and technical capacities in developing countries, at encouraging the training of young scientists, while also improving the ability of decision and policy-makers to make sense of biodiversity issues. However, in contrast to other major global expert processes, most prominently the IPCC, IPBES still lacks public visibility (e.g. on twitter, as of December 13th 2015, the IPCC has 67,6k followers while IPBES has only 3221). Organizations such as DIVERSITAS (now Future Earth), ICSU and the SCB are playing a key role in trying to mobilize ecologists to participate in IPBES (Lundquist et al. 2015). The first IPBES reports should be officially presented during IPBES-4 (Kuala-Lumpur, Malaysia) in February 2016. Studying the content and reception of these reports, and whether they influence some policy regulations, will give a more concrete indication of what can be expected from IPBES.

Nevertheless, if IPBES were to gain as much visibility as the IPCC it could significantly change the global landscape of conservation science and policy. Providing some reflections on the early stages of IPBES development is therefore useful. To do so, I build on the rules of engagement for IPBES formulated by STS scholars, introduced in Chapter 2 and outlined for reference in Box 9.1 below. The rationale for using these rules is that they would make IPBES more robust and meaningful to diverse audiences, and to some degree they resonate with the ambitions of IPBES. Moreover, much of the material presented in my empirical chapters allows me to discuss these. For each rule, I provide a qualitative assessment reflecting on how likely it is that the rule is implemented, as well as identifying some factors that would facilitate or hamper its implementation. This serves to identify possible risks for IPBES and to reflect on what can realistically be expected from it.

Box 9.1 - Rules of engagement for the IPBES (*Source*:Turnhout et al. 2012:455)

1. Operate not as a centralized global organization, but as global coordinator of a distributed network that can be sensitive to local knowledge, needs and conditions.
2. Address all mandated functions simultaneously and in a balanced way so that non-elite actors are not placed in an end-of-pipe position.
3. Facilitate broad discussion of the terms and methodologies used to define, understand, assess and conserve biodiversity; and be explicit about contested assumptions.
4. Ensure diverse representation in activities and decisions. Expert panel should include natural scientists, social scientists, humanities researchers, biodiversity practitioners and indigenous knowledge networks, with accreditation criteria and selection processes made public.
5. Experiment with ways to validate and maintain quality control, such as sensible narratives and citizen panels.
6. Embrace dissenting views and perspectives to build trust among represented parties – for example, through minority reporting instead of pursuing consensus.
7. Work with trusted civic organizations and networks at the interface of science, citizens, business and culture.
8. Have rolling and overlapping timetables for different products, rather than delivering a single 'big-bang report' every six years.
9. Reflect regularly to identify areas for improvement.

Contrasting the early development of IPBES with the rules outlined in Box 9.1 suggests that IPBES presents a range of novel features, for example regarding rules R7 and R8. Regarding R7, after having been postponed for two IPBES plenaries, during IPBES-3 (Bonn, January 2015) an agreement was reached to develop a stakeholder engagement strategy. Such strategy might be seen as an attempt to open a deliberative space in global science-policy settings as in the IAASTD – yet with numerous ambiguities as the IPBES stakeholders are more in a 'end of pipe' position (see section 9.2 and also Opgenoorth et al. 2014). Moreover, there is a strong regional bias (towards Europe and North America) in the participation of stakeholders. Although some have underlined that the engagement of stakeholders would work better if regionalized (Pataridze 2013), to date in IPBES numerous efforts have been made in the European region to coordinate these diverse knowledge-holders (Carmen et al. 2015) but participation from the other UN regions appears limited. An obvious limiting factor relates to the fact that there is no funding attributed to facilitate their mobilization and huge heterogeneities exist between these regions. However, an online forum has also been set up aimed at facilitating discussions on IPBES deliverables and on which participants from everywhere can register.[106]

Regarding R8, the 2014-2018 IPBES work programme was split into 18 deliverables related to the four IPBES functions and organized around four objectives (Appendix 4). These deliverables include methodological (e.g. 'Principles and procedures for working with ILK systems'; 'Guide to conduct assessments'; 'Policy support tools and methodologies on scenarios and modelling'; 'Policy support tools and methodologies on values, valuation and accounting') and thematic (e.g. assessment on land degradation and restoration; assessment on invasive alien species) reports. They also include a range of catalogues (e.g. catalogue of assessments; catalogue of policy-support tools and methodologies) and communication activities. The regional assessments (2014-2016) were undertaken before the global one (2015-2018). Moreover, the first IPBES assessment – a fast track assessment on pollination and food production – should be published in early 2016. In contrast to the IPCC, the structure of the IPBES work programme is much more diversified both in terms of content and timetable. The choice to conduct a fast track assessment, on the controversial topic of pollination, can also be interpreted as an attempt to establish credibility quickly.

For most other suggested rules in Box 9.1, numerous ambiguities remain, in particular R1, R3, R4, R5 and R6. Regarding R3, the ways in which diverse perspectives are included remain to be seen depending on what will be the content of the diverse IPBES reports, but efforts are currently made in several of the draft reports to reflect diverse perspectives (e.g. report on the diverse ways of conceptualizing nature and biodiversity, see UNEP 2015a). R3 resonates with R6 which suggests that IPBES should make explicit any contested assumptions and diverging views. To date there are no signs of minority reporting but, while IPBES is being driven by consensus, it has in particular recognized Mother Earth in its conceptual framework. What this means in practice remains unclear. Regarding R5, to date no IPBES documents mention citizen panels nor sensible narratives. Whereas practices of deliberative mapping have been developed elsewhere

[106] http://ipbes.net/j3/forum/index.php?/ (last accessed November 23rd, 2015).

– for example to include the views of citizens on organ transplant (Davies & Burgess 2004) or geo-engineering (Bellamy 2013) – there is, as yet, no sign of such practices that would allow citizens to challenge or complement the 'view from nowhere' which exists in IPBES. Numerous IPBES procedures mimic the ones used in previous GEAs (most particularly the IPCC, see Fulthazar 2015) and IPBES still needs to invent standards, or 'border practices', of its own. Nevertheless, in contrast to previous GEAs, IPBES aspires to find ways to validate non-scientific knowledge through innovative processes so as to be able to incorporate non-peer reviewed materials.

Regarding R4, the criteria and selection processes leading to the selection of experts are made public but, although the rhetoric of diversity and inclusivity is pervasive, the core bodies of IPBES (MEP and Bureau in particular) are dominated by conventional natural science expertise. The participation of social scientists, humanities researchers, biodiversity practitioners as well as indigenous knowledge-holders remains limited. Regarding R1, IPBES operates both globally and regionally (as illustrated by the fact that four regional assessments are on-going). Yet, it is still unclear whether IPBES is actually considering indigenous and local knowledge. Moreover, the term 'region' in the context of IPBES refers to the UN regions which are broad and follow the boundaries of nation-states. This may be a condition to ensure that IPBES is credible to these nation-states, but at the same time it means that such regions may also provide a safe, or non-threatening, operating space for them. This echoes radical ecology authors who have expressed scepticism regarding what could be expected from nation-states when addressing ecological issues (Smith 2011). Drawing on critical state theory and politics of scale literature, some authors have underlined that the delineation of 'scales' in scientific assessments was a matter of political contestation, being intimately related to questions of power relations (Beck et al. 2014). Here, an important question regarding IPBES regards whether the ways 'scales' are defined actually encourages nation-states to take responsibilities for their actions over biodiversity, or rather, by being too wide, ensure the protection of these national jurisdictions.

Other rules are far from being implemented, in particular R2. IPBES has four functions but thus far these are not addressed simultaneously: the assessment function is largely predominant. Implementing R2 would imply redistributing the budget of IPBES very differently. Until now almost 70% of the IPBES budget is dedicated to the 'assessment' function (Brooks et al. 2014, see table 9.3). Regarding R9, which invites IPBES to reflect regularly on areas of improvement, it is too early to judge.

Table 9.3 Structure of IPBES budget (2014-2018)

Function	US $ (millions)	% Budget
Assessments	17	69%
Capacity-building	3,4	14%
Knowledge-generation	2,5	10%
Policy-support	1,6	7%
TOTAL IPBES Budget	25,5	100%

Source: Adapted from Brooks et al 2014:544

Overall then, although IPBES's aspirations are consistent to some degree with the recommendations of STS scholars advocating for a reflexive turn, IPBES is not (or very partially) embracing them in practice. What does this imply for the future of IPBES? The normative assumption underlying these rules is that they would make IPBES more likely to be successful and effective, while preserving a range of governance options. However, realistically IPBES is very ambitious and little focussed: while aspiring to halt biodiversity loss and ecosystem services degradation, it also aspires to recognize multiple ways of making sense of human-nature relations. While IPBES might provide a space or a forum for conversations on biodiversity, this overarching objective is unlikely to be achieved. It would imply reaching out towards new networks, engaging anthropologists, humanities researchers, practitioners, citizens, and having the resources to do so. Future research will be needed to assess whether IPBES actually manages to be more inclusive than previous GEAs, but so far this 'opening-up' is very partially realised.

It is worth underlining here that some factors that would allow IPBES to be successful are also beyond its scope or external to it. For example, IPBES is a non-legally binding organization and nothing forces States to follow IPBES recommendations. While conserving and ensuring the sustainable use of biodiversity might appear as a priority for a range of actors, this might not be the case for many governments. Moreover, IPBES is one organization among many and the policies that IPBES seek to promote may work well with some organizations operating in the same area (e.g. CBD, CMS), but also contradict the objectives of other organizations (e.g. World Trade Organization). For example, in the European Union the Common Agricultural Policy is often perceived as going against the objectives of some European environmental directives, and damaging for biodiversity (Pe'er et al. 2014). Additionally, for IPBES to engage a broad range of diverse knowledge-holders, this implies that these knowledge-holders are willing to participate in IPBES. However, participating in IPBES might not be perceived as rewarding (e.g. because participation is on an unpaid voluntary basis) or worthwhile.

9.3.2. Future research

- **IPBES and regionalization: developing comparative insights across the five United Nations regions**

Numerous STS studies have pointed out the diversity of ways of knowing, whether in diverse scientific disciplines, with the concept of 'epistemic cultures'(Knorr-Cetina 1999), or in diverse national settings. This is for example reflected by the concept of 'civic epistemology' as proposed by Jasanoff:

> 'Civic epistemology refers to the institutionalized practices by which members of a given society test knowledge claims used as a basis for making collective choice' (Jasanoff 2007:255).

In a similar approach, Barry has also developed the concept of 'technological zones':

> 'A technological zone can be understood as a space within which differences between technical practices, procedures and forms have been reduced, or common standards have been established.'(Barry 2006:239)

While the notion of civic epistemology was first intended to explore situated ways of knowing in the context of nations-states, Barry's notion of 'technological zone' differs in that such zones do not necessarily overlap with national borders. Yet, both concepts have a spatial dimension and are an invitation to explore how some particular knowledge practices and standards get deployed and accepted collectively across particular regions.

A line of inquiry, directly inspired by the content of the IPBES work programme, is to explore how ways of knowing vary across the UN regions. Such work might compare the development of the four IPBES regional assessments which, together with the global one, are currently on-going (respectively in Asia-Pacific, Europe and Central Asia, Africa and the Americas). Contrasting the development of these four 'situated' regional assessments with the global one may help understand what kinds of global civic epistemology(ies) is(are) being deployed. This would allow comparing the standards and metrics adopted, whether there are some significant differences and what the implications of these are – for example in terms of how indigenous and local knowledge is conceptualized and considered.

A further research path might be pursued by contrasting the IPBES assessments with those that were conducted in the MA. This would help identify how the particular intergovernmental context in which IPBES operates differs and how it affects the epistemic practices that are developed.

- **Effects of IPBES on the organization of biodiversity sciences and on the production of biodiversity knowledge**

While contributing to particular ways of framing climate change and acting upon it, the IPCC also has had structuring effects on the social and epistemic organization of climate sciences (Vasileiadou et al. 2011). Similarly, several studies have documented the fact that the 'ecosystem services' approach also shapes the ways in which we come to know 'biodiversity' and goes far beyond being mere rhetoric (Fisher & Brown 2014; Turnhout et al. 2014). Currently, several scientific organizations are also encouraging scientists, for example macro-ecologists, to participate in IPBES (Hof et al 2015). A key co-productionist question posed by organizations such as the IPCC or IPBES then is: how do these GEAs affect the production of knowledge on global environmental change? Does the ecosystem services notion, for example, actually modify the organization of ecological sciences and, more broadly, of those involved in the production of knowledge on biodiversity? How does the empowerment of ecology in global science-policy settings, enabled by IPBES, affect the modes of knowledge production within the discipline? For example, how is the concept of 'ecosystem services' used in IPBES and how does it change knowledge-practices? How is ‘mobile’ biodiversity knowledge produced?

A complementary line of inquiry may explore if there is a relationship between the practices that have been developed in climate sciences, especially with the IPCC, and the extent to which the ‘globalization’ of ecology is influenced by these. For example, some ecologists are trying to improve the ability of ecology to act as a predictive science by developing global ecosystem models (e.g. Madingley model) which are meant to ‘model all life on Earth’ (Purves et al. 2013). In a nutshell, future work inspired by co-productionist thinking might therefore focus on the globalization of ecology, as influenced by organizations such as IPBES. It might explore further the influence of the ecosystem services framing on policy, and also develop comparative insights between climate and ecological sciences. Such research would allow analysing further which knowledge practices are rendered authoritative, the normative assumptions underlying the work of such global expert organizations and the forms of governance and biodiversity futures that are therefore rendered possible.

- **Continuity and differences between IPBES and previous biodiversity and ecosystem services assessments: social network analysis**

Although IPBES differs in several aspects from previous biodiversity and ecosystem assessments, there is also an important continuity between these initiatives. In the field of biodiversity conservation, Holmes talks about the ‘transnational conservation elite’(Holmes 2011:1). GEAs often involve the same global institutions (UN organizations, MEAs), scientists (e.g. Anne Larigauderie, Robert Scholes) involved in global research programmes such as DIVERSITAS (now part of Future Earth) and their affiliated networks, and heavily rely on the same funding bodies (e.g. Global Environmental Fund, World Bank) and think tanks (e.g. WRI). In addition to relying on similar institutions, many individuals have also been involved in several GEAs. Most prominently, Sir Robert Watson, a chemist by training, also had a leading role in all of them. Having chaired the Ozone Panel, he contributed to the development of subsequent GEAs and was strongly involved in the negotiations leading to the establishment of IPBES – currently being co-chair of this organization. For this reason, using the tools offered by social network analysis (e.g. Lazega 1998) might be fruitful to understand how all these GEAs are connected to each other, whether in terms of institutions or individuals (e.g. participating experts), and to explore the extent to which IPBES is actually managing to reach out and include new, or previously unconnected, actors and institutions.

Such work would describe the structure of experts' networks participating in global environmental governance, therefore enriching our understanding of these 'epistemic communities'(Haas 1992) while helping to analyse their power and influence (Canan & Reichman 2002). Social network analysis tools might also help to explore the connections between diverse organizations not historically but rather horizontally, that is for example comparing who participates in the activities of IPBES and in those of the CBD SBSTTA, or in the IPCC and in IPBES (e.g. Oubenal et al. 2014). Additionally, although detailed information is not necessarily easily accessible, social network analysis might be useful to further study the composition of the diverse delegations. Until now very little work (or none to my knowledge) has been carried out regarding the particular backgrounds of the individuals belonging to these delegations and exploring these would be valuable to understand who represents 'biodiversity' and how: how is nature represented? In contrast, there is some emerging literature on the composition of the delegations participating in the COP of the UNFCCC (Skovgaard & Gallant 2015) and on the composition of the IPCC working groups (Corbera et al. 2015).

9.4. Synthesis

In this research, I have shown that adopting a constructivist stance which refuses to take categories such as 'science' and 'policy' for granted can improve our understanding of GEAs and the difficulties surrounding the implementation of a new model of expertise. Drawing on STS concepts and methods I have conceptualized IPBES as a site of co-production and used multi-sited ethnography to provide a first account of this nascent organization. IPBES's mandate and aspirations make it markedly different from previous GEAs and results suggest that IPBES presents indeed a number of innovative features – in particular by explicitly recognizing 'indigenous and local knowledge' in its conceptual framework. However, numerous ambiguities remain as to whether IPBES actually manages to 'open-up' and implement a model of expertise that recognizes multiple forms of knowledges. First, the location of the IPBES Secretariat in Bonn, the 'UN city of Germany', suggests that the organization remains firmly anchored in the global North. IPBES's efforts are embedded within, and reflect, already established dichotomies, in terms of power relations, between centre and peripheries; here in the case of global environmental governance. As demonstrated in Chapter 6, this case suggests that locating IPBES in Bonn also reinforces a particular socio-technical imaginary through which Germany seeks to exert what can qualify as a form of soft power to maintain influence on the world stage. Secondly, the case of the IPBES conceptual framework suggests that despite presenting some original features, this framework essentializes the distinction between science and indigenous and local knowledge. It also fails to recognize that incommensurable worldviews cannot fit in the same framework. Finally, the first MEP was highly skewed towards conventional natural science expertise and concerns to establish its 'scientific' authority led to the exclusion of other forms of expertise.

More specifically, I argue that while IPBES aspires to be the 'view from everywhere', the narrative of science as the 'view from nowhere' contradicts this aspiration. Concerns over the establishment of its scientific authority and credibility lead IPBES to maintain a conception of credible expertise that does not legitimize 'views from everywhere'. While practices and devices that would allow such views to be included within IPBES may exist elsewhere, they remain to be used within the organization. IPBES faces a lack of 'know-how' and struggles to establish itself as a credible scientific organization while including less conventional forms of expertise. The institutional design of IPBES itself, with two global subsidiary bodies separated between MEP and Bureau, is also very dualist and also reflects a certain conception of scientific credibility.

Moreover, while aspiring to be globally authoritative, IPBES inevitably offers a 'view from somewhere' marked by the views of those having a voice in its decision-making processes and connected to these global science-policy settings. The intergovernmental context in which IPBES operates strongly constrains whose voices and knowledges are included and the search for consensus hampers the implementation of alternative, innovative, 'border practices'. Finally, there is value in developing the concept of 'institutional epistemology' to further document the knowledge-practices rendered authoritative in GEAs and characterize the ‘view from somewhere’. This will afford comparative insights between these organizations and help identify what they can learn from each other.

Appendix 1: Corpus of documents for Chapters 5, 6, 7 and 8

- **List of documents related to Chapter 5**

In addition to interviews and participant observation during IPBES plenary sessions, the following documents have been used in the analysis. Most of the sources are still available online, in particular all official IPBES documents are available on the IPBES website: http://ipbes.net .

N°	Reference	Type
1	Babin, D. et al., 2008. *IMoSEB - Consultative process towards an International Mechanism on Scientific Expertise on Biodiversity,* 119pp.	Report
2	UNEP, 2008a. *Summary report, and conclusions, of the consultative process to assess the need for, modalities of, and options for an international mechanism of scientific expertise on biodiversity (UNEP/CBD/COP/9/INF/34).*	Institutional document
3	UNEP, 2008b. *The Millennium Ecosystem Assessment (MA) follow-up: A global strategy for turning knowledge into* action (UNEP/CBD/COP/9/INF/26).	Institutional document
4	UNEP, 2008c. *Building on the strategy for follow-up to the Millennium Ecosystem Assessment and the consultative process towards an international mechanism of scientific expertise on biodiversity, background report for the ad hoc intergovernmental and multistakeholder meeting on an intergovernmental science–policy platform on biodiversity and ecosystem services*, Kuala Lumpur, 10–12 November	Institutional document
5	IISD, 2007. *IMoSEB Asian Regional Consultation Bulletin*, ENB, International Institute for Sustainable Development IISD	Report
6	IISD, 2007. *IMoSEB European Regional Consultation Bulletin*, ENB, International Institute for Sustainable Development IISD	Report
7	IISD, 2007. *IMoSEB North American Regional Consultation Bulletin*, ENB, International Institute for Sustainable Development IISD	Report
8	IISD, 2007. *IMoSEB South American Regional Consultation Bulletin*, ENB, International Institute for Sustainable Development IISD	Report
9	IMoSEB, 2007. *Statement from the IMoSEB consultation. International Steering Committee Meeting*, Montpellier.	Report
10	IISD, 2007. *IMoSEB African Regional Consultation Bulletin*, ENB, International Institute for Sustainable Development IISD	Report
11	Görg et al., 2006. *International Science-Policy Interfaces for Biodiversity Governance - Needs , Challenges , Experiences* A Contribution to the IMoSEB Consultative Process Workshop Report Content. *Interfaces*, (October), pp.1–44.	Academic report
12	UNEP and France, 2008. Concept Note on IPBES. (November), pp.1–17.	Concept note
13	Koetz, T. et al., 2008. The role of the Subsidiary Body on Scientific, Technical and Technological Advice to the Convention on Biological Diversity as science–policy interface. *Environmental Science & Policy*, 11(6), pp.505–516	Scientific publication
14	Granjou, C. et al., 2013. Assessing Nature? The Genesis of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). *Science Technology & Society*, 18, pp.9–27. Available at: http://sts.sagepub.com/cgi/content/long/18/1/9.	Scientific publication
15	Hove, S. Van Den et al., 2009. The Debate on an Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Exploring gaps and needs. *Idées pour le débat (IDDRI),* pp.1–25	Working paper
16	Koetz T, Farrell K N, Bridgewater P, 2012, "Building better science–policy	Scientific

	interfaces for international environmental governance: assessing potential within the Intergovernmental Platform for Biodiversity and Ecosystem Services" *International Environmental Agreements* **12** 1–21	publication
17	UNEP 2008. *Report of the ad hoc intergovernmental and multistakeholder meeting on an intergovernmental science–policy platform on biodiversity and ecosystem services*, Kuala Lumpur, 10–12 November	Institutional document
18	UNEP 2009. *Report of the second ad hoc intergovernmental and multistakeholder meeting on an intergovernmental science–policy platform on biodiversity and ecosystem services*, Nairobi, 5–9 October	Institutional document
19	UNEP 2009. *Needs and actions to strengthen the science–policy interface on biodiversity and ecosystem services", background document for the second ad hoc intergovernmental and multistakeholder meeting on an intergovernmental science–policy platform on biodiversity and ecosystem services*, Nairobi, 5–9 October	Institutional document
20	UNEP 2009. *Science–policy interface on biodiversity and ecosystem services: gap analysis, background document for the second ad hoc intergovernmental and multi-stakeholder meeting on an intergovernmental science–policy platform on biodiversity and ecosystem services*, Nairobi, 5–9 October	Institutional document
21	UNEP 2010. *'Busan Outcome' Report of the third ad hoc intergovernmental and multistakeholder meeting on an intergovernmental science–policy platform on biodiversity and ecosystem services*, Busan, 7–11 June	Institutional document
22	UNEP 2010. Breakthrough in International Year of Biodiversity as governments give green light to new gold standard science policy body, Busan/Nairobi, 11 June	Press release
23	UNEP 2010. Biodiversity year ends on high note as UN General Assembly backs resolution for an'IPCC-for Nature', New York/Nairobi, 21 December	Press release
24	Perrings, C. et al. (2011). The biodiversity and ecosystem services science-policy interface. *Science*, *331*, 1139–1140.	Scientific publication
25	UNEP 2011. *Consideration of the modalities and institutional arrangements for an intergovernmental science–policy platform on biodiversity and ecosystem services: work programme of the platform", background document for the plenary meeting to determine modalities and institutional arrangements for an intergovernmental science–policy platform on biodiversity and ecosystem services*, Nairobi, 3–7 October	Institutional document
26	UNEP 2011. *Report of the first session of the plenary meeting to determine modalities and institutional arrangements for an intergovernmental science–policy platform on biodiversity and ecosystem services*, Nairobi, 3–7 October	Institutional document
27	UNEP 2012. *Report of the second session of the plenary meeting to determine modalities and institutional arrangements for an intergovernmental science–policy platform on biodiversity and ecosystem services*, Panama City, 16–21 April	Institutional document
28	UNEP 2012, *New intergovernmental body established to accelerate global response towards sustainable management of world's biodiversity and ecosystems*, Panama, April 23rd	Press release
29	IISD 2012. *Summary of the second session of the plenary meeting on the Intergovernmental science-policy Platform on Biodiversity and Ecosystem Services: 16-21 April 2012 (Panama)*,	Report
30	IPBES, 2012a. *Functions, operating principles and institutional arrangements of the Intergovernmental Platform on Biodiversity and Ecosystem Services (as adopted in Panama, April 2012)*, Available at: http://www.ipbes.net/images/Functions operating principles and institutional arrangements of IPBES_2012.pdf	Report
31	Vadrot, A.. 2014. *The Politics of Knowledge and Global Biodiversity*. Routledge.	Book
32	Laikre, L. et al., 2008. Wanted: scientists in the CBD process. *Conservation biology : the journal of the Society for Conservation Biology*, 22(4), pp.814–5	Scientific publication
33	Afribes: www.afribes.net	Website
34	DIVERSITAS: http://www.diversitas-international.org/	Website

35	Larigauderie, A. et al., 2012. Biodiversity and ecosystem services science for a sustainable planet: The DIVERSITAS vision for 2012-20. *Current Opinion in Environmental Sustainability*, 4, pp.101–105	Academic paper
36	Presentation of the nested networks project: https://www.ufz.de/index.php?en=19865	Website
37	EPBRS, 2009. Concept note: Network of Knowledge for Biodiversity Governance	Concept note
38	BiodiversityKnowledge, 2014. *A recommended design for "BiodiversityKnowledge", a Network of Knowledge to support decision-making on biodiversity and ecosystem services in Europe* (KNEU Project)	Academic Report
39	Watson, R.T., 2005. Turning science into policy: challenges and experiences from the science-policy interface. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 360(1454), pp.471–477	Scientific publication
40	Hulme, M. et al., 2011. Science-Policy Interface: Beyond Assessments. *Science*, 333 (6043), pp.697–698	Scientific publication
41	IISD 2005. Summary of the international conference 'Biodiversity: Science and Governance', Paris, January 2005.	Report
42	Le Monde, 16.11.2001 'Jacques Chirac s'empare de l'écologie', available online: http://www.lemonde.fr/politique/article/2009/11/16/jacques-chirac-s-empare-de-l-ecologie_1266390_823448.html	Newspaper article
43	SciDev, 25.01.2005. France stirs controversy with plan for biodiversity panel, available online: http://www.scidev.net/global/biodiversity/news/france-stirs-controversy-with-plan-for-biodiversit.html	Online news article
44	SPIRAL Brief 2014. Afribes: Towards a social network of scientific and technical information for Africa, available at: http://www.spiral-project.eu/sites/default/files/29_TestCases_Afribes.pdf	Policy Brief
45	Online platform of the United Nations: https://sustainabledevelopment.un.org/aboutmajorgroups.html	Website
46	Barbault, R. & Leduc, J.P., 2005. *Proceedings of the International Conference on Biodiversity, Science and Governance for Sustainable Development*. In Paris: UNESCO.	Report

- **List of documents related to Chapter 6**

N°	Reference	Type
1	SciDev.,2014, July 23rd. Future Earth's 'global' secretariat under fire. Available online: http://www.scidev.net/global/sustainability/news/future-earth-global-secretariat.html	Online news article
2	Van de Graaf, T., 2012. March 29th. How Irena is re-shaping the global energy architecture. *European Energy Review*	Online news article
3	UNEP, 2012. *Executive summaries of the offers submitted by the Governments of France, Germany, India, Kenya and the Republic of Korea to provide the physical location of the secretariat of an intergovernmental science-policy platform on biodiversity and ecosystem services) (UNEP/IPBES.MI/2/5).* Panama City, 16-21 April, 10pp.	Institutional document
4	UNEP, 2012. *Addendum to the executive summaries of the offers submitted by the governments of France, Germany, India, Kenya and the Republic of Korea to provide the physical location of the secretariat of an intergovernmental science-policy platform on biodiversity and ecosystem services (UNEP/IPBES.MI/2/5/Add.),* Panama City 16-21 April, 66pp.	Institutional document
5	UNEP, 2012. *Joint proposal submitted by UNEP, UNESCO, FAO and UNDP to host the Secretariat of an intergovernmental science-policy platform on biodiversity and ecosystem services (UNEP/IPES.MI/2/6),* Panama city 16-21 April, 16pp.	Institutional document
6	UNEP, 2012. *Report of the second session of the plenary meeting to determine modalities and institutional arrangements for an intergovernmental science-*	Institutional document

	policy platform on biodiversity and ecosystem services (UNEP/IPBES.MI/2/9), Panama City 16-21 April, 26pp.	
7	Mahony, M., 2013. Boundary spaces: Science, politics and the epistemic geographies of climate change in Copenhagen, 2009. *Geoforum*, 49, pp.29–39	Scientific publication
8	Gieryn, T., 2002. Three truth-spots. *Journal of the History of the Behavioral Sciences*, 38(2), pp.113–132	Scientific publication
9	Gieryn, T.F., 2006. City as Truth-Spot: Laboratories and Field-Sites in Urban Studies. *Social Studies of Science*, 36(1), pp.5–38.	Scientific publication
10	Kohler, R.E., 2002. *Landscapes and Labscapes: Exploring the Lab-Field Border in Biology*, University of Chicago Press Books	Book
11	Mahony, M., 2013. Boundary spaces: Science, politics and the epistemic geographies of climate change in Copenhagen, 2009. *Geoforum*, 49, pp.29–39.	Scientific publication
12	Heise, U., 2008. *Sense of Place and Sense of Planet*, Oxford University Press	Book
13	Jasanoff, S. & Kim, S.-H., 2013. Sociotechnical Imaginaries and National Energy Policies. *Science as Culture*, 22(2), pp.189–196.	Scientific publication
14	Barnstone, D.A., 2014. Nomina sunt Omina—Capital City Bonn: Inventing an Image for the Federal Republic of Germany. *Journal of Design History*, 27(2), pp.148–166.	Scientific publication
15	Laporte, A., 2011. Bonn, la ville qui devait rétrécir. *Géocarrefour*, 86(2), pp.95–102	Scientific publication
16	Uelzmann, Jan (May 2011). *Bonn, the Transitional Capital and its Funding Discourses, 1948-1963*. Dissertation presented to the Faculty of Graduate School of the University of Texas at Austin. 224pp	PhD Thesis
17	Mukte Jens, *The BION Network: Linking stakeholders from local, national and international organizations*. Presentation at the ALGUE NET meeting on biodiversity and Climate Change, Marseille, November 2014	Conference presentation
18	*The Economist*, 1997, May 24th. The shifting heart of a nation, Issue 8018, p46, London, England	Newspaper article
19	*The Washington Post*, 1999, July 2nd, Germany leaves Bonn behind	Newspaper article
20	*States News Service.* 2013, Sept. 17th. *German foreign minister visits UN Campus in Bonn*. *Biography In Context*.	Newspaper article
21	*New York Times*. 1992, May 25th. New York City Fighting to Keep 4 UN agencies from Moving. p21-25	Newspaper article
22	*New York Time.* 2011, June 23rd. In Germany's Capitals, Cold War Memories and Imperial Ghosts	Newspaper article
23	*New York Times*. 2008, June 19th. No Longer the Capital but a Global Destination.	Newspaper article
24	Merkel, A., 1998. The Role of Science in Sustainable Development. *Science*, 281(5375), pp.336–337.	Scientific publication
25	Merkel, A. 2006. German science policy 2006. *Science*, *313*(5784), 147.	Editorial
26	Brochure '*Biodiversity Today for Tomorrow'* prepared for the 1st International Conference organized by BION – Biodiversity Network Bonn, 17-19 September 2014, Bonn, Germany, 37pp	Brochure
27	http://www.bion-bonn.org/en/ueber-uns	Website
28	http://www.bonn-international.org	Website
29	http://www.bonn.de	Website
30	Crop trust welcomed to Germany, May 2013. Available online at: https://www.croptrust.org/press-release/crop-trust-welcomed-germany/	Press release
31	Anderson, P., 2011. *The New Old World*, Verso.	Book
32	Padgett, S., Paterson, W. & Smith, G., 2003. *Developments in German Politics*, Palgrave Macmillan.	Book
33	Rüdig, W., 2003. The Environment and Nuclear Power. In S. Padgett, W. Paterson, & G. Smith, eds. *Development in German Politics*. Palgrave Macmillan,	Book chapter

	pp. 248–268	
34	Jasanoff, S., 2007. *Designs on Nature: Science and Democracy in Europe and the United States*, Princeton University Press	Book
35	Nye, J., 2004. *Soft Power: The means to success in world politics* PublicAffairs US	Book
37	Massey, D., Quintas, P. & Wield, D., 1992. *High-tech fantasies: Science Parks in Society, Science and Space*, Routledge	Book
38	Augé, M. 1995. *Non-lieux*. Verso.	Book
39	Le Carré, John, 1968. *A Small Town in Germany*. Penguin Books, 316pp	Book
40	Conference declaration of the 1st International BION Conference 'Biodiversity Today for Tomorrow', Bonn, September 17-19. Available at: http://www.bion-bonn.org/de/downloads/1-bion-konferenz-dokumente-und-vortraege/bion-conference-declaration	Conference declaration
41	Common Information Unit of the United Nations Organisations in Bonn (CIU) (September 2014) *UN in Bonn: Working towards sustainable development worldwide*, 55pp. Available online: www.unobonn.org	Guide
42	Universität Bonn. 2013. *Welcome to Bonn*. 16pp.	Guide
43	United Nations in Bonn: http://www.bonn-international.org/city-of-bonn/un-in-bonn.html (last accessed December 15th, 2015)	Website
44	Federal Ministry of Education and Research, 2009. *Study and Research on Sustainability in Germany*, 14pp.	Guide
45	*The Economist*, July 18th, 2015. Softly does it.	Newspaper article
46	Bauhaus archiv, Egon Eierman, January 29th, 2015. Available online: http://www.undo.net/it/mostra/23400 (last accessed December 15th)	Online article
47	Presentation of the Langer Eugen building (UN Campus): http://www.wegderdemokratie.de/tour/5_eugen.htm (last accessed December 15th)	Online resource
48	UNEP 2011. *Process and criteria for selecting the host institution or institutions and the physical location of the platform's secretariat* (UNEP/IPBES.MI/1/6), Nairobi, 3-7 October, 4pp.	Institutional document
49	BMU Pressedienst, *Reinforcing the United Nations in Bonn: Handing over the key to the UN climate change secretariat*, October 31st, 2012	Press release
50	Biography of Egon Eiermann: http://www.smow.com.au/pages/designers/egon-eiermann/ (last accessed December 15th, 2015)	Online resource
51	UNEP, 2013. *List of participants in the first session of the Plenary of IPBES* (IPBES/1/INF/16). Bonn, 21-26 January, 42pp.	List of participants

- **List of documents related to Chapter 7**

N°	**Reference**	**Type**
1	IPBES, 2012. *Functions, operating principles and institutional arrangements of the Intergovernmental Platform on Biodiversity and Ecosystem Services* (as adopted in Panama city, 16-21 April)	Institutional document
2	IPBES, 2013. *Rules of procedure for the plenary of the Platform*, Available at: http://www.ipbes.net/images/Rules of procedure for the Plenary of the Platform_2013.pdf.	Institutional document
3	UNEP, 2012. *Report of the second session of the plenary to determine modalities and institutional arrangements for an IPBES (UNEP/IPBES.MI/2/9),* Panama city, 16-21 April, 26pp.	Institutional document
4	UNEP, 2013a. *Outcome of an informal expert workshop on main issues relating to the development of a conceptual framework for IPBES (IPBES/1/INF/9),* Bonn 21-26 January, 37pp	Report
5	UNEP, 2013b. *Report of the Expert Workshop on the Conceptual Framework for*	Report

	IPBES held in Cape Town (South Africa) (IPBES/2/INF/2), Bonn, 21-26 January, 8pp	
6	UNEP, 2013. *Report of the first session of the Plenary of IPBES (IPBES/1/12),* Bonn (Germany), 21-26 January , 39pp	Institutional document
7	How to bake a conceptual framework for IPBES? An informal expert group proposes views on ingredients and preparation steps (2012), 4pp Available at: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/IBPES_cookbook_2013.pdf	Brochure
8	Plurinational State of Bolivia. *Comment on the IPBES conceptual framework*.	Comment
9	Canada. 2013. *Comments on the IPBES conceptual framework*	Comment
10	United Kingdom. 2013. *Comments on the IPBES conceptual framework*	Comment
11	European Union. 2013. *Comments on the IPBES conceptual framework*	Comment
12	France. 2013. *Comments on the IPBES conceptual framework*	Comment
13	Germany. 2013. *Comments on the IPBES conceptual framework*	Comment
14	India. 2013. *Comments on the IPBES conceptual framework*	Comment
15	Japan. 2013. *Comments on the IPBES conceptual framework*	Comment
16	New Zealand.2013. *Comments on the IPBES conceptual framework*	Comment
17	Norway. 2013. *Comments on the IPBES conceptual framework*	Comment
18	The Netherlands. 2013. *Comments on the IPBES conceptual framework*	Comment
19	USA. 2013. *Comments on the IPBES conceptual framework*	Comment
20	BioGenesis. 2013. *Comments on the IPBES conceptual framework*	Comment
21	ARC. 2013. *Comments on the IPBES conceptual framework*	Comment
22	CSIRO. 2013. *Comments on the IPBES conceptual framework*	Comment
23	AERF/UNEP WCMC/UNU-IAS. 2013. *Comments on the IPBES conceptual framework*	Comment
24	Birdlife International. 2013. *Comments on the IPBES conceptual framework*	Comment
25	FAO. 2013. *Comments on the IPBES conceptual framework*	Comment
26	IUCN CEM. 2013. *Comments on the IPBES conceptual framework*	Comment
27	IUCN Secretariat. 2013. *Comments on the IPBES conceptual framework*	Comment
28	UNEP WCMC. 2013. *Comments on the IPBES conceptual framework*	Comment
29	University of Melbourne.2013. *Comments on the IPBES conceptual framework*	Comment
30	ICSU. 2013. *Comments on the IPBES conceptual framework*	Comment
31	WCS. 2013. *Comments on the IPBES conceptual framework*	Comment
32	R. Thaman, P. Lyver, R. Mpande, E. Perez, J. Carino and K Takeuchi (eds.). 2013. *The contribution of indigenous and local knowledge-systems to IPBES: Building synergies with science. IPBES Expert Meeting Report*, UNESCO/UNU. Paris: UNESCO. 48pp.	Report
33	Agenda of the International Expert Workshop on the Conceptual Framework for IPBES, 25-26 August 2013, Cape Town (South Africa)	Meeting document
34	List of participants to the International Expert Workshop on the Conceptual Framework for IPBES, 25-26 August, Cape Town (South Africa)	Meeting document
35	UNEP, 2013. *IPBES Conceptual framework background report (IPBES/2/INF/2Add.1),* Antalya, 9-14 December, 21pp	Report
36	UNEP, 2013. *Report of the African regional consultation meeting on IPBES (IPBES/2/INF/4*). Antalya, 9-14 December, 13pp	Report
37	UNEP, 2013. *Report of the Asia-Pacific regional consultation meeting on IPBES (IPBES/2/INF/5)*, Antalya, 9-14 December, 8pp	Report
38	UNEP, 2013. *Outcome of the Eastern Europe consultation meeting (IPBES/2/INF/6),* Antalya, 9-14 December, 9pp	Report
39	UNEP, 2013. *Report of the Latin American and Carribbean Regional Consultation meeting on IPBES (IPBES/2/INF/7),* Antalya, 9-14 December, 34pp.	Report
40	UNEP, 2013. *Statement of the pan-European dimension of support for IPBES (IPBES/2/INF/8),* Antalya, 9-14 December, 4pp.	Report
41	UNEP, 2013. *Seoul international Symposium and scientific workshop on the regional interpretation of the conceptual framework of IPBES (IPBES/2/INF/12*),	Report

	Antalya, 9-14 December , 11pp	
42	Chan Kai. 2013. *IPBES: Intense Politics of Biodiversity & Ecosystem Services*, 4th September 2013 Available at: http://chanslabviews.blogspot.ca/2013/09/ipbes-intense-politics-of-biodiversity.html	Blog post
43	UNEP, 2013. *Recommended conceptual framework of the IPBES (IPBES/2/4)*. Antalya (Turkey), 9-14 December, 10pp.	Report
44	UNEP, 2013. *Report of the second session of IPBES (IPBES/2/17*), Antalya (Turkey), 9-14 December, 96pp.	Institutional document
45	Joly, C.A., 2014. The conceptual framework of the Intergovernmental Platform on Biodiversity and Ecosystem Services. *Biota Neotropica*, 14(1), pp.1–2.	Scientific publication
46	Díaz, S., Demissew, S., Joly, C., et al., 2015a. A Rosetta Stone for Nature's Benefits to People. *PLOS Biology*, 13(1), p.e1002040.	Scientific publication
47	Díaz, S., Demissew, S., Carabias, J., et al., 2015b. The IPBES Conceptual Framework — connecting nature and people. *Current Opinion in Environmental Sustainability*, 14, pp.1–16.	Scientific publication
48	Mace, G.M., Norris, K. & Fitter, A.H., 2012. Biodiversity and ecosystem services: A multilayered relationship. *Trends in Ecology and Evolution*, 27, pp.19–25	Scientific publication
49	Carpenter, S.R. et al., 2006. Millennium Ecosystem Assessment: Research Needs. Science, 314, pp.257–258	Scientific publication
50	Carpenter, S.R. et al., 2009. Science for managing ecosystem services: Beyond the Millenium Ecosystem Assessment. *PNAS*, 106, pp.1305–1312	Scientific publication
51	Heywood, V. H. 1995. *The Global Biodiversity Assessment*. Cambridge: United Nations Environment Programme, Cambridge University Press	Report
52	Millennium Ecosystem Assessment, 2003. *Ecosystems and Human Well-being: A framework for assessment*, Washington: Island Press	Report
53	Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Synthesis*, Washington: Island Press	Report
54	Mooney, H., Cropper, A. & Reid, W., 2004. The Millennium Ecosystem Assessment: what is it all about? *Trends in ecology & evolution*, 19(5), pp.221–4	Scientific publication
55	TEEB , 2010. *The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB*.	Report
56	UK National Ecosystem Assessment, 2011. *The UK National Ecosystem Assessment: Synthesis of key findings*. UNEP-WCMC, Cambridge	Report
57	Mooney, H. , Duraiappah, A. & Larigauderie, A., 2013. Evolution of natural and social science interactions in global change research programs. *Proceedings of the National Academy of Sciences of the United States of America,* 110, pp.3665–72	Scientific publication
58	Plurinational State of Bolivia, 2010. Law of the Rights of Mother Earth (Law 071).	Policy document
59	Ostrom, E., 1990. *Governing the Commons*, Cambridge: Cambridge University Press	Book
60	Ostrom, E., 2010. Polycentric systems for coping with collective action and global environmental change. *Global Environmental Change*, 20, pp.550–557.	Scientific publication

- **List of documents related to Chapter 8**

N°	Reference	Type
1	UNEP, 2012a. *Functions and structure of bodies that might be established under an intergovernmental science-policy platform on biodiversity and ecosystem services, (UNEP/IPBES.MI/2/3)*, Panama city, 16-24 April, 7p.	Institutional document
2	UNEP, 2012b. *Guidance document on the nomination and selection process for officers of the Bureau and members of the Multidisciplinary Expert Panel of IPBES, (IPBES/1/INF/11)*, Bonn, Germany, 21-26 January, 9p.	Institutional document
3	UNEP, 2012c. *Regional structure and composition of the Multidisciplinary Expert*	Institutional

	Panel *(IPBES/1/INF/7)*. Bonn, Germany, 21-26 January, 30p.	document
4	UNEP, 2012d. *Report of the scientific workshop on assessments for an intergovernmental science-policy platform on biodiversity and ecosystem services*, (*UNEP/IPBES.MI/2/INF/10)*, Bonn, Germany, 21-26 January, 28p.	Workshop report
5	UNEP, 2012e. *Report of the second session of the plenary meeting to determine modalities and institutional arrangements for an intergovernmental science-policy platform on biodiversity and ecosystem services (UNEP/IPBES.MI/2/9)*, Bonn, Germany, 21-26 January, 26p.	Institutional document
6	IISD, 2012. Report of the session of the IPBES plenary in Panama (Panama, April 2012). *Earth Negotiations Bulletin. Vol 16 (99).* 26p	Report
7	ICSU, 2012. Review sheet for IPBES intersessional documentation - Comment on the rules of procedures for the Plenary of the Platform (UNEP/IPBES.MI/2/9), 2p.	Comment
8	Brazilian proposal (Souza Dias, B.; Joly, C.A.; Juarez, K.). 2012. *Comment on UNEP/IPBES.MI./1/4: Network of regional nodes and structure of the scientific panel of IPBES*, 4p	Comment
9	IPBES, 2013. *Rules of procedure for the plenary of the Platform*. Retrieved from http://www.ipbes.net/images/Rules of procedure for the Plenary of the Platform_2013.pdf	Institutional document
10	*List of candidates and their curriculum nominated for the 1st interim MEP, African region*, Bonn, Germany, 21-26 January 2013, 176pp.	IPBES information document
11	*List of candidates and their curriculum nominated for the 1st interim MEP, Asian region*, Bonn, Germany, 21-26 January 2013, 180pp.	IPBES information document
12	*List of candidates and their curriculum nominated for the 1st interim MEP, Eastern Europe region*, Bonn, Germany, 21-26 January 2013, 10pp.	IPBES information document
13	*List of candidates and their curriculum nominated for the 1st interim MEP, Latin American region*, Bonn, Germany, 21-26 January 2013, 127pp	IPBES information document
14	*List of candidates and their curriculum nominated for the 1st interim MEP, European region and Other groups*, Bonn, Germany, 21-26 January 2013, 177pp.	IPBES information document
15	ICSU-DIVERSITAS, 2013. *First impressions in relation with first plenary of IPBES* (IPBES-1). Bonn, Germany, 21-26 January.	Comment
16	UNEP, 2012. *Consideration of initial elements: recognizing indigenous and local knowledge and building synergies with science* (IPBES/1/INF/5). Bonn, Germany, 21-26 January, 6p.	Report
17	IUCN, 2013. Position paper on IPBES-1. January 2013	Comment
18	UNESCO-UNU. 2013. *Background paper: The Contribution of indigenous and local knowledge systems to IPBES: Building synergies with science*. 8p.	Information document
19	ICSU- DIVERSITAS. 2013. Opening statement on the occasion of the opening of IPBES-1, January 2013, Bonn.	Comment
20	Plurinational State of Bolivia. 2012. *Comment on the regional structure and composition of the IPBES Multidisciplinary Expert Panel (MEP*). 7p.	Comment
21	India. 2012. *Comment on the regional structure and composition of the IPBES Multidisciplinary Expert Panel (MEP*). 2p.	Comment
22	United Kingdom. 2012. *Comment on the regional structure and composition of the IPBES Multidisciplinary Expert Panel (MEP*). 1p.	Comment
23	Fiji. 2012. *Comment on the regional structure and composition of the IPBES Multidisciplinary Expert Panel (*MEP). 3p.	Comment
24	Japan. 2012. Comment on the regional structure and composition of the IPBES Multidisciplinary Expert Panel (MEP). 1p.	Comment
25	Mexico. 2012. *Comment on the regional structure and composition of the IPBES Multidisciplinary Expert Panel (MEP).* 1p.	Comment
26	New Zealand. 2012. *Comment on the regional structure and composition of the*	Comment

	IPBES Multidisciplinary Expert Panel (MEP). 6p.	
27	Society for Conservation Biology (SCB). 2012*. SCB Position Statement for the First IPBES Plenary*, August 2012, 12p.	Comment
28	IPBES Stakeholders Forum, *Stakeholder statement for the first IPBES plenary*. Bonn, January 21-26, 2013	Comment
29	Forum of Indigenous Peope, *Closing statement of the forum of indigenous peoples and local communities*. Bonn, January 21-26, 2013.	Comment
30	Sinnathamby, J. 2012. *Global IPBES Assessment Survey (UNEP/IPBES.MI/2/INF/10)* (12p). Available online at: http://www.diversitas-international.org/activities/assessment/ipbes/SurveyKnowledgeforIPBES.pdf	Report
31	SciDev. 2013. Global Biodiversity Panel urged to heed local voices. Published on the 03.05.2013. Available online at: http://www.scidev.net/global/biodiversity/news/global-biodiversity-panel-urged-to-heed-local-voices.html	Online newspaper article
32	A Year in the Life of a MEP member, August 2014, 1p. Available online on the IPBES website: http://www.ipbes.net/images/documents/MEPBureau/A_year_in_the_life_of_a_MEP_member.pdf	Short note
34	List of candidates to the MEP for France. 17/09/2012	List of candidates
35	Call for IPBES MEP UK Nominees. Available online at: http://jncc.defra.gov.uk/pdf/IPBES_MEP_advert%28June12%29.pdf	Call for nomination
36	Thaman, R., Lyver, P., Mpander, R., Perez, E., Carino, J., & Takeuchi, K. (2013). *The contribution of Indigenous and Local Knowledge to IPBES: Building Synergies with Science* , 48pp.	Report

Appendix 2: Sample of interview guide

This is the general structure of the interview guide that has been used in the semi-structured interviews (here specifically for chapter 7). The aim of these interviews was to (1) reconstruct the process that has led to the adoption of the IPBES conceptual framework; (2) identify the main controversies and debates punctuating this process; and (3) reflect on the similarities and differences between the IPBES conceptual framework and other frameworks. Questions were adapted slightly depending on the background of the interviewee, and the form of her/his involvement in this process.

- **General questions**

How and when did you become interested in IPBES?

Have you participated in other global environmental assessments before?

When did you start working on the IPBES conceptual framework?

At which periods did you participate the most in the process?

- **On the process leading to the IPBES conceptual framework**

What were the main events in the development of this framework?

Who were the most influential actors? Were there some marginalized actors as well? How were stakeholders involved in this process?

You were both at the initial workshop convened by UNESCO in Paris and at the workshop in Cape Town last August. Since the first draft of this framework, what have been the main changes? Why?

How was the first framework received following its initial presentation in Bonn? What were the main comments?

According to you what were the main difficulties during the discussions on the conceptual framework? (Worldviews? Interdisciplinarity?)

Which boxes and arrows triggered the most important debates?

Were there some debates regarding the relationship between biodiversity and ecosystem services?

What were the main debates surrounding the notion of ecosystem services? And Mother Earth?

- **On the use of the conceptual framework**

Why is a conceptual framework needed? Is it an analytical tool?

The framework has recently been accepted by IPBES delegates in Antalya. What do you think of the latest version of the framework?

Why is there a colour code on the framework?

When it was presented, this framework was compared to a Rosetta Stone, what do you think of this metaphor?

What are the main challenges awaiting this framework now?

Do you think it will be possible to actually implement it over a wide range of cultural/geographical contexts?

- **Comparison with other conceptual frameworks**

How similar/different is the IPBES conceptual framework when compared to the one that was used in the Millennium Ecosystem Assessment?

Were you also very involved in the development of the MA framework? If so, what was your experience of this process?

You were also involved in the […], does this relate to the IPBES framework as well?

Overall, what are the distinctive features of the IPBES framework?

Appendix 3: Example of transcript extract

MB: Maud Borie, IR: Interview respondent

MB: So the first question would be, how did you start working with IPBES? And on the conceptual framework?

IR: We are not too many social scientists or I'd say environmental ecological economists who participate in this kind of international platforms that connect the science with the policy. When I say "not too many" it is of course in relative terms, in relative numbers, because of course there are many but relatively to the number of environmental ecologists working on issues such as ecosystem services or biodiversity…We are relatively few who have this interest. And it is one of my main research interests: doing science for informing and engaging with policy at different scales, from the local scale to the global scale. I guess there is some kind of path-dependency in our lives, you will have your own as well, and you start engaging with some people and some networks, so for instance I have been a member of the scientific committee of Diversitas, the agrobiodiversity network of Diversitas for many years, and by being part of the Diversitas world we have had the opportunity to interact throughout, before IPBES was formed actually, on certain kinds of issues that we thought were relevant for the research community, science and knowledge generation about ecosystem services and so on. So that's one reason why I got into IPBES, this sort of path-dependency I did not look for it but I guess IPBES looked for me…

MB: so networks were important?

IR: Yes because I was part of the network and there are also personal ties, personal professional connections between people who have really instrumental to the Millennium Ecosystem Assessment, and I also participated quite actively in the UK NEA, in the ECONEX group, and so one thing brings another one. So there was the possibility to contribute to the conceptual framework, they wanted to do one, and people who usually engage are ecologists but IPBES, in the origins, wished to engage social scientists in the origins and thought that it was practically important to have social scientists for a successful science-policy interface. So of course they were looking for people like anthropologists, historians, philosophers, people working on legal aspects, so lawyers, and all of these would be in academia, as part of the "science group of people", so they contacted me to contribute with economics, with environmental economics, with economics thinking about a potential new conceptual framework for IPBES and that's how the Paris workshop at UNESCO HQ happened at the end, more or less, at the end of 2012. And that was a big group of people, very interesting sort of set of experts who were interested in this kind of things; we can talk more about that episode if you wish. Then given that this group of people worked quite well, a subset of people from that workshop got invited to the workshop in Cape Town. The difference with that is that the Paris workshop was the first workshop to sort of sketch a conceptual framework, or actually first there was, sort of a preliminary conceptual framework that was going to be open to everyone to discuss and to provide inputs.

MB: Is that the one that was presented in Bonn?

IR: Yes, that's correct. It was presented in Bonn. There was an open process for delegations or anyone who wished to engage as academic or otherwise to provide comments, suggestions and criticisms to that conceptual framework. And there were quite a few, criticisms from different perspectives. And then the workshop in Cape Town last year worked in a different way because they could not invite people, people had to be nominated by governments, so scientists had to be nominated by governments or nominated by a specific platform like ICSU or even I guess the IPBES Secretariat, there were a bit of possibility to bring people that were not nominated or invited specifically by governments. In this case I was invited by the Spanish government. If you want we can talk about these two workshops, how one workshop provided input to the next workshop and what were the dynamics between the two.

MB: Yes that would be great

IR: For me both workshops were extremely interesting, not only in terms of content and in terms of things that were discussed, procedurally both were different and both had important aspects that one should bear in mind when trying to bring together experts from different fields, countries, visions and so on and how you negotiate a common vision, it is always difficult. Even from the start of our conceptual scientific framework we know how important this is because this sets the vision for how IPBES understands the connections between biodiversity, nature, ecosystem services, human well-being and the rest of it. This is very very clearly stated, in a very open, but it is still a very direct way for the IPBES plenary to accept it or turn it down or whatever.

The process of getting there was not easy, so for me it was a very interesting process of negotiation between scientists who wanted to make very relevant points but who also had to compromise to be able to maintain a coherent and unified vision by many different types of scientists and people with very different understandings about for example the connections in the conceptual framework that came out afterwards.

Appendix 4: IPBES objectives and work programme (2014-2018)

Platform goal

Strengthen the science-policy interface for biodiversity and ecosystem services for the conservation and sustainable use of biodiversity, long-term human well-being and sustainable development

Platform functions, operational principles and procedures

Platform work programme 2014–2018: Objectives and associated deliverables

Objective 1: Strengthen the capacity and knowledge foundations of the science-policy interface to implement key functions of the Platform:

(a) Priority capacity-building needs to implement the Platform's work programme matched with resources through catalysing financial and in-kind support
(b) Capacities needed to implement the Platform work programme developed
(c) Procedures, approaches for participatory processes for working with indigenous and local knowledge systems developed
(d) Priority knowledge and data needs for policymaking addressed through catalysing efforts to generate new knowledge and networking

Objective 2: Strengthen the science-policy interface on biodiversity and ecosystem services at and across subregional, regional and global levels:

(a) Guide on production and integration of assessments from and across all scales
(b) Regional/subregional assessments on biodiversity, ecosystem services
(c) Global assessment on biodiversity and ecosystem services

Objective 3: Strengthen the science-policy interface on biodiversity and ecosystem services with regard to thematic and methodological issues:

(a) One fast-track thematic assessment of pollinators, pollination and food production
(b) Three thematic assessments: land degradation and restoration; invasive alien species; and sustainable use and conservation of biodiversity and strengthening capacities/tools
(c) Policy support tools and methodologies for scenario analysis and modelling of biodiversity and ecosystem services based on a fast-track assessment and a guide
(d) Policy support tools and methodologies regarding the diverse conceptualization of values of biodiversity and nature's benefits to people including ecosystem services based on an assessment and a guide

Objective 4: Communicate and evaluate Platform activities, deliverables and findings:

(a) Catalogue of relevant assessments
(b) Development of an information and data management plan
(c) Catalogue of policy support tools and methodologies
(d) Set of communication, outreach and engagement strategies, products and processes
(e) Reviews of the effectiveness of guidance, procedures, methods and approaches to inform future development of the Platform

Source: *IPBES Decision 2/5 (p6)*

Appendix 5 : Participants in IPBES-1 (Bonn, January 2013)

- **Participants in IPBES-1**

	Number of participants	%
Members of delegations	287	56%
Member States	254	49%
Non-members	33	6%
Observers	234	44%
Conventions	43	8%
United Nations bodies and Specialized Agencies	34	7%
IPBES interim Secretariat	15	3%
Intergovernmental organizations	28	5%
NGOs & Universities	114	22%
TOTAL	**521**	**100%**

- **Composition per UN Region : Representatives of Member States**

States	Number	%
AFRICA	39	15%
EEA	9	4%
GRULAC	34	13%
ASIA-PACIFIC	66	26%
WEOG	106	42%
TOTAL	**254**	**100%**

- **Composition per UN Region : Observers**

Observers	Number	%
AFRICA	22	9%
EEA	2	1%
GRULAC	1	0%
ASIA-PACIFIC	15	6%
WEOG	194	83%
TOTAL	**234***	**100%**

**In total among all observers 95 (41%) were from Germany and 53 (23%) based in Bonn.*

Source: Analysis presented in this document is based on UNEP, 2013*. List of participants in the first session of the Plenary of IPBES (IPBES/1/INF/16).* Bonn, January 21-26.

Appendix 6: List of IPBES Members (as of January 2016)

A	B
Afghanistan Albania Algeria Andorra Antigua and Barbuda Argentina Australia Austria Azerbaijan	Bahrain Bangladesh Belarus Belgium Benin Bhutan Bolivia (Plurinational State of) Bosnia and Herzegovina Botswana Brazil Burkina Faso Burundi
C	**D - F**
Cambodia Cameroon Canada Central African Republic Chad Chile China Colombia Comoros Congo Costa Rica Cote d'Ivoire Croatia Cuba Czech Republic	Democratic Republic of the Congo Denmark Dominican Republic Ecuador Egypt El Salvador Ethiopia Fiji Finland France
G - H	**I - L**
Gabon Georgia Germany Ghana Greece Grenada Guatemala Guinea-Bissau Guyana	India Indonesia Iraq Ireland Iran (Islamic Republic of) Israel Japan Kenya Kyrgyzstan

Honduras	Republic of Korea
Hungary	Latvia
	Liberia
	Libya
	Lithuania
	Luxembourg
M	**N - R**
	Netherlands
Madagascar	Nepal
Malawi	New Zealand
Malaysia	Nicaragua
Maldives	Niger
Mali	Nigeria
Mauritania	Norway
Mexico	Pakistan
Monaco	Panama
Montenegro	Peru
Morocco	Philippines
Republic of Moldova	Portugal
	Russian Federation
S	**T - Z**
	Tajikistan
	Thailand
Saint Lucia	Togo
Saudi Arabia	Trinidad and Tobago
Senegal	Tunisia
Slovakia	Turkey
South Africa	United Republic of Tanzania
Spain	Uganda
Sri Lanka	United Arab Emirates
St. Kitts and Nevis	United Kingdom of Great Britain and Northern Ireland
Sudan	United States of America
Swaziland	Uruguay
Sweden	Viet Nam
Switzerland	Yemen
	Zambia
	Zimbabwe

Appendix 7: Letter of approval by the General Research Ethics Committee

Miss Maud Borie
School of Environmental Sciences
UEA

15th November 2012

Dear Maud

I am writing to you on behalf of Professor Martin Barker, Chair, General Research Ethics Committee, in response to your submission of an application for ethical approval for your study 'Between place and cosmos: The challenges of making IPBES'.

Having considered the information that you have provided in your correspondence Professor Barker has asked me to tell you that your study has been approved on behalf of the General Research Ethics Committee.

You should let this office know if there are any significant changes to the proposal which raise any further ethical issues.

Will you please let this office have a brief final report to confirm the research has been completed.

Yours sincerely

Sarah Burbidge
Administrator
Research and Enterprise Services East Office
University of East Anglia
Norwich Research Park
Norwich NR4 7TJ
Email: s.burbidge@uea.ac.uk

Appendix 8: Interview consent form

PhD Project: The challenges of making IPBES

RECORDING

1. Do you agree to be recorded during the interview?

   YES NO

USE OF THE CONTENT OF THE INTERVIEW

Following each research interview, the recording will be transcripted. A copy of the transcript will be sent to you for your records (you will be able to check it and correct any errors).

2. Do you want your name to be changed into a pseudonym?

- For non-published materials: YES NO
- For published/public materials: YES NO

Further consent will be sought from you for on an ongoing basis for the use of any or all of this material to be included in this study and for the quotation of specific passages in academic journal or other publications arising from the research.

CONFIRMATION AND CONSENT

I confirm that I have freely agreed to participate in the PhD project: the challenges of making IPBES. I have been briefed on what this involves and I agree to the use of the findings as described above. I understand that the material is protected by a code of professional ethics. I hereby assign the copyright in my contribution to the University of East Anglia.

Participant signature:

Name:

Date:

I confirm that I agree to keep the undertakings in this contract.

Researcher signature:

Name: **Date:**

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