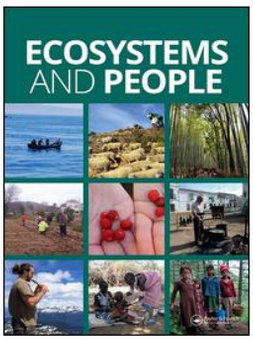

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The science-policy interface on ecosystems and people: challenges and opportunities

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EDITORIAL: THE SCIENCE-POLICY INTERFACE OF ECOSYSTEMS AND PEOPLE

The science-policy interface on ecosystems and people: challenges and opportunities

Introduction

The complex links and feedbacks between ecosystems and people are now sharply in focus. Our growing understandings of the complex relations between ecosystems and people, the social and ecological drivers of changes in nature, and the different dimensions of a good quality of life, from local to global scales, have made these interdependencies ever more visible (IPBES 2019; Díaz et al. 2019). Furthermore, recent studies have revealed how dramatically unsustainable and inequitable the interactions between ecosystems and people are, as a result of a long legacy of consumerism and utilitarianism, patriarchy and colonialism, and the global expansion of production-oriented relationships with nature.

In embracing the new name and scope of the Journal **Ecosystems and People** (Martín-López et al. 2019) a special issue was launched in 2018 to gather and synthesize the findings, insights and experiences gained in science-policy interfaces regarding ecosystems and people, with a special emphasis on the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). We invited scientific contributions and contributions from non-academic authors, on the process, theory, and outcomes of IPBES as well as on other science-policy interfaces. Following the approach of the journal, the special issue aimed for a diverse distribution of authors based on gender, region, ethnicity and seniority as contributors.

In this introductory paper, we synthesize the insights gained through this special issue. We identify four key challenges, as well as opportunities and strategies to overcome them, which are presented below. These challenges and exemplary strategies were drawn from a series of collaborative contributions from authors around the world, involving work at different science-policy interfaces, and including a range of professional and disciplinary backgrounds among scientists, sectors of society, types of knowledge and spatial and temporal scales. Close to 100 authors, from nearly 30 different countries, encompassing all continents, from a wide range of career stages participated in this special issue. They belong to a wide range of academic, education, governmental, civil society and consulting organizations and provide a rich overview of how science-policy interfaces advance research on ecosystems and people.

Challenges and opportunities to advance the contributions of science-policy interfaces

Challenge 1: Science-policy interfaces are essential to address the global environmental crisis

Science-policy interfaces that address the interactions between ecosystems and people have a key role to play in tackling the global environmental crisis. IPBES is one such interface. IPBES has drawn lessons from the first and best-known contemporary science-policy interface, the Intergovernmental Panel on Climate Change (IPCC). IPCC played a key role in informing governments from local to global scales, businesses, civil society organizations and the global public on the scientific knowledge that can be used to address the climate crisis. IPBES, however, has striven to be more inclusive in terms of regional, cultural and disciplinary diversity, bringing the voices from a range of stakeholders, making visible Indigenous peoples and local communities to help inform the IPBES products, and to disseminate the findings (Stevance et al. 2020).

Science-policy interfaces play a key role to urgently address the nature crisis

Science-policy interfaces can help speed up linking science findings to policy development and implementation (Crouzat et al. 2019; Krug et al. 2020; Stevance et al. 2020). Researchers working at the interface of science and policy have a crucial and urgent role to play at generating the knowledge decision makers need to act swiftly (Crouzat et al. 2019; Gustafsson et al. 2019; Krug et al. 2020; Stevance et al. 2020; Washbourne et al. 2020). This is particularly relevant for the case of the linkages between ecosystems and people, and the need to speedily limit climate change and biodiversity loss below threatening levels. The drivers of these changes in nature, such as increased consumption and pollution, transformation of the seascapes and landscapes, and unequal gains and burdens from these transformations have clearly accelerated

over the last five decades (IPBES 2019; Díaz et al. 2019). Recent regional and global reports have highlighted the potential impacts of ecological deterioration in limiting the achievement of the 2030 Sustainable Development Goals (IPBES 2018a; 2018b; 2018c; 2019). Disruptive events like the 2020 COVID-19 pandemic demonstrate the magnitude of the impacts from unsustainable and inappropriate management of ecosystems, yet provide opportunities to build a more resilient planet (Gordon 2020). Action to revert current trends in conservation, and to promote wise use and management of nature is deeply felt and urgently needed where science-policy interfaces have a key role to play (Crouzat et al. 2019; Krug et al. 2020; Stevance et al. 2020).

Science-policy interfaces have made more visible the deterioration of ecosystems and its consequences for people

People and ecosystems are inextricably interlinked, and yet nature has growingly just seen as the factory of the goods we need to support economic growth and as the dumpster of all that we discard (Balvanera et al. 2012). Triggered by the onset of the industrial revolution, the great acceleration targeted at supporting development marked the dawn of a new era, the Anthropocene (Steffen et al. 2007), in which climate, bio-geochemical cycles, and biodiversity are dramatically affected by human practices, activities and decisions (Crutzen 2006). The livelihoods, well-being and experiences of current generations are radically different from those of only fifty years ago. The changes are neither linear, nor independent, and regime shifts (e.g. tipping points) are becoming more common in a diversity of ecosystems – for instance, in coral reefs and mangroves which have been affected by eutrophication, hypoxia, climate change (Rocha et al. 2018). The media coverage of a result of the IPBES assessment, on the up to 1,000,000 species of animals and plants possibly at risk of extinction in the near-term (IPBES 2019; Díaz et al. 2019), have put for the first time ever the nature crisis in the news at least 2,200 different news sites across 115 countries, in 35 languages, reaching an audience of 3.26 billion people.[1] Communication with different audiences and stakeholders has been shown to be critical to the success and impact of IPBES (Krug et al. 2020; Stevance et al. 2020). Sustained participatory interactions have been shown to be critical for other science-policy interfaces operating at national scales, e.g. Crouzat et al. (2019) for the case of the French mountain National Ecosystem Assessment.

The transformation of ecosystems and people has been pervasive

Every region of our planet, on land, along rivers and lakes and at sea, has been impacted (IPBES 2019; Díaz et al. 2019). Every facet of people's lives is touched by these changes. The ways in which nature fulfills our basic physiological, psychological and spiritual needs continue to be challenged. Furthermore, the way we conceive and value nature itself has changed. The world visions, knowledge, and practices of indigenous and local peoples are quickly disappearing, and the different values of nature are not fully being integrated into commodity markets and development policies (IPBES 2019; Díaz et al. 2019). Matuk et al. (2020) stress the need for science-policy interfaces to address the relationship between cultural values and decisions on practices that create sustainable relationships between people and nature.

Science has a radically new role to play

New frameworks, concepts and methods are co-produced by science-policy interfaces, as large interdisciplinary and intersectoral needs are interconnected. Even so, our currently available tools are not fully adequate to address the tasks at hand. IPBES developed a conceptual framework before producing any assessments (Díaz et al. 2015), but quickly identified the need for developing a new concept, that of 'Nature's Contributions to People' (NCP) that emerged from the co-production of regional and thematic assessments (Díaz et al. 2018; Kadykalo et al. 2020). New conceptual approaches, processes and outputs are needed to ensure science-policy interfaces adequately address more viable relationships between ecosystems and people, given the urgency, depth, and pervasiveness of negative trends in biodiversity and ecosystem services (nature's contributions to people).

Challenge 2: Addressing the interconnectedness of ecosystems and people to tackle the planetary crisis

The complex interconnectedness of ecosystems and people is the second major challenge that we have identified. Teasing apart each of the processes and issues that relate to either 'ecosystems' or 'people' dimensions of nature is not an option (IPBES 2019; Díaz et al. 2019). Specific challenges of science-policy interfaces in this arena are associated with the systemic nature of the processes and issues.

Adopt a systemic perspective in understanding ecosystems and people

Socio-ecological systems approaches have allowed us to more fully understand complex interactions between the different components of nature and of societies, and explore the drivers, feedbacks, emerging properties, and thresholds of these interactions (Folke 2006; Berkes and Berkes 2009; Bridgewater and Rotherham 2019). In this issue, Sala and Torchio (2019) highlight that a socio-ecological systems approach is critical for co-creating

knowledge sharing opportunities at the science-policy interface. Crouzat et al. (2019) present a cross-sectoral and integrated analysis of mountain systems at national scale, fostering the integration of different value types towards nature in policymaking. Similarly, Pandit et al. (2020) show that approaches to ecological restoration must fully embrace the cultural, social and political dimensions involved to be effective and have long-term success in moving away from ecologically dominated perspectives.

Environmental problems are context specific but can be tackled by actors of different sectors and scales with a shared lens

Socio-ecological processes and issues are strongly influenced by their specific biophysical and societal contexts. In this issue, Schröter et al. (2020) address the context-specific perspective through including Indigenous and local Knowledge (ILK) in assessments through indicators for relational values. Also, Kadykalo et al. (2020) highlight that the context-specificity approach of the NCP paradigm (Díaz et al. 2018). The co-construction of more sustainable pathways by science-policy interface actors together with local stakeholders relies on understanding and addressing the specificities in each particular location of our diverse planet. Interconnected place-based research across contrasting contexts allows for building science-policy interface approaches that are both generic and specific, i.e. can be grounded within individual contexts (Balvanera et al. 2017). As a specific example, Pandit et al. (2020) show the effectiveness of community forestry policy as an indirect response to address forest land degradation in Nepal by actively engaging people in addressing environmental problems. Krug et al. (2020) illustrate how the inclusion of a wide diversity of stakeholders helps integrate diverse forms of knowledge and perspectives in IPBES processes.

Global trade exacerbates social and economic inequality

Trade has shifted the benefits of exploiting nature towards richer countries whilst placing the burden of these actions onto poorer countries. These political and economic inequalities result from the technical, social and international (geopolitical) division of the production and labor of the globalized capitalist world (Sala and Torchio 2019). Strategies aimed at reversing degradation need to move beyond the most obvious impacts, focusing rather on the drivers and processes underpinning the accelerated rates of degradation, as shown by Pandit et al. (2020). Global food trade has reshaped the way rural communities conceive, value, relate and care for nature, transforming deeply held principles and cultural practices into business transactions. Approaches for re-incorporating non-monetary values for nature and environment within production processes have been shown by Schröter et al. (2020), as the incorporation of relational values of care and responsibility for nature is gradually being incorporated by the consumers in richer countries of Europe and elsewhere.

Tackling the complex nature of social-ecological systems requires diverse teams

The complexity of socio-environmental problems is such that no single individual can fully understand and address them. A robust science-policy interface is one that successfully sparks creativity and novel insights and opportunities, by bringing together diverse teams and actors (Sala and Torchio 2019). Stevance et al. (2020) show how diverse stakeholders from across countries and sectors are brought together by a global platform such as IPBES. Gustafsson et al. (2019) identify the crucial importance of intersectional boundary work at the boundaries between senior and junior experts, between science and policy and between scientific knowledge and indigenous and local knowledge. Washbourne et al. (2020) highlight the need to improve collaborations and policy relevance by integrating even more social scientists, researchers from developing countries, early career scientists and policymakers in IPBES. Crouzat et al. (2019) discuss the roles of stakeholders' participation in ecosystem assessments for increasing the robustness and possible uptake of key messages. Krug et al. (2020) provide examples of how stakeholders contribute to IPBES processes, and how they take up and further disseminate key findings from the products of the platform.

Resolving power asymmetries in reducing inequality and degradation

Inequalities across countries, sectors, genders and societal groups are ever more visible in a global world. As policy platforms and scientific programs bring together more diverse teams, and as calls for more inclusive and gender-equitable decision-making processes are made, the role of power in shaping policy processes becomes more evident (Krug et al. 2020). Yet, rules of policy procedures and funding opportunities can either reinforce these inequities or help science-policy interfaces and societal actors overcoming them (Krug et al. 2020). Intersectional relations can change power dynamic among the involved stakeholders (Gustafsson et al. 2019). Relational values linked to equity and justice are likewise ever more present, as they are increasingly being considered and incorporated into systematic assessment on nature, such as in the case study of Schröter et al. (2020). This validates the idea that the 'Nature's Contributions to People' concept developed in the context of IPBES' work can accommodate a variety of values, creating spaces for exploring

relational values of nature (Kadykalo et al. 2020). Yet, power imbalances threaten the legitimacy of decision-making processes, as shown by Matuk et al. (2020).

Challenge 3: Dealing with the complexities of the science-policy interface

For policy to be well grounded in science, fruitful interactions between science and policy are needed (Engels 2005). Since the early 1990s, we have become acutely aware of the need to enhance the relation between science and policy on national and global levels to better reflect and respond to the emerging understanding of ecosystems and people. Our understanding of these complex science-policy interfaces continues to evolve through ongoing engagements between science, policy, and other societal actors (Sala and Torchio 2019). IPBES provides a catalytic space for this engagement. IPBES has proved its worth in building our understanding of socio-ecological systems and testing different approaches for bringing together science and other forms of knowledge to provide policy options at global to national levels. This special issue highlights four specific areas where IPBES, as an example of a science-policy interface, is making progress, and one area where further work is still required.

The inclusion of a diversity of regional voices

Science-policy processes have strongly worked towards the inclusion of a diversity of researchers and participants across global regions through their integration into IPBES global, regional and thematic assessments. Krug et al. (2020) have shown that intergovernmental platforms such as IPBES can be substantially strengthened by the participation of a wider range of stakeholders. While the review of IPBES documents in different phases of their preparation has brought to the table many voices there is a case for streamlining processes (Stevance et al. 2020). IPBES has pioneered using a wide range of case studies (e.g. Pandit et al. 2020) and regional and evidence-base balance to deliver a full range of options, drawing from regional insights lacking in global policy processes prior to the advent of IPBES.

Enhanced interdisciplinary engagement

Bringing together natural and social scientists into science-policy processes has resulted in global issues being considered from a variety of disciplinary perspectives. For instance, the very diverse worldviews about the linkages between ecosystems and people held in different disciplines and those held by different cultures have been made more visible and understandable (Kadykalo et al. 2020; Matuk et al. 2020). Furthermore, thinking regarding the need for social engagement in science-policy processes at a variety of scales has grown more entrenched (Krug et al. 2020; Stevance et al. 2020).

Social-ecological systems perspectives can play a key role in keeping different groups apart or bringing them together

Concerns about the possibility of economic approaches for valuing nature overriding the recognition of intrinsic, or even relational, values of nature possibly opening pathways for the privatization of nature (Balvanera et al. 2012) can be addressed from such perspective. Focusing on the IPBES-developed inclusive language and framing of NCP, expanding from the ideas, concepts and frameworks relating to 'Ecosystem Services', can provide an alternate view of human-nature relationships that is more acceptable to diverse groups (see Kadykalo et al. 2020; Sala and Torchio 2019, for an in-depth discussion on this).

Co-producing understanding and knowledge

Integration of science into policy processes has advanced from initial approaches directed at making policy makers aware of scientific knowledge, to being co-creators of this knowledge. International discussions around biodiversity, such as those at IPBES and of the Biodiversity related conventions and their subsidiary bodies, need to strengthen systems to co-produce knowledge with a range of stakeholders, including national, regional and local governments, business, scientific organizations, non-governmental organizations, indigenous peoples and local communities, early career researchers, and students. While the importance of knowledge co-production for science-policy progress on ecosystems and people is now well recognized (Norström et al. 2020), it is not always easily achieved. Stevance et al. (2020) show how very diverse stakeholders from across countries and sectors are brought together by IPBES as a global platform. Co-production can occur at national or regional scales as well, as shown by the national mountain assessment analyzed by Crouzat et al. (2019). Gustafsson et al. (2019) elucidate the learning process that takes place within IPBES across multiple boundaries – between junior and senior researchers, knowledge forms, across geographies and cultures. Washbourne et al. (2020) acknowledge that working in such transdisciplinary fashion implies a 'huge learning curve', seen as both inspiring and rewarding. Gustafsson et al. (2019) also highlight difficulties in including other knowledge systems (especially ILK), in the co-production of knowledge, when the 'credibility' of such knowledge is validated by a western

scientific framework. Washbourne et al. (2020) highlight that some scientists perceive that IPBES related work as 'too focused on policies', which could draw focus from and hinder the development of science. Sala and Torchio (2019) also point out that steps towards inclusiveness and co-production are almost always dominated by a western science-based epistemology. A move towards real collaboration and co-design will require concerted efforts to change institutional structures (Tengö et al. 2017).

Improving methods for enhancing scientific understanding and policy formulation

Science-policy processes have enabled the development of frameworks, methods, concepts and tools for advancing both our understanding of, and ability to measure and assess relationships and effects of humans on the environment. For example, in moving beyond instrumental values, Schröter et al. (2020) demonstrate advances in our understanding and in the measurement of relational values, by using indicators and proxies. The concept of Nature's Contributions to People emerged from the work of IPBES as a catalyst for the importance of context-dependent views and relational perspectives (Kadykalo et al. 2020). Similarly, Pandit et al. (2020) developed a conceptual framework that links land degradation causes/consequences, responses, and outcomes/evaluations, and apply the framework to assess effectiveness of forest land restoration responses considering six criteria (environmental, economic, social, technical, cultural and political) and 20 sub-criteria. Advances at global levels can then cascade down towards national or regional assessments, which benefit from such advances, with these being tailor to meet local needs and available resources (Crouzat et al. 2019). Stakeholders participating in IPBES have made use of IPBES products, such as the Pollination Assessment (IPBES 2016), to develop strategies for better conservation and management of pollinators (Krug et al. 2020). Critically, participation and engagement enables stakeholders to understand which knowledge and products are useful for input into future IPBES and other assessment processes (Krug et al. 2020).

Strengthening the involvement of policy makers in global science-policy processes

While the need to more effectively integrate policy makers into science-policy processes is recognized, IPBES has not effectively achieved this yet (Stevance et al. 2020). Better communication and adaption or refinement of these global processes is still required – but a good science-policy interface is always in a learning mode. Moreover, iterative interaction between scientists and decision makers has contributed to better understanding of the very different perspectives and approaches to the same issues, though more assertive engagement and communication is still needed.

Work at the science-policy interface is cross-cutting in nature, and the areas of policy that are to be addressed by and benefit from a single study are often multiple

When dealing with complex socio-ecological interlinkages that touch on numerous aspects of human ways of life and ecological processes, effective implementation of findings means that multiple areas of policy should be addressed simultaneously. As the results of Goodwin et al. (2019) suggest, information on the relationships that young people of diverse backgrounds develop with nature is important to multiple areas of policy, from education, to health, and even migration. Just as the science underpinning these findings benefits from taking an interdisciplinary approach, the cross-cutting nature of the policy spheres with which they interact must also be taken into account, so that results are usable and able to be communicated effectively.

Challenge 4: Transforming the postures and contributions of scientists and their institutions

Given the previous three challenges, dramatic changes are needed in the way science, scientific institutions, and scientists generate, validate and share knowledge (Sala and Torchio 2019).

Expanding perspectives on knowledge, research and research institutions

Scientists can play different roles, e.g. knowledge generators, the arbiter of knowledge generation or advocating for a particular cause, such as reducing consumption (Crouzat et al. 2018). The common departure point of these stances is often one of academic superiority and belief in the credibility, legitimacy, and relevance of scientific knowledge over other knowledges (for an in-depth discussion on this, see Sala and Torchio 2019). Alternatively, scientists can play a key role building bridges between a range of knowledges and co-producing solutions towards sustainability (Norström et al. 2020). Recent studies, e.g. Matuk et al. (2020), as well as the IPBES assessments, demonstrate the strength of including diverse knowledges (Hill et al. 2019; Schröter et al. 2020), which in the past were discarded as 'opinions' of 'lay people'.

Power imbalances can also be found between academic disciplines, as scientists who have a background in social or natural sciences and are often uncomfortable

outside their single-disciplinary domain. Their disciplinary bias makes it hard to fully appreciate the complexity and importance of other disciplines. In this respect, Washbourne et al. (2020) recommend that the ecosystem services community increase engagement with, and openness to other knowledges and world views beyond mainstream western-science perspectives. The frustration of not fully grasping complex jargon from another discipline, while at the same time failing to convey 'important nuances' in the proper jargon, can lead to underappreciation or even aversion towards other disciplines (Sala and Torchio 2019). Such postures can be traced back to educational institutions, and the paradigms or hermeneutics taught, and are propagated by funding drivers that pitch disciplines against each other in competitive schemes, and by publication formats which stimulate specialization and controversy within disciplines rather than building bridges between them (Sala and Torchio 2019). Being transparent about the roles adopted by scientists involved in the science-policy interface appears critical to explicitly characterize the type of knowledge produced and its potential uses (Crouzat et al. 2019). Thus, transparency allows for reflexivity on how norms are upheld and changed to determine what knowledge that is credible and relevant (Gustafsson et al. 2019). In this respect, Washbourne et al. (2020) emphasize the need to increase transparency of, and communication around, IPBES opportunities and processes.

Engaging in interdisciplinary and transdisciplinary collaboration with the goal of providing workable solutions to real-life problems

Engaging scientists in real-life contexts relevant to science-policy interfaces and offering the space, time and tolerance to test, succeed, fail and gain new insights to change posture and transform reality, is the most obvious way forward. Washbourne et al. (2020) highlight that scientists and the communities of practice at the interface between ecosystems and people strive for increased policy-relevance and collective action but can further enhance the crafting of messages across the interface to policy. As illustrated by Pandit et al. (2020), accommodating environmental, economic, cultural, social, technical, and political dimensions in designing and implementing restoration responses could improve the restoration outcomes and increase appreciation of their importance and complexity. Learning by doing is transformative and can be used to develop novel solutions towards sustainability (Gustafsson et al. 2019; Krug et al. 2020; Stevance et al. 2020). Both disciplinary specialists and interdisciplinary researchers are needed to create transdisciplinary collaborations and co-production of knowledge with social actors, unless a purely fundamental academic path is chosen (Sala and Torchio 2019). The same goes for projects or research institutions: engaging with complex problems and evaluating success based on contributions to real solutions will transform the way decisions and choices are made. Matuk et al. (2020) show that the co-production of knowledge by policy practitioners of different disciplinary backgrounds with Indigenous peoples and local communities is crucial for the creation of transdisciplinary policy outcomes. In the inter- and transdisciplinary co-production of knowledge, the resulting policy processes, and options and outcomes are recognized as more legitimate and effective (i.e. valid and relevant) by both practitioners and locals (Sala and Torchio 2019; Matuk et al. 2020) – e.g. by taking account of different values, perceptions, and worldviews of all participants in the knowledge generation process.

Incorporating diverse world views

The need for more inclusive conceptualization and decision-making processes that fully take into account diverse views of the linkages between ecosystems and people have been recently emphasized by IPBES (Pascual et al. 2017). Matuk et al. (2020) describe how policy practitioners who implemented an environmental assessment and planning with science-based planners collaborated with the Kaxinawá Indigenous people community collaborated to incorporate their indigenous knowledge and worldviews, which spoke of People's Contribution to Nature (PCN) in addition to Nature's Contributions to People. Through long dialogues, and negotiations, bridging values and worldviews linked to knowledge co-production, a planning of resource management and governance was created that both practitioners and local groups considered as valid and legitimate (Matuk et al. 2020). The very diverse worldviews and knowledges were shared respect such diversity. Yet, they also highlight the importance of contestation as an important mechanism in so doing.

New incentives are needed to promote inter- and transdisciplinary processes

This issue forms part of a growing body of literature which is focused on inter- and transdisciplinary work in real-life contexts (Martín-López et al. 2019). Such venues are essential to foster knowledge exchange, advance ideas, and allow for the evolution of communities of practice (Turner et al. 2016). Academic institutions, funders, capacity building programs, and academic outlets can play a key role in strengthening science-policy interfaces by fostering effervescent, creative, relevant, salient, and legitimate transdisciplinary collaborations.

Science-policy initiatives increasingly target stakeholder inclusion and societal impact

Explicit reflection on the position of researchers could be combined with objective ways to evaluate societal impact

and contributions such as those that have been made by IPBES (Stevance et al. 2020). Evaluating the effectiveness of forest land restoration responses, for instance, requires multi-disciplinary and inclusive perspectives for improved restoration planning and decision-making (Pandit et al. 2020). In many ways, sustainability science is a diverse collection of fundamental/academic disciplines coming of age and finding this new posture, as demonstrated by Washbourne et al. (2020). IPBES, again, illustrates this shifting posture as the platform's mandate and posture has evolved away from that of the IPCC, especially concerning capacity building, strengthening policy development, and intensified communications and outreach (Stevance et al. 2020).

Education opens the door to stronger science-policy interfaces in the future

Much could be achieved through transforming current education (Goodwin et al. 2019) and curricula related to sustainability (in natural as well as social and human sciences). As some of the results of Goodwin et al. (2019) showed, of those students whose relationships with nature were the most challenged were also among the most curious to learn more. This suggests that education has a powerful role to play in developing relationships that future generations develop towards nature. Interdisciplinary assignments, applied thinking, critical societal impact evaluation and introduction of diverse knowledges are some of the key topics abilities needed (Sala and Torchio 2019).

Conclusion

Insights gained from the contributions for this Special Issue on 'how science-policy interfaces advance research on ecosystems and people' reveals that research on ecosystems and people is interconnected and depends on including diverse worldviews, knowledge systems, scientific disciplines, governments, policy practitioners, indigenous peoples and local communities, corporate groups, and others. Managing biodiversity in ways that are consistent with maintaining the diversity of life, nature's contributions to people, livelihoods, good quality of life, as well as the inclusion of diverse world views, knowledge systems and practices in the Anthropocene is a challenge. That challenge requires diverse imagination and forms of thinking as well as a respectful engagement with different communities of research, policy, and practice. We highlighted several challenges and opportunities to address them, namely, to move towards a more just and sustainable future, by relying on inclusive, intersectoral, interdisciplinary, transdisciplinary and systemic research of ecosystems and people.

This synthesis stresses how science-policy interfaces are being shaped and how they can advance and frame research on ecosystems and people for the purpose of creating a better future for people and the rest of nature. Moving away from the symptoms of the environmental crisis, a call is made for research to focus rather on the deeply interconnected causes of the nature crisis, to generate new tools and concepts, and to meaningfully incorporate diverse types of knowledge, worldviews, and perspectives is underway. Science-policy processes are indeed heading towards more inclusive and comprehensive approaches, however they need to perpetually reflect on inclusion and ensure that stakeholders and policy makers are integrated into the knowledge creation processes that deliver legitimate, both scientifically and socially, valid and relevant outcomes.

New institutions that can work across local to global scales, support a stronger commitment of scientists to address the urgent nature crisis, and build a wide range of capacities to do so, will be needed to champion a sustainable and prosperous future for both ecosystems and people. The authors of the papers in this special issue have already experienced how science-policy interfaces open up very different experiences, insights, processes and outcomes. May these transformations reinforce each other and trickle down to academic institutions, scientific journals, and transdisciplinary processes that trigger and develop more sustainable pathways between ecosystems and people from local to global scales.

Note

1. http://www.terrycollinsassociates.com/2018/ipbes-biodiversity-and-natures-contributions-continue-dangerous-decline-scientists-warn/

Disclosure statement

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