

Session Title	Theoretical and Methodical Opportunities for Cross-scale Integrated Earth System Assessments
Session ID	S01
Convener/s	Jochen Schanze (IOER, Germany); Dieter Gerten (PIK, Germany)
Description of the context, objectives of the panel and its scientific relevance	<p>Humanity's interference with the Earth system is increasing rapidly. Not only is global warming continuing unabated with all its consequences. At the same time, biodiversity is declining worldwide, pollution of the oceans is spreading, water is becoming increasingly scarce in many places, and pollutants are accumulating in soils, the air and waters. As a result, politics, business and civil society are facing enormous challenges: What are the impacts of the increasing human influences on the Earth system, and in turn how do they affect people? How can unforeseeable risks be prevented and at the same time enable wellbeing, economic prosperity and justice?</p> <p>These challenges also pose new and fundamental questions for science. Their scope extends beyond the previous consideration of local or regional human-environment relationships. They also involve a previously unaddressed complexity of interactions between natural and societal processes on different spatial and temporal scales. Consequently, a broad spectrum of disciplines is addressed, from the natural sciences and engineering to economics, social sciences and the humanities.</p> <p>The session addresses theoretical and methodical opportunities of a cross-scale Earth system assessment integrating the anthroposphere. It puts three guiding questions in the centre: (i) What are key gaps in assessing the biophysical Earth system with the societal world in an integrated manner across scales? How could these gaps be overcome through conceptual advancements? Which methodical approaches would facilitate interdisciplinary implementation of those concepts?</p> <p>Contributions and the moderated dialogue are considered as a means of reflecting and supporting a deeper integration of the wealth of research tools, approaches and insights for an integrated Earth system research.</p> <p><u>References</u></p> <ul style="list-style-type: none"> • Brandi C, 2015. Safeguarding the earth system as a priority for sustainable development and global ethics: the need for an earth system SDG. <i>Journal of Global Ethics</i> 11(1): 32–36. • Meyer K, Newman P, 2020. Planetary accounting: Quantifying How to Live Within Planetary Limits at Different scales of human activity. Springer Nature. • Steffen W, Richardson K, Rockström J, et al., 2015. Planetary Boundaries: Guiding human development on a changing planet. <i>Science</i> 347(6223). • Steffen W, Richardson K, Rockström J, et al., 2020. The emergence and evolution of Earth System Science. <i>Nature Reviews Earth & Environment</i> 1: 54–63. • Tortell PD, 2020. Earth 2020: Science, society, and sustainability in the Anthropocene. <i>PNAS</i> 117(16), 8683–8691.
Call for Abstracts	The session invites researchers from all relevant disciplines to submit conceptual or methodical contributions responding to the three guiding questions for lightning talks or poster presentations as a basis for the moderated dialogue. Case studies may underline the conceptual or methodical work rather than being presented empirically only.

SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
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Tracks	Resource nexus theory (also linking to Sustainability Assessment; Governance; Health and Wellbeing; Society and Justice; etc.)																	
Themes	Cross-cutting (also considering Climate change; Biodiversity; Agri-Food and Forest Systems; Urban and Regional Development; and Circular Economy)																	

Session Title	Biodiversity Restoration
Session ID	S02
Convener/s	Wolfgang Wende (IOER, Germany); Ariel Brunner (Bird Life Europe, Belgium)
Description of the context, objectives of the panel and its scientific relevance	<p>The UN has declared 2021-2030 the Decade of Biodiversity Restoration, thereby spotlighting the need for significantly increased global cooperation to restore degraded or destroyed biodiversity and ecosystems. Ecosystem restoration aims to repair some of the damage suffered by ecosystems and biodiversity. The EU has also formulated new goals for biodiversity and ecosystem services restoration through its new Biodiversity Strategy 2030. The main research question guiding this session is thus: How can these restoration policies and targets be implemented in the real world? The session will analyse and operationalise the political goals and identify technical as well as governance possibilities for their practical implementation at the global level and in the EU Member States.</p> <p>Biodiversity depends, in particular, on rare abiotic site factors, which in turn are very strongly shaped by soils and the water balance. Therefore, any restoration of biodiversity must carefully consider the nexus between biotic components and the factors soil/water. This nexus will be specifically addressed by the session.</p> <p>The UN Convention on Biological Diversity (CBD) already recognises the intrinsic value of biodiversity and its ecological, social, economic, cultural and aesthetic importance. Nevertheless, beginning in the second half of the 20th century, we can observe a faster and more intensive loss of animal and plant species, landscapes and genetic diversity (WWF 2020). The IPBES Global Assessment Report on Biodiversity and Ecosystem Services states that of the eight million known animal and plant species worldwide, around one million are threatened with extinction (IPBES 2019). In order to reverse the trend of biodiversity loss by 2030, both the UN and the EU aim to bolster the protection and particularly the restoration of nature. This will be achieved by improving and expanding the network of protected areas and developing an EU nature restoration plan (COM 2020). According to the WWF (2020), while greater species protection and more protected areas are hugely important, these will not in themselves reverse current trends: it is also vital that we change patterns of land use and/or food production and consumption. Moreover, the EU Commission sees it as imperative to introduce a European governance framework for biodiversity to help identify obligations and commitments while also setting a roadmap for their implementation (COM 2020). Another key element of the EU Biodiversity Strategy 2030 is to draft a proposal for binding EU targets on biodiversity restoration. The European Commission intends to suggest such legally binding targets by the end of 2021. Further, if UN targets are also to be achieved, restoration activities must be immediately launched around the world.</p> <p><u>References</u></p> <ul style="list-style-type: none"> • IPBES (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. IPBES secretariat, Bonn, Germany. • COM (European Commission) (2020): EU Biodiversity Strategy for 2030 – Bringing nature back into our lives. European Commission. 380 final, Brussels, 20.5.2020. • Wende, W.; Tucker, G.-M.; Quétier, F.; Rayment, M.; Darbi, M. (Eds.): Biodiversity offsets: European perspectives on no net loss of biodiversity and ecosystem services. Cham: Springer International Publishing, 2018 (252 pages) https://doi.org/10.1007/978-3-319-72581-9 • WWF (2020): Living Planet Report 2020 – Bending the curve of biodiversity loss. Almond, R.E.A., Grooten M. and Petersen, T. (Eds). WWF, Gland, Switzerland.

Call for Abstracts	We expect presentations from both researchers addressing restoration policy and governance as well as practitioners addressing individual case studies. Such case studies can include large scale biodiversity restoration projects, in particular those addressing the biotic-soil-water nexus. Presentations should also go beyond the European context to illustrate cases from around the world. The various examples (both policies and case studies) should also show how citizens are involved in the restoration process and how the long-term efficiency is being safeguarded.																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Technology																
Themes	Biodiversity																

Session Title	Biodiversity Offsets / No Net Loss / Net Gain
Session ID	S03
Convener/s	Martine Maron (The University of Queensland, Australia); Wolfgang Wende (IOER, Germany); N. N. (EU Commission); Matthias Herbert (Federal Nature Conservation Agency, Germany)
Description of the context, objectives of the panel and its scientific relevance	<p>The vast anthropogenic environmental change occurring in the wake of the global man-made environmental crisis is accompanied by a degradation of landscapes/ecosystems and the loss of biodiversity. These current trends pose an increasing threat to the well-being of human as well as non-human nature and are exacerbated by rising environmental injustice. The session will analyse the potential transformational pathways – and likely obstacles – to achieving offsets and net gain for biodiversity and ecosystem services. We will identify global and European strategies with instruments for the sustainable development of high-quality biodiversity tailored to the various rural and urban habitats.</p> <p>The EU Commission’s DG Environment recently published a guidance document on ‘No Net Loss/Net Gain’ of biodiversity, based on the EU Biodiversity Strategy to 2020. While the implementation and application of the guidance is voluntary, the question arises whether this is not a first official and important step towards a pan-European impact mitigation regulation, flanking a wide range of activities already conducted by the Member States. The contents are not primarily directed at practitioners but are rather intended as policy proposals for Member States with conceptual suggestions for the introduction of no net loss/net gain systems.</p> <p>The research question for this session is: How should policies be designed to achieve full biodiversity offsetting and/or net gain? Australia, France and Sweden, for example, are actively working on national models for biodiversity offsetting, which can be followed with interest. The session will present the main features and conceptual ideas of the EU guidance and show which activities selected EU Member States are undertaking to implement the contents of this EU study and initiative. Beyond the European perspective offsets strategies and cases from around the world illustrate a global view on no net loss and/or net gain of biodiversity.</p> <p>Offsets should not only compensate for impacts on biodiversity, but also for impacts on ecosystem services. In the context of the nexus approach, offset policies for ecosystem services related to soil and water are therefore specifically addressed.</p> <p><u>References</u></p> <ul style="list-style-type: none"> • http://ec.europa.eu/environment/nature/biodiversity/nnl/index_en.htm • Herbert, M. (2015): German Impact Mitigation Regulation – National, European, International. A Comparison from the Viewpoint of the Federal Agency for Nature Conservation. In: UVP-report 29 (3), pp 149-151. • Maron, M.; Mackey, B.; Gordon, A.; Possingham, H.-P. (2015): Stop misuse of biodiversity offsets. In: Nature 523, pp 401-403. https://doi.org/10.1038/523401a • Sonter, L.-J.; Gordon, A.; Archibald, C.; Simmonds, J.-S.; Ward, M.; Metzger, J.-P.; Rhodes, J.-R.; Maron, M. (2020): Offsetting impacts of development on biodiversity and ecosystem services. In: Ambio 49, pp 892-902. https://doi.org/10.1007/s13280-019-01245-3 • Tucker, G.M., Quétier, F. & Wende, W. (2020) Guidance on achieving no net loss or net gain of biodiversity and ecosystem services. Report to the European Commission, DG Environment on Contract ENV.B.2/SER/2016/0018, Institute for European Environmental Policy, Brussels.

	<p>https://ec.europa.eu/environment/nature/biodiversity/nnl/pdf/NNL%20Guidance%20-%20July%202020%20-%20Final.pdf [last access: 29th of July 2021].</p> <ul style="list-style-type: none"> Wende, W.; Tucker, G.-M.; Quétier, F.; Rayment, M.; Darbi, M. (Eds.): Biodiversity offsets: European perspectives on no net loss of biodiversity and ecosystem services. Cham : Springer International Publishing, 2018, 252 pages. https://doi.org/10.1007/978-3-319-72581-9 																
Call for Abstracts	<p>We expect presentations from both researchers investigating offsetting policy and governance systems as well as practitioners addressing particular case studies. Case studies can include projects such as infrastructure development, mining, waste management, urban development or other developmental types. Planning coordination of biodiversity and ecosystem service compensation via habitat banks can also be addressed. Presentations can go beyond the European context and illustrate cases from around the world. The examples (both policies and case studies) should also indicate which metrics are used, i.e. quantitative or qualitative assessment methods for impacts and compensation.</p>																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Governance																
Themes	Biodiversity																

Session Title	Relational values and planning of urban nature and biodiversity
Session ID	S04
Convener/s	Constantina Alina Hossu (University of Bucharest, Romania); Martina Artmann (IOER, Germany)
Description of the context, objectives of the panel and its scientific relevance	<p>'In the era of climate change, urbanization and biodiversity loss, it is crucial to understand how an urbanized society can establish sustainable human-nature relationships. Current research sees a major reason of today's environmental crisis in objectifying and instrumentalizing nonhuman nature neglecting that human societies are tangibly and intangibly connected with the natural environment. Thus, there is the call to move towards a relational instead of instrumental view on nonhuman nature (Chan et al., 2018) as well as the role of personal values what constitutes a 'good life' (Ives et al., 2020). Relational values are informed by preferences, principles and virtues connected with human's relationship with nature and responsibilities towards it (Klain et al., 2017) and are a crucial concept fostered by the Intergovernmental Panel on Biodiversity and Ecosystem Services (Chan et al., 2018).</p> <p>Although academic approaches to assess relational values such as sense of place, social bonding or sacredness are meaningful (Arias-Arévalo et al., 2017; 2018; Sheremata, 2018), it still lacks a comprehensive understanding of relational values in an urban context. Furthermore, relational urban green space planning can strengthen normative parameters such as environmental justice and care (Anguelovski et al., 2020) taking into account shared meanings and responsibilities of multiple stakeholder groups (De Vos et al., 2018).</p> <p>Against this backdrop, this session aims to answer the following questions:</p> <ul style="list-style-type: none"> • What kinds of relational values hold by individual and collective actors can be found in cities and how can these be incorporated in the planning and management of urban nature? • How can relational values methodologically be assessed? • What are drivers and constrains of relational and collaborative urban green space planning? • In which regard do relational values provide a conceptual advancement of the ecosystem service approach in academia and urban planning practice? • How can the recognition of urban relational values contribute to sustainability transformations? <p><u>References</u></p> <ul style="list-style-type: none"> • Anguelovski, I., Brand, A. L., Connolly, J. J. T., Corbera, E., Kotsila, P., Steil, J., Garcia-Lamarca, M., Triguero-Mas, M., Cole, H., Baró, F., Langemeyer, J., del Pulgar, C. P., Shokry, G., Sekulova, F., & Argüelles Ramos, L. (2020). Expanding the Boundaries of Justice in Urban Greening Scholarship: Toward an Emancipatory, Antisubordination, Intersectional, and Relational Approach. <i>Annals of the American Association of Geographers</i>, 110(6), 1743–1769. https://doi.org/10.1080/24694452.2020.1740579 • Arias-Arévalo, P., Martín-López, B., & Gómez-Baggethun, E. (2017). Exploring intrinsic, instrumental, and relational values for sustainable management of social-ecological systems. <i>Ecology and Society</i>, 22(4), art43. https://doi.org/10.5751/ES-09812-220443 • Chan, K. M., Gould, R. K., & Pascual, U. (2018). Editorial overview: Relational values: what are they, and what's the fuss about? <i>Current Opinion in Environmental Sustainability</i>, 35, A1–A7. https://doi.org/10.1016/j.cosust.2018.11.003

	<ul style="list-style-type: none"> • De Vos, A., Joana, C. B., & Dirk, R. (2018). Relational values about nature in protected area research. <i>Current Opinion in Environmental Sustainability</i>, 35, 89–99. https://doi.org/10.1016/j.cosust.2018.10.018 • Ives, C. D., Freeth, R., & Fischer, J. (2020). Inside-out sustainability: The neglect of inner worlds. <i>Ambio</i>, 49(1), 208–217. https://doi.org/10.1007/s13280-019-01187-w • Klain, S. C., Olmsted, P., Chan, K. M. A., & Satterfield, T. (2017). Relational values resonate broadly and differently than intrinsic or instrumental values, or the New Ecological Paradigm. <i>PLOS ONE</i>, 12(8), e0183962. https://doi.org/10.1371/journal.pone.0183962 • Sheremata, M. (2018). Listening to relational values in the era of rapid environmental change in the Inuit Nunangat. <i>Current Opinion in Environmental Sustainability</i>, 35, 75–81. https://doi.org/10.1016/j.cosust.2018.10.017 																																		
Call for Abstracts	<p>This session invites conceptual and empirical work which elaborates on:</p> <ul style="list-style-type: none"> • Conceptual benefits and challenges of relational values in the ecosystem services discourse in an urban context and beyond • Quantitative and qualitative assessments of relational values urban residents and stakeholders (e.g., urban planning, policy, companies, NGOs) hold towards urban nature and biodiversity • Conceptual frameworks, empirical findings and co-creative projects fostering relational and collaborative urban green space planning • Relational values and relational planning contributing to sustainable transformations by fostering ethics of care, stewardship and environmental justice • The role of inner transformations (e.g., shifts of personal and societal values, deep assumptions and goals) that inform care for nonhuman nature in an urban context <p>This session welcomes international interdisciplinary research including urban ecology, urban planning, human geography, environmental psychology, environmental philosophy, arts, spiritual ecology etc. In particular, transdisciplinary research and practitioners are invited to present insights into relational values and collaborative urban green space planning including for instance urban living labs, citizen science, co-creative green space interventions, artistic projects or mindful and spiritual nature experiences to foster a harmonic relationship between society, nature protection and biodiversity in cities.</p>																																		
SDGs addressed	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17											X						
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Tracks	Health and Wellbeing																																		
Themes	Urban and Regional Development																																		

Session Title	Urban green mapping																
Session ID	S05																
Convener/s	Robert Hecht, Tobias Krüger (IOER, Germany); Jochen A.-G. Jaeger (Concordia University, Montréal)																
Description of the context, objectives of the panel and its scientific relevance	<p>Green Infrastructure is a component of the urban nexus. Urban green have positive effects on urban climate, biodiversity, they serve as places for recreation and social interaction, and provide opportunities for experiencing nature und this support health. Covid-19 pandemic showed us how important urban green spaces are to quality of life and that not everyone can benefit equally from green spaces because they are not available and accessible at the same quality everywhere. In order to allow urban residents to best benefit from the positive effects urban residents, tourists, and city administrations should know where UGSs are located, what qualities (amenities) they have and how to reach them. On the other hand city administrations are interested in information how UGS are used and perceived.</p> <p>The following research questions could be addressed:</p> <ul style="list-style-type: none"> • Which data and methods are suitable for spatiotemporal acquisition, mapping and assessment of urban green space? • Which accuracies can be achieved? • What methods can be used to map green spaces and map their characteristics in terms of physical structure, amenities, and use/perception of urban green spaces? <p>The focus may be on urban green spaces and their accessibility, green connectivity, or green amenities along the street and road network. Remote sensing data, volunteered geographic information, social media data, or street-level photographs could be used as data sources.</p>																
Call for Abstracts	We expect researcher's input in form of a scientific talk. Presentation should include: Motivation, data & method, results, discussion outlook. We welcome any kind of geospatial approaches of mapping, analyzing, assessing of urban green with no restrictions to any geographical region. We encourage the use of open data and following the guidelines for applying Open Science.																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Data																
Themes	Urban and Regional Development																

Session Title	National Ecosystem Accountings																
Session ID	S06																
Convener/s	Ralf-Uwe Syrbe, Karsten Grunewald (IOER, Germany); Sabine Lange (MAIA, Leibniz University Hanover, Germany)																
Description of the context, objectives of the panel and its scientific relevance	<p>Previous sustainability and biodiversity strategies have not been able to counter negative trends in the protection of biodiversity. One major cause of this is the poor structure of economic reporting systems at both the national level and within the business sector. Biodiversity and ecosystem services (ES) are still either disregarded or only partially captured as valuable resources. Both the ongoing loss of various ecosystems and the huge positive contribution that they (still) provide to the well-being of society and to economic prosperity are underestimated.</p> <p>The session will explore the potential integration of information on biodiversity and ES (referred to as natural capital in a broader sense) into reporting systems such as environmental economic accounts. The aim is to modernise economic reporting by better integrating elements of biodiversity in the form of natural capital and ES as well as to shift processes of policymaking and business decision-making towards the conservation and sustainable use of biodiversity. Governmental actors and companies should be closely involved in these processes. This applies to the integration of exemplary indicators for biodiversity and ecosystem services as well as to the corresponding agenda setting for innovative reporting systems.</p> <p>It should be emphasised that the nexus principle is inherent in the ES concept, as ecosystems and habitat types are considered.</p>																
Call for Abstracts	<ul style="list-style-type: none"> • Oral presentations or posters are expected • Main questions are: <ul style="list-style-type: none"> - How to integrate ecosystem extent, conditions and services into national accounts? - What are the best political meaningful and economically acceptable methods for ecosystems assessment for accounting purposes? • Economical, statistical and ecosystem services approached are important, alternative approaches are welcome. 																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Sustainability Assessment																
Themes	Biodiversity																

Session Title	Measurement methods and indicators of regional and urban sustainability with a focus on the public sector
Session ID	S07
Convener/s	Jon Morris (IOER, Germany); Adrian Solomon (South-East European Research Centre, Greece)
Description of the context, objectives of the panel and its scientific relevance	<p>Public authorities are a major consumer of goods and services (accounting for 14% of GDP in the European Union) and therefore have the potential to shape markets to increase the proliferation of products and services with enhanced sustainability performance (European Commission, 2020; Loader, 2013). This session will discuss the state of the art in operationalizing sustainability targets at the local scale to support public procurement strategies, especially focusing on the way the sustainability objectives and indicators could be incorporated into sustainability management of Cities and Regions.</p> <p>This draws on ideas of Green Public Procurement (GPP), defined as a “process whereby public authorities seek to promote goods, services, and works with a reduced environmental impact through their life cycle when compared to goods, services, and works with the primary function that would otherwise be procured” (Commission of the European Union, 2012). This requires a shift away from lowest cost objectives and requires increased involvement of public authorities in designing, monitoring and measuring procurement strategy implementation (Genovese et al., 2020). Within this framing, the public sector can be an important factor in driving innovation to fulfil societal needs – such as job creation and equitable income distribution (Talebi and Rezaia, 2020), as well as reaching ecological objectives related to greenhouse gas emissions, land use, and biodiversity (Lindfors and Ammenberg, 2021). Biodiversity management in particular is often neglected an objective in Public Procurement despite its relevance for local well-being and its positioning as one of the top 5 threats facing our societies (World Economic Forum, 2020a, 2020b). Furthermore, public authorities are well positioned to cover schemes that have direct links to monitor and evaluate trade-offs between different policies and sectors and integrate Nexus thinking. Research is therefore required to develop assessment and evaluation indicators with practical applications.</p> <p><u>References</u></p> <ul style="list-style-type: none"> • Commission of the European Union, 2012. Green Public Procurement: A collection of good practices (No. DOI: 10.2779/93178). Commission of the European Union, Luxembourg. • European Commission, 2020. New Circular Economy Strategy [WWW Document]. URL https://ec.europa.eu/environment/circular-economy/ (accessed 6.17.20). • Genovese, A., Morris, J., Koh, S.C.L., Acquaye, A., 2020. An investigation into design and performance of supply chains for public procurement projects. <i>Prod. Plan. Control</i> 0, 1–20. https://doi.org/10.1080/09537287.2020.1837930 • Lindfors, A., Ammenberg, J., 2021. Using national environmental objectives in green public procurement: Method development and application on transport procurement in Sweden. <i>J. Clean. Prod.</i> 280, 124821. https://doi.org/10.1016/j.jclepro.2020.124821 • Loader, K., 2013. Is Public Procurement a Successful Small Business Support Policy? A Review of the Evidence. <i>Environ. Plan. C Gov. Policy</i> 31, 39–55. https://doi.org/10.1068/c1213b • Talebi, A., Rezaia, D., 2020. Governance of projects in public procurement of innovation a multi-level perspective. <i>J. Public Procure.</i> 20, 187–206. https://doi.org/10.1108/JOPP-01-2019-0005 • World Economic Forum, 2020a. The Future of Nature and Business. World Economic Forum, Geneva, Switzerland. • World Economic Forum, 2020b. Global risks report. World Economic Forum.

Call for Abstracts	<p>We welcome submissions from a broad range of perspectives that focus on indicators in public procurement. We are interested in submissions on the following topics (but not limited to):</p> <ul style="list-style-type: none"> • Sustainability performance criteria in procurement documents • The framing of sustainability and performance systems to evaluate its successes • Drivers and barriers for integrating sustainability criteria into procurement practices and decision-making • Social, Economic and Environmental assessment of procurement decision-making, including Nexus approaches • Indicator development for measuring effectiveness of public procurement at city/regional level. • Identifying potential for procurement to drive urban sustainability transformations <p>We encourage submissions that address clear and important research questions examining the development and application of performance indicators in public procurement processes, including public-private partnerships and public sector supply chain management. All empirical approaches are welcome, especially those which bring together multi and interdisciplinary perspectives.</p>																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Sustainability Assessment																
Themes	Urban and Regional Development																

Session Title	Sustainability Assessment – From concepts to methodical implementation																
Session ID	S08																
Convener/s	N.N. Junior Professor Sustainability Assessment (TUD, Germany); Jochen Schanze (IOER, Germany); Dominik Möst (TUD, Germany); Peter Saling (TUD / BASF, Germany); Edeltraud Günther (UNU FLORES, Germany); PRISMA – Center for Sustainability Assessment and Policy																
Description of the context, objectives of the panel and its scientific relevance	<p>Sustainability Assessments are commonly understood as a means of jointly analyzing and evaluating the three dimensions of sustainability for various entities, processes and structures with their institutional contexts. While the scope of topics is wide ranging from natural resources to industrial production processes on the one hand, and empirical applications are frequent on the other hand, there appears to be little exchange and common ground in terms of the conceptual framing and methodical implementation. Against this background, the session provides a platform for exchange between experts from different fields to share their most recent findings and to explore similarities and differences in the conceptual and methodical approaches. Guiding questions are: (i) Which conceptual framework is used for the Sustainability Assessment? (ii) Which methodology is used for implementing the framework? (iii) How far may these approaches be considered as transferable for Sustainability Assessment in a more general sense?</p> <p>The multidisciplinary and cross-sectoral session allows for a deeper understanding of the state of the art on Sustainability Assessment. Based upon, it is supposed to pave the way towards the identification of gaps and the derivation of research needs from an interdisciplinary and transdisciplinary perspective. Therefore, case studies of sustainability assessment such as for industries and sectors are also welcome, which critically reflect the assessment in the above mentioned sense. This may include trade-offs between different sustainability criteria and uncertainties of the assessment.</p> <p><u>References</u></p> <ul style="list-style-type: none"> • Pope, J., Bond, A., Hugé, J., Morrison-Saunders, A., 2017. Reconceptualising sustainability assessment. <i>Environ. Impact Assess. Rev.</i> 62, 205–215. https://doi.org/10.1016/j.eiar.2016.11.002. • Sala, S., Ciuffo, B., Nijkamp, P., 2015. A systemic framework for sustainability assessment. <i>Ecol. Econ.</i> 119, 314–325. https://doi.org/10.1016/j.ecolecon.2015.09.015. • Tarne, P., Traverso, M., Finkbeiner, M., 2017. Review of Life Cycle Sustainability Assessment and potential for its adoption at an automotive company. <i>Sustainability</i> 9, 670. https://doi.org/10.3390/su9040670. • Zijp, M.C., Waaijers-van der Loop, S.L., Heijungs, R., Broeren, M.L.M., Peeters, R., Van Nieuwenhuijzen, A., Shen, L., Heugens, E.H.W., Posthuma, L., 2017. Method selection for sustainability assessments: the case of recovery of resources from waste water. <i>J. Environ. Manage.</i> 197, 221–230. https://doi.org/10.1016/j.jenvman.2017.04.006. 																
Call for Abstracts	There is a call for presentations and posters on the session topic.																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Sustainability Assessment																
Themes	Open Themes																

Session Title	Creating Circular Value in Building Stocks																
Session ID	S09																
Convener/s	Georg Schiller (IOER, Germany); Raimund Bleischwitz (UNU FLORES, Germany)																
Description of the context, objectives of the panel and its scientific relevance	<p>The context of the topic is the global urbanization and quest for new infrastructures for the built environment. This has been leading to anthropogenic stocks in emerging economies, such as China, that are likely to come to their end of lifetimes. Thus there is a risk and an opportunity:</p> <ul style="list-style-type: none"> • a risk for increased waste production, alongside with a massive increase in emissions if new buildings are erected with concrete, steel, glass and other environmentally-intensive materials • an opportunity, if those materials can be deconstructed and re-used. <p>Numerous studies point at the feasibility of a more circular use of construction materials. This session/seminar will address research questions on</p> <ul style="list-style-type: none"> • Modelling anthropogenic stocks in the built environment with extensions into future supply of secondary materials • Drivers and barriers to a more circular use of construction materials • Assessment of the urban footprint in terms of land use, landscape and ecosystems <p>DNCi has been delivering a seminar with around 25 actors in a local scope (Dresden & Saxony) in June 2021. The Nexus conference shall extend their scope into an international context, by reaching out to international researchers (e.g. UKRI CE Centre, TU Delft, CSIRO, SJTU), emerging data hubs (Madaster, IRP) and platforms such as EU Bauhaus.</p> <p>The link to biodiversity is yet strong: extraction of sand (used for concrete production) is a threat to biodiversity especially in river estuaries, concrete is the most carbon-intensive material world-wide, and landfill contributes to environmental deterioration.</p>																
Call for Abstracts	<p>We will be reaching out to reserachers interested in co-creating solutions with practicioners and vice-versa. Our three research questions on</p> <ul style="list-style-type: none"> • Modelling anthropogenic stocks in the built environment with extensions into future supply of secondary materials • Drivers and barriers to a more circular use of construction materials • Assessment of the urban footprint in terms of land use, landscape and ecosystems <p>...suggest quantitative or semi-quantitative contributions, cases with evidence on transferability, comparative assessments, outlooks and evidence-oriented recommendations.</p>																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Options, dependent on final scope: 1) Sustainability Assessment 2) Governance 3) Data																
Themes	Circular Economy																

Session Title	Biodiversity in urban development – planning strategies and instruments
Session ID	S10
Convener/s	Puay Yok Tan (Director Singapore Botanic Gardens/National University of Singapore, Singapore); Juliane Mathey, Stefanie Rößler, Wolfgang Wende (IOER, Germany); Robert Spreter, Robert Bartz (German Alliance of Municipalities for Biodiversity, Germany); Beatrice Chng, Youde Tang (ICLEI Asia, South Korea)
Description of the context, objectives of the panel and its scientific relevance	<p>Because of the specific environmental conditions in cities, urban biodiversity is different from that in the open landscape. Diverse habitats and a high diversity of animals and plants can be found, being an important base for ecosystem services and the quality of urban life of residents (e. g. climate adaptation, food production, recreation, social interaction, nature experience). Besides supporting human well-being and healthy environments in cities, biodiversity under and above ground is responsible for functions like nutrition of plants, animals and humans, decomposition of organic waste and loosening of the soil for a well-functioning water balance (e. g. supporting food production). At the same time, the high density of uses and the dynamics of settlement are a threat to biodiversity.</p> <p>Therefore, municipalities have a great responsibility for the protection and development of biodiversity on their territory. This challenge must be addressed systematically with suitable planning strategies and instruments. Even though there are planning and implementation approaches to promote biodiversity in many cities, there is often a lack of overarching strategies and integrated planning that take into account a city-wide approach in particular and also consider inner urban areas and the urban stock. Hence, in this session, potentials and limits of planning strategies and instruments to protect and strategically develop biodiversity in municipalities will be discussed:</p> <p>Addressed research questions are:</p> <ul style="list-style-type: none"> • What planning approaches for strengthening urban biodiversity exist in different countries? • What are hindering and facilitating factors for successful approaches? • What conclusions can be drawn for handling urban biodiversity in planning processes? • Which role play participatory processes and public involvement in the development of urban biodiversity? <p><u>References</u></p> <ul style="list-style-type: none"> • Elmqvist, T.; Fragkias, M.; Goodness, J.; Güneralp, B.; Marcotullio, P. J.; McDonald, R.; Parnell, S.; Schewenius, M.; Sendstad, M.; Seto, K. C.; Wilkinson, C. (eds) (2013): Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities. A Global Assessment. A Part of the Cities and Biodiversity Outlook Project. Springer. Dordrecht, Heidelberg, New York, London. • Faeth, S. H.; Bang, C.; Saari, S. (2011): Urban biodiversity: Patterns and mechanisms. In: Annals of the New York Academy of Sciences. Issue: The Year in Ecology and Conservation Biology, ISSN 0077-8923, 69-81. https://www.researchgate.net/publication/50935514 [accessed 18th August 2021]. • Kowarik, I. (2011): Novel urban ecosystems, biodiversity, and conservation. Environmental Pollution, 159(8–9):1974–1983. • Mathey, J.; Rößler, S. (2021): Approaches to developing urban wastelands as elements of green infrastructure. In: Di Pietro, F.; Robert, A. (eds.): Urban Wastelands: A form of urban nature? Springer Nature, Switzerland, 295-329 (in press). • Mathey, J.; Rößler, S.; Banse, J.; Lehmann, I.; Bräuer, A. (2015): Brownfields as an Element of Green Infrastructure for Implementing Ecosystem Services into Urban Areas. Journal of Urban Planning and Development 141(3), A4015001-1 to A4015001-13.

	<ul style="list-style-type: none"> • Niemelä, J.; Saarela, S.-R.; Södermann, T.: Kopperoinen, L.; Yli-Pelkonen, V.; Väre, S.; Kotze, D.J. (2010): Using the ecosystem services approach for better planning and conservation of urban green spaces: a Finland case study. <i>Biodiversity Conservation</i> 19, 3225-3243. • Rößler, S.; Böhme, E.; Arndt, T. (2019): Biologische Vielfalt und Naturschutz im Förderprogramm Stadtumbau. In: <i>Natur und Landschaft</i> (94) 12, 517-523. • Tan, P.-Y.; Jim, C.-Y. (2017, Eds.): <i>Greening Cities – Forms and Functions</i>. Springer Nature, Singapore. • UrbanNBS-Team (Eds.) (2020): Mehr biologische Vielfalt in Städten und Gemeinden – Eine Arbeitshilfe zur Erstellung kommunaler Biodiversitätsstrategien. Radolfzell, DUH. • Wende, W. (2019): Ecosystem services and landscape planning. How to integrate two different worlds in a high-density urban setting. In: Rinaldi, B.-M.; Tan, P.-Y. (eds.): <i>Urban landscapes in high-density cities: Parks, streetscapes, ecosystems</i>. Birkhäuser, Basel, pp 154-164 																																		
Call for Abstracts	<p>Welcome are contributions presenting and discussing theoretical reflections, conceptual frameworks as well as practical examples for innovative planning strategies and instruments. The focus will be on qualitative approaches, comparisons and also single cases. The presentations shall address questions on how urban planning and other municipal strategic approaches can support urban biodiversity issues (e. g. formal urban planning instruments, landscape planning instruments, informal municipal biodiversity strategies, urban regeneration strategies).</p> <p>We appreciate contributions addressing the international variety of urban patterns, socio-economic conditions, city sizes and policy frameworks.</p>																																		
SDGs addressed	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>X</td><td></td><td></td><td></td><td>X</td><td></td><td></td> </tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17											X				X		
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Tracks	Governance																																		
Themes	Urban and Regional Development, Biodiversity																																		

Session Title	Promoting Corporate Biodiversity Management Through Stakeholder Involvement
Session ID	S11
Convener/s	Remmer Sassen (TUD, Germany); Stefan Schaltegger (Leuphana University Lüneburg, Germany)
Description of the context, objectives of the panel and its scientific relevance	<p>Corporate biodiversity management (CBM) is a relatively new term in both the business and academic fields. The main goals of CBM are to assist companies in identifying impacts their activities bring to biodiversity and developing strategies to avoid possible risks. As every business sector depends on natural resources and faces rising biodiversity awareness from stakeholders, companies, especially corporations, start realizing the importance of tackling biodiversity issues and reporting on them. However, compared to climate change, which has clearer measurement approaches and indicators, biodiversity loss is a more complicated issue since it includes the interaction of genetic, species, and ecosystem diversity. For this reason, CBM is still not widely adopted from businesses in most sectors.</p> <p>Globalization brings the world closer together, but at the same time complicates business supply chains and causes more pollution and resource exploitation, which increase biodiversity loss. The global supply chains involve stakeholders from diverse backgrounds, bringing up opportunities for cooperation to preserve biodiversity. While sustaining corporate images is one of the main drivers of implementing CBM, involving stakeholders in the biodiversity strategic development can help companies to enhance stakeholder relationships, to understand the resources involved in the supply chain, and to mitigate biodiversity risks. Therefore, research questions as indicated below are addressed:</p> <ul style="list-style-type: none"> • Why is cooperating with stakeholders necessary to develop and implement CBM? • How can stakeholders support and motivate the implementation of CBM? <p>These questions can shed light on the resource nexus community through exploring the dependencies and interlinkages of different natural resources and biodiversity while developing strategies with stakeholders. This might further find research synergies between resource nexus community and CBM.</p> <p>We are looking for contributions on the involvement of both internal, e.g. employees and suppliers, and external, e.g. NGOs and community, stakeholders in CBM among diverse business sectors and sizes.</p> <p><u>References</u></p> <ul style="list-style-type: none"> • Addison, P. F., Bull, J. W., & Milner-Gulland, E. J. (2019). Using conservation science to advance corporate biodiversity accountability. <i>Conservation Biology</i>, 33(2), 307-318. • Boiral, O., & Heras-Saizarbitoria, I. (2017). Managing biodiversity through stakeholder involvement: why, who, and for what initiatives?. <i>Journal of Business Ethics</i>, 140(3), 403-421. https://doi: 10.1007/s10551-015-2668-3. • Boiral, O., Heras-Saizarbitoria, I., & Brotherton, M. C. (2018). Corporate biodiversity management through certifiable standards. <i>Business Strategy and the Environment</i>, 27(3), 389-402. https://doi: 10.1002/bse.2005. • Boiral, O., Heras-Saizarbitoria, I., & Brotherton, M. C. (2019). Improving corporate biodiversity management through employee involvement. <i>Business Strategy and the Environment</i>, 28(5), 688-698. https://doi: 10.1002/bse.2273. • KPMG (2020). The time has come: The KPMG Survey of Sustainability Reporting 2020. KPMG International. • Schaltegger, S., & Beständig, U. (2010). Corporate biodiversity management handbook: A guide for practical implementation. Federal ministry for the environment, nature conservation and nuclear safety (BMU).

Call for Abstracts	<p>In this session, the potentials of stakeholder involvement to achieve a strong biodiversity network, to understand the involved resources in the supply chains, and to assist businesses to implement CBM will be the focus. Following questions might be addressed during the presentations:</p> <ul style="list-style-type: none"> • How does the resource nexus literature help developing strategies to implement CBM? • What are corporate impacts on biodiversity through natural resource use in a certain sector? How can stakeholder involvement in CBM lead to sustainable resource use? • How are stakeholders involved in CBM along the supply chain for a particular natural resource? To what extent are stakeholders involved? • What motivates a certain industry to involve stakeholders to extend the topics regarding CBM? • What are the challenges that hinder businesses to collaborate with stakeholders and develop strategies for CBM? • What are the risks and opportunities for businesses to involve stakeholders to implement CBM? • What are the differences in stakeholder involvement for biodiversity topics between corporations and SMEs? <p>Both inputs from researchers and practitioners, e.g. employees and NGOs, are expected. Qualitative, e.g. systematic review, interview, and content analysis, and quantitative, e.g. survey, approaches are especially welcome. Single case or multiple cases focused on diverse companies or industries for the discussion of stakeholder cooperation in CBM are as well desired.</p>																	
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
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Tracks	Society and Justice																	
Themes	Biodiversity, Organisations																	

Session Title	Pollination for sustainable food production
Session ID	S12
Convener/s	Katharina Stein (TUD / CIPSEM, Germany); Hien Ngo (IPBES, now with FAO, Germany)
Description of the context, objectives of the panel and its scientific relevance	<p>In view of growing demands for food and agricultural land, it is imperative to recognize the interdependence between human needs and biodiversity conservation. Identification of the knowledge gaps is important for decision-makers, researchers, and capacity building and management actions. Worldwide biodiversity is threatened by climate change and land use such as grazing, agriculture and deforestation. Strong human population growth and increased demand for resources and food enhances the pressure on natural ecosystems and their biodiversity, thereby threatening the provisioning of ecosystem services, e.g. pollination of crops and natural vegetation and other services such as carbon sequestration in woody plants and biomass production. Bees are the most important pollinators worldwide and crucial for food security and ecosystem stability. 75 % of all food crops depend on pollination by animals. Pollinator declines and their effects on human wellbeing have received a great deal of international attention. However, only a small proportion of pollination research has focused on the developing world, most studies focus on crop systems in the Global North. The consequences of losing these services could be at least as detrimental to economies, ecosystems and communities in these regions through reducing crop yields and hence negatively affect income and livelihoods of farmers. Furthermore, declining pollination services are likely to reduce production and human intake of nutritious pollinator-dependent food groups such as fruits, nuts and vegetables.</p> <p>Recommendations/knowledge needs:</p> <ul style="list-style-type: none"> • Continuing research on bee pollination and limiting factors in the Global South to diminish the knowledge gap on pollinators and to ensure the delivery of maximum benefit to the respective countries • Identification of management practices that were considered “ecologically-intensive” (pollinator friendly) and changing to meet demands for food production and subsequently poverty alleviation • Knowledge transfer and education programs on the importance of bee pollination for various stakeholders (farmers, local industry, decision makers) by information brochures, community workshops, agricultural training centers, school trainings • Conservation and restoration of natural habitats to maintain vigorous and diverse bee populations and their pollination service • Introduction/expansion of beekeeping (honeybees and stingless bees) to increase and diversify income as well as boosting local crop pollination • Reduced use of pesticides (in combination with integrated pest management) <p><u>References</u></p> <ul style="list-style-type: none"> • Gallai, N., Salles, J.-M., Settele, J., Vaissière, B.E., 2009. Economic valuation of the vulnerability of world agriculture confronted with pollinator decline. <i>Ecol. Econ.</i> 68, 810-821. • Godfray, H.C.J., Beddington, J.R., Crute, I.R., Haddad, L., Lawrence, D., Muir, J.F., Pretty, J., Robinson, S., Thomas, S.M., Toulmin, C., 2010. Food security: the challenge of feeding 9 billion people. <i>Science</i> 327, 812-818. • Klein, A.M., Vaissiere, B.E., Cane, J.H., Steffan-Dewenter, I., Cunningham, S.A., Kremen, C., Tscharntke, T., 2007. Importance of pollinators in changing landscapes for world crops. <i>Proc. R. Soc. B.</i> 274, 303-313. • Potts, S.G., Imperatriz-Fonseca, V. et al., 2016. Safeguarding pollinators and their values to human well-being. <i>Nature</i> 540, doi: 10.1038/nature20588

	<ul style="list-style-type: none"> Stein, K., Coulibaly, D., Stenchly, K., Goetze, D., Porembski, S., Lindner, A., Konaté, S., Linsenmair, E.K. (2017) Bee pollination increases yield quantity and quality of cash crops in Burkina Faso, West Africa. NATURE Scientific Reports (2017) 7:17691 doi:10.1038/s41598-017-17970-2. 																																		
Call for Abstracts	Both inputs from researchers and practitioners, e.g. employees and NGOs, are expected. Qualitative, e.g. systematic review, interview, and content analysis, and quantitative, e.g. survey, approaches are especially welcome as well as case studies from the Global South that deal with pollination for food/oil/energy or Cash crop production in a international context (trade, global markets, “super foods” for the industrialized countries)																																		
SDGs addressed	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td> </tr> <tr> <td></td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>X</td><td></td><td>X</td><td></td><td></td> </tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		X											X		X		
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	X											X		X																					
Tracks	Open Tracks																																		
Themes	Agri-Food and Forest Systems																																		

Session Title	Resource Neutral Engineering – Adding Value by Saving Resources																
Session ID	S13																
Convener/s	Maik Gude (TUD, Germany); Ashish Kamalakar Darpe (Indian Institute of Technology Delhi, India)																
Description of the context, objectives of the panel and its scientific relevance	<p>In the light of the constantly increasing human population, a minimisation of the impact of humankind’s impact on the environment becomes a vital issue. The accomplishment of this task is particularly difficult considering the necessity of comprehensive cross-national cooperation of societies with their different development stages, language diversity and cultural backgrounds as well as their local problems and beliefs.</p> <p>More than ever, we need new, holistic technical-technological solutions that enable us to make a proactive contribution to reconciling growth and progress with environmental protection and resource conservation.</p> <p>Lightweight engineering has long played a key role as drivers of ideas and innovation for resource-efficient, competitive and socially balanced economic activity. This concept of the “resource-neutral design” offers a comprehensive approach for the development, manufacture, use and recycling of technical structures with the aim to minimize the human footprint, to achieve sustainable use of the remaining global resource potential and to contribute to just global society.</p> <p>From today’s perspective, this approach is still an ideal concept that can only be partially implemented with the technologies of our time, but which determines our vision and action.</p> <ul style="list-style-type: none"> • Foster in actual research topics; lead the tomorrow’s pro-environment initiatives on administration level; animate and intensify the anti-pollution measures of the local communities; change research and development direction of industry in order to maintain profits in changing society • Representatives of: Academy; Big industry; Start-Ups; NGOs • Impulse presentations, exchange of opinions and a roundtable discussion to generate new approaches and ideas involving all actors / key-holders 																
Call for Abstracts	<p>Researchers and practitioners are utmost welcome to submit a five-minute impulse presentation and a question / topic for the roundtable discussion.</p> <p>Ideally, the topic should deal with the resources neutral design, but other related themes, e.g. Recycling and Reuse (especially of plastics), Life Cycle Analysis, Bio-based Materials are welcome.</p> <p>Interdisciplinary approach with social impact is especially appreciated.</p>																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
								X	X			X					
Tracks	Technology																
Themes	Circular Economy																

Session Title	Biodiversity Economy																
Session ID	S14																
Convener/s	Morgan Hauptfleisch (Namibia University of Science and Technology, Namibia); Patrick O'Farrell (UNU FLORES, South Africa)																
Description of the context, objectives of the panel and its scientific relevance	<p>Biodiversity underlies ecosystem functions and services. Economic activities depend largely on biodiversity and the associated ecosystem services. For example, freshwater provisioning, food, and energy production largely depend on nature (Krcnak et al., 2011). Contrary, satisfying these fundamental needs affect the state of biodiversity either directly or indirectly. Already, human consumption and economic activities have contributed to the degradation of nature (Diaz et al., 2019; Wilting et al., 2017). The current rates and paces of biodiversity loss have never been recorded before (IPBES, 2019), already overshooting the safe operating space (Rockström et al., 2009). Thereby, the reached doubling of produced capital per capita came with a natural capital decline of 40 percent during the same period (Dasgupta & McKenzie, 2020).</p> <p>Businesses from all sectors induce impacts and have specific dependencies on nature that create costs and benefits to themselves and society (NCC, 2016) and are also affected by progressive biodiversity loss (Diaz et al., 2019). Therefore, it is essential to identify synergies and trade-offs in economic functioning and biodiversity to ensure a sustainable life for humankind. Accordingly, as an internationally renowned framework, the natural capital protocol creates a tool to make business-biodiversity interactions visible, measurable, and manageable (NCC, 2016).</p> <p>In Namibia, a broad share of the people directly depends on natural resources. Therefore, the biodiversity economy offers a promising approach to maximize livelihood opportunities while protecting biodiversity. An ongoing project at UNU-FLORES on biodiversity economy contributes to, facilitates research, capacity building, and promotes the sustainable use of biodiversity in Namibia. The natural capital protocol is applied to corporate case studies to investigate impacts and dependencies on biodiversity and to develop best practice guidance.</p> <p>This session focuses on the relationship between biodiversity and the economy as well as the application of frameworks such as the natural capital protocol, to induce economic growth while protecting and mainstreaming the sustainable use of biodiversity.</p>																
Call for Abstracts	<p>This chair welcomes input from the research community and from practitioners covering topics related to the economy and/or natural capital across different scales (from local to international) and sectors.</p> <p>Case studies are particularly welcome that provide insights into the approach and the practical application to account for a company's or a sector's impacts and dependencies on biodiversity and natural capital. In addition, any input that relates to biodiversity and the Resource Nexus or that investigates synergies and trade-offs among biodiversity and other natural resources are invited to be shared during this seminar.</p> <p>Contributions that provide best practice guidelines for performing natural capital accounting or investigate contemporary limiting factors of integrating biodiversity business strategy are particularly welcome. Both qualitative and quantitative approaches are welcome.</p> <p>Additionally, single case studies and comparisons of several cases are welcomed by the chair such as investigations of specific regions or regions with a strong interdependence between biodiversity and economy.</p>																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Open Tracks																
Themes	Biodiversity																

Session Title	Fostering Collective Action: Mainstreaming Biodiversity Across Sectors																
Session ID	S15																
Convener/s	Remmer Sassen (TUD, Germany); Jon Morris (IOER, Germany); Atiqah Fairuz Salleh (UNU FLORES, Germany)																
Description of the context, objectives of the panel and its scientific relevance	<p>Biodiversity underpins human life on Earth by being the source for various goods and services such as food, medicine, air quality, and culture. More diverse and resilient ecosystems can benefit climate mitigation, sequester carbon, and reduce greenhouse gases (IPBES IPCC 2021).</p> <p>Biodiversity and its rich contribution to people are deteriorating and some contributions are irreplaceable. The current way of using nature and its services through sea and land-use change negatively impacts Earth's ecosystems and is derived from societal behaviours including production and consumption (IPBES 2019).</p> <p>Still, the awareness on biodiversity and its importance to human wellbeing is rather low. In German society, the awareness was found to be at an alarming rate of only 28 per cent, measured by knowledge, attitudes, and behavioural willingness to protect biodiversity (Naturbewusstsein 2019, BMU).</p> <p>Biodiversity is the foundation of resources on Earth and a cross-sectoral mainstreaming of biodiversity is needed to ensure sustainable development. How can we increase the understanding of biodiversity by involving various parties and stakeholders on different scales?</p> <p>Daily consumption and production have to be linked to biodiversity and ecosystem services and biodiversity education shall be increased among civil society. Only a long-term engagement in nature conservation and consumption which does not exceed nature's supply will secure natural resources for future generations (Dasgupta Review 2021).</p>																
Call for Abstracts	<p>Actions are needed on an individual and collective level. In addition, collaboration across sectors and common goals for increasing biodiversity need to be identified. Who could take which role to support each other in their actions? Different approaches from different sectors are welcome: Researchers shall give input how to increase the awareness for biodiversity? Practitioners and NGOs shall give input on how they envision to increase biodiversity and share their best practices. Representatives from the business sector may present initiatives that support efforts to promote biodiversity. In their presentations, presenters would also identify some obstacles and challenges that may be faced. The discussion is intended to identify these gaps in the different sectors and to foster collective action through identifying synergies that would bridge these gaps.</p>																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Society and Justice																
Themes	Biodiversity																

Session Title	The Resource Nexus for new modes of science-policy interaction
Session ID	S16
Convener/s	Chrysi Laspidou (University of Thessaly, Greece); Floor Brouwer (UNU FLORES, The Netherlands)
Description of the context, objectives of the panel and its scientific relevance	<p>Session will gain knowledge and advance capacity for nexus-compliant management of our vital resources. A state-of-the art overview of the science of the Resource nexus, to make explicit the key interlinkages between resources and targeted towards improved decision making. The session will showcase the interrelatedness and interdependencies of environmental resources and their transition and fluxes across scales and between resources. Knowledge on the functioning, productivity and management of complex resource systems is advanced.</p> <p>In doing so, the session will gain knowledge and advance the capacity for systems approaches towards nexus-compliant management of our vital resources. The session will add knowledge to improve science-policy interactions with an orientation towards action and building on transdisciplinary approaches (triangle of policy-practice-knowledge). Session seeks for new modes of science-policy interaction, taking into account transformative changes (e.g. Planetary Boundary and Doughnut Economics etc.). The session will also support to understand (un-)willingness of society (individual and groups) to change their practice. Focus on institutions, access to resources, knowledge and skills, incentives, rights and responsibilities, social status, identity and social preferences.</p> <p><u>References</u></p> <ul style="list-style-type: none"> • Bréthaut, C., L. Gallagher, J. Dalton and J. Allouche (2019), 'Power dynamics and integration in the water-energy-food nexus: Learning lessons for transdisciplinary research in Cambodia', <i>Environmental Science & Policy</i>, 94, 153–62. • Clark, W. C., L. van Kerkhoff, L. Lebel and G. C. Gallopin (2016), 'Crafting usable knowledge for sustainable development', <i>Proceedings of the National Academy of Sciences</i>, 113 (17), 4570–8. • Märker, C., S. Venghaus and J.-F. Hake (2018), 'Integrated governance for the food–energy–water nexus – The scope of action for institutional change', <i>Renewable and Sustainable Energy Reviews</i>, 97, 290–300. • Simpson, G.B. and G.P.W. Jewitt (2019), 'The Development of the Water-Energy-Food Nexus as a Framework for Achieving Resource Security: A Review', <i>Frontiers in Environmental Science</i>, 7, 8. • van den Heuvel, L., M. Blicharska, S. Masia, J. Sušnik and C. Teutschbein (2020), 'Ecosystem services in the Swedish water-energy-food-land-climate nexus: anthropogenic pressures and physical interactions', <i>Ecosystem Services</i>, 44, 101141. • Zhang, C., X. Chen, Y. Li, W. Ding and G. Fu (2018), 'Water-energy-food nexus: Concepts, questions and methodologies', <i>Journal of Cleaner Production</i>, 195: 625-639.
Call for Abstracts	<p>Contributions are foreseen to be mainly from the research community, but we welcome contributions from practice. There is no strict format on the approaches, but the session is planned to include a mix of qualitative and quantitative approaches, as well as single cases and comparative analyses across cases. Contributions will focus to advance our understanding of the resource nexus, with a perspective towards nexus-compliant management of our vital (natural) resources. We welcome contributions to address the following:</p> <ul style="list-style-type: none"> • The resource nexus concept, making explicit the key interlinkages between resources and improve decision making. • The resource nexus and the management of our vital resources (e.g. biodiversity, climate-neutrality and land).

	<ul style="list-style-type: none"> The resource nexus and transformative change (e.g. Planetary Boundaries, Footprint, Doughnut Economics). Understand (un-) willingness of society (individual and groups) to change their practice. Establish links with institutions, access to resources, knowledge and skills, incentives, rights and responsibilities, social status, identity and social preferences. 																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Resource Nexus Theory																
Themes	Biodiversity and Other Themes (e.g. climate change, agri-food and forest systems, urban and regional development, circular economy)																

Session Title	Advancing Water Security by Climate Change Adaptation
Session ID	S17
Convener/s	Jürgen Stamm (TUD, Germany); Daniel Karthe (UNU FLORES, Germany); Holger Schüttrumpf (RWTH Aachen, Germany); Mukand Singh Babel (AIT Bangkok, Thailand); Sannasi Annamalaisamy Sannasiraj (IIT Chennai, India)
Description of the context, objectives of the panel and its scientific relevance	<p>The session focuses on the advancement of water security in the context of climate change adaptation.</p> <p>Global climate change affects water security in multiple ways, both directly (e.g. via increasing frequencies and intensities of extreme meteorological such as floods or droughts) and indirectly (e.g. via changes in terrestrial and aquatic ecosystems and their roles in the hydrological cycle). The hydrological and hydrogeological impacts of climate differ not only between different physical environments, but also strongly depend on settlement pattern, land and water management and water-related infrastructures. Besides quantitative changes in water availability, climate change also impacts water quality in numerous ways, for example via saltwater intrusion in coastal aquifers or urban sewer overflows affecting water sources and in the worst case even drinking water systems. Moreover, rising temperatures may increase risks related to waterborne pathogens. Even though considerable research has been done to assess and predict climate change impacts on water security, there are also uncertainties that need to be considered when developing adaptation strategies.</p> <p>Water security and climate change adaptation are linked to biodiversity in multiple ways, both through climate-induced changes in natural ecosystems and through adaptation strategies that may prioritize other objectives (e.g. ensuring food security) over biodiversity.</p> <p><u>References</u></p> <ul style="list-style-type: none"> • Abdallah, M. & Stamm, J. (2012): Developing an Optimum Multipurpose Reservoir Operation Policy under Uncertain Conditions. Nile Basin Water Science & Engineering Journal 5(2):35-47. DOI: 35 • Allan, C.; Xia, J. & Pahl-Wostl, C. (2013): Climate change and water security: challenges for adaptive water management. Current Opinion in Environmental Sustainability 5(6):625-632. DOI:10.1016/j.cosust.2013.09.004. • Bastakoti, R.C.; Gupta, J.; Babel, M.S. & van Dijk, M.P. (2014): Climate risks and adaptation strategies in the Lower Mekong River basin. Regional Environmental Change 14:207-219. DOI: 10.1007/s10113-013-0485-8 • Brinkmann, M.; Eichbaum, K.; Kammann, U.; Hudjetz, S.; Cofalla, C.; Buchinger, S.; Reifferscheid, G.; Schüttrumpf, H.; Preuss, T. & Hollert, H. (2014): Physiologically-based toxicokinetic models help identifying the key factors affecting contaminant uptake during flood events. Aquatic Toxicology 152:38-46. DOI:10.1016/j.aquatox.2014.03.021. • Howard, G.; Calow, R.; Macdonald, A. & Bartram, J. (2016): Climate Change and Water and Sanitation: Likely Impacts and Emerging Trends for Action. Annual Review of Environment and Resources 41(1):253-276. DOI:10.1146/annurev-enviro-110615-085856 • Karthe, D.; Kasimov, N.; Chalov, S.; Shinkareva, G.; Malsy, M.; Menzel, L.; Theuring, P.; Hartwig, M.; Schweitzer, C.; Hofmann, J.; Priess, J. & Lychagin, M. (2014): Integrating Multi-Scale Data for the Assessment of Water Availability and Quality in the Kharaa - Orkhon - Selenga River System. Geography, Environment, Sustainability 3(7):65-86. DOI:10.24057/2071-9388-2014-7-3-40-49 • Lal, R. (2015): The Nexus Approach to Managing Water, Soil and Waste under Changing Climate and Growing Demands on Natural Resources. In: Kurian, M. & Ardakanian, R.

	<p>(Eds.) (2015): <i>Governing the Nexus: Water, Soil and Waste Resources Considering Global Change</i>, pp. 39-60. Cham, Switzerland; Heidelberg, Germany; New York, USA; Dordrecht, The Netherlands & London, UK: Springer.</p> <ul style="list-style-type: none"> • Manasseh, R.; Sannasiraj, S.; McInnes, K.L.; Sundar, V. & Jaliha, P. (2017): Integration of wave energy and other marine renewable energy sources with the needs of coastal societies. <i>The International Journal of Ocean and Climate Systems</i> 8(1):19-36. DOI:10.1177/1759313116683962 																																		
<p>Call for Abstracts</p>	<p>This session invites case studies, meta studies/reviews and position/impulse papers that deal with the challenges related to water security under climate change. This includes assessment methodologies and management strategies and their evaluation. Topics of specific interest include the following:</p> <ul style="list-style-type: none"> • Assessment of climate change impacts on water security (historical and forecasting perspectives, e.g. via modelling); • Technical and non-technical solutions to advance water security under climate change, including nature-based adaptation measures; • Societal acceptance and integration of traditional knowledge and local economies into climate change adaptation. <p>Contributions that address the interlinkages of water security and climate change with other environmental resources from a Nexus perspective are particularly welcome.</p>																																		
<p>SDGs addressed</p>	<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td>X</td><td></td><td></td><td></td><td>X</td> </tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17						X							X				X
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<p>Tracks</p>	<p>Technology, Governance, Data, Sustainability Assessment</p>																																		
<p>Themes</p>	<p>Climate Change</p>																																		

Session Title	Resource Nexus Perspectives on Coal Regions in Transition
Session ID	S18
Convener/s	Daniel Karthe (UNU FLORES, Germany); Andrés Ángel (UNU FLORES, Germany); Franziska Stölzel (Universität Graz, Austria); Alexey Alekseenko (St Petersburg Mining University, Russian Federation)
Description of the context, objectives of the panel and its scientific relevance	<p>The session looks at coal regions and their transformation from a Resource Nexus and SDG perspective.</p> <p>To reach the goals of the Paris Agreement, many countries have introduced policies to phase out coal mining and combustion as a part of their nationally determined contributions (NDCs) to combat global climate change. In regions with a long history of coal mining or a concentration of coal-based power production and industries, this transition process is complicated by numerous factors, including environmental legacies of the carbon age, challenges arising from the introduction of renewable energies, but also the widespread fear that exnovation might lead to socio-economic decline and/or energy insecurity. However, the coal transition also opens opportunities for regions to re-invent themselves and rehabilitate the natural environment. A good example is the growing number experiences with landscape and biodiversity restoration in former mining sites.</p> <p><u>References</u></p> <ul style="list-style-type: none"> • Bellos, E. (2018): Sustainable energy development: How can the tension between energy security and energy transition be measured and managed in South Africa? <i>Journal of Cleaner Production</i> 205:738-753. DOI:10.1016/j.jclepro.2018.08.196. • Bogdanov, D., Farfan, J., Sadovskaia, K.; Aghahosseini, A.; Child, M.; Gulagi, A.; Oyewo, A.S.; de Souza Noel Simas Barbosa, L. & Breyer, C. (2019): Radical transformation pathway towards sustainable electricity via evolutionary steps. <i>Nature Communications</i> 10:1077. DOI:10.1038/s41467-019-08855-1 • Deutsche Gesellschaft für Technische Zusammenarbeit (=GIZ) (2017): From Riches to Rags? Stranded Assets and the Governance Implications for the Fossil Fuel Sector. Bonn & Eschborn, Germany: GIZ. • Kodir, A.; Hartono, D.M.; Haeruman, H. & Mansur, I. (2017): Integrated post mining landscape for sustainable land use: A case study in South Sumatera, Indonesia. <i>Sustainable Environment Research</i> 27(4):203-213. DOI:10.1016/j.serj.2017.03.003. • Toubmourou, T.; Muhdar, M.; Werner, T. & Bebbington, A. (2020): Political ecologies of the post-mining landscape: Activism, resistance, and legal struggles over Kalimantan's coal mines. <i>Energy Research & Social Science</i> 65:101476. DOI:10.1016/j.erss.2020.101476.
Call for Abstracts	<p>This session invites case studies, meta studies/reviews and position/impulse papers that deal with the challenges related to coal regions in transformation. This includes the following aspects:</p> <ul style="list-style-type: none"> • Assessment of environmental legacies of coal mining (and local combustion) on different environmental compartments (e.g., hydrosphere, pedosphere, biosphere, atmosphere), including interconnections and material/contaminant fluxes; • Prediction/analysis of environmental benefits and challenges related to the coal and energy transition at the local level; • Investigation of social and economic opportunities and obstacles for coal phase-out from regional, national and global perspectives; • Discussion of management approaches that consider both environmental, socio-economic and political challenges (to learn from 'best experiences' but also learn from research and experience focusing on barriers and failures).

	The session intends to contribute to a knowledge-sharing between coal regions in different parts of the world, and between academia and decision-makers.																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Sustainability Assessment																
Themes	Open Themes																

Session Title	Governance of agri-food systems
Session ID	S19
Convener/s	Carsten Daugbjerg (University of Copenhagen, Denmark); Sabrina Kirschke (UNU FLORES, Germany)
Description of the context, objectives of the panel and its scientific relevance	<p>Agri-food systems are complex socio-technical systems, including a diversity of actors involved in producing, processing, distributing, and consuming food (Lamine et al., 2012, p. 232). This complex system is often associated with a diversity of sustainability problems at the interface of water and soil/land. Agricultural practices rely on sufficient amounts of water as well as good water quality which is, however, often missing. Likewise, agricultural practices often have negative effects on both water quantity (overextraction) and quality (pollution by nutrients and pesticides). By consequence, sustainable outcomes in terms of food security (SDG 2) and water (SDG 6) are questioned. Further, water scarcity and poor water quality can negatively affect biodiversity below water and on land (SDG 14, 15). Additional pressures can exacerbate these problems, including population growth, migration, climate change induced droughts and floods, pandemics such as COVID-19, or bioenergy production.</p> <p>Governance research often understands these problems as wicked problems, coined by goal diversity, system complexity, and uncertainty (Wiering et al., 2020). To address wicked problems, appropriate governance strategies for designing and implementing policies are important. The governance literature has suggested a wide range of “forms of coordination such as non-hierarchical and hierarchical modes of governance” (Kirschke & Newig, 2017). Special emphasis is put on the networks of actors and institutions involved in agri-food systems (Levine et al., 2012; Daugbjerg, 2018), as well as the effects on sustainability and resilience (Smit, 2018; Meuwissen et al., 2019). However, it is an ongoing research puzzle which governance modes address wicked water-soil nexus problems related to agri-food systems effectively. Which effects do governance modes have on designing and implementing policies for sustainable and resilient agri-food chains? Do governance strategies matter in general or is effectiveness mainly influenced by contextual factors?</p> <p><u>References</u></p> <ul style="list-style-type: none"> • Daugbjerg, C. (2018). Policy networks under pressure: pollution control, policy reform and the power of farmers. Routledge. • Kirschke, S., & Newig, J. (2017). Addressing complexity in environmental management and governance. <i>Sustainability</i>, 9(6), 983. • Lamine, C., Renting, H., Rossi, A., Wiskerke, J. H., & Brunori, G. (2012). Agri-food systems and territorial development: innovations, new dynamics and changing governance mechanisms. In <i>Farming Systems Research into the 21st century: The new dynamic</i> (pp. 229-256). Springer, Dordrecht. • Meuwissen, M. P., Feindt, P. H., Spiegel, A., Termeer, C. J., Mathijs, E., de Mey, Y., ... & Reidsma, P. (2019). A framework to assess the resilience of farming systems. <i>Agricultural Systems</i>, 176, 102656. • Smit, W. (2018). Current urban food governance and planning in Africa. In <i>Urban food systems governance and poverty in African cities</i> (pp. 94-103). Routledge. • Wiering, M., Liefferink, D., Boezeman, D., Kaufmann, M., Crabbé, A., & Kurstjens, N. (2020). The Wicked Problem the Water Framework Directive Cannot Solve. The Governance Approach in Dealing with Pollution of Nutrients in Surface Water in the Netherlands, Flanders, Lower Saxony, Denmark and Ireland. <i>Water</i>, 12(5), 1240.
Call for Abstracts	The panel welcomes contributions that discuss innovative governance approaches to address complex problems related to agri-food systems, aiming at sustainability net gains through governance.

	<p>Contributions should address at least one of the key research questions:</p> <ul style="list-style-type: none"> • Which governance factors are key for sustainable and resilient agri-food systems? • Which effects do governance modes have on designing and implementing policies for sustainable and resilient agri-food chains? • Which context factors account for the role of governance modes in policy design and implementation? <p>We welcome contributions that focus on (i) different stages of the policy process such as policy design or implementation as well as (ii) different steps of the agri-food chain (from production to consumption). Presentations should show conceptual and theoretical depth while also providing empirical evidence from the global south or the global north. Comparative analyses that go beyond single case studies and cover more than one region are particularly welcome.</p>																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Governance																
Themes	Agri-Food and Forest Systems																

Session Title	Agriculture practices, climate change, and biodiversity: adaptive management and integrative policy framework
Session ID	S20
Convener/s	Lulu Zhang (UNU FLORES, Germany); Caridad Canales Davila (United Nations Environment Programme)
Description of the context, objectives of the panel and its scientific relevance	<p>Biodiversity is the origin of all species of crops and the foundation of essential ecosystem services for human well-being, such as nutrition, health, and livelihoods. At the same time, agriculture is also a major driver of biodiversity loss, putting the sustainability of agriculture, ecosystem services and their ability to adapt to changing conditions in jeopardy, threatening food and livelihoods security (Convention on Biological Diversity, 2021; FAO, 2019a). Furthermore, climate change is among the direct drivers of biodiversity loss (IPBES 2019).</p> <p>The significant challenges of agricultural biodiversity are (i) sustaining agricultural biodiversity and ecosystem services and (ii) mitigating the negative impacts of agricultural systems/practices and climate change on biodiversity (Convention on Biological Diversity, 2008; FAO, 2019b; Turney et al., 2020). Ecosystem approach, traditional and newer knowledge, understanding and awareness of management practices, technologies, and policies across cultural, socio-economic, and environmental dimensions are essential to achieve a balance between the production of food and the sustained delivery of other ecosystem services vital for human well-being (Convention on Biological Diversity, 2021; Munang et al., 2011). To achieve this, different management approaches can be applied. For example, adaptive management includes diverse strategies and research agendas focusing on developing use and conservation of biodiversity under climate change conditions.</p> <p>Nevertheless, some research questions are still ongoing challenges: How to comprehensively analyse the impacts of agricultural production on biodiversity? What are the best practices (including natural resource management) for efficient and resilient adaptive management? What are the actual and potential impacts of current and newly developing agricultural technologies on biodiversity? Where and how to leverage agricultural biodiversity as adaptation to climate change?</p> <p>To address these challenges and relevant research questions, diverse actors such as farmers, local communities, private sectors and decisionmakers need to be involved in the process of designing and employing management practices, technologies, and policies (Convention on Biological Diversity, 2008; OECD, 2021). This understanding based on complex interactions among adaptive management strategies allows more efficient management of agricultural biodiversity and mitigate climate change in the life cycle of the agri-food biodiversity system.</p> <p><u>References</u></p> <ul style="list-style-type: none"> • Convention on Biological Diversity (2008). Programme Element # 2: Adaptive Management. [online] www.cbd.int. Available at: https://www.cbd.int/agro/management.shtml [Accessed 12 Aug. 2021]. • Convention on Biological Diversity (2021). Agricultural Biodiversity. [online] www.cbd.int. Available at: https://www.cbd.int/agro/ [Accessed 12 Aug. 2021]. • FAO (2019a). The biodiversity that is crucial for our food and agriculture is disappearing by the day. [online] FAO. Available at: http://www.fao.org/news/story/en/item/1180463/icode/ [Accessed 12 Aug. 2021]. • FAO (2019b). The State of the World's Biodiversity for Food and Agriculture 2019. [online] www.fao.org. Available at: http://www.fao.org/state-of-biodiversity-for-food-agriculture/en/. • Munang, R.T., Thiaw, I. and Rivington, M. (2011). Ecosystem Management: Tomorrow's Approach to Enhancing Food Security under a Changing Climate. Sustainability, 3(7), pp.937–954.

	<ul style="list-style-type: none"> • Turney, C., Ausseil, A.G. and Broadhurst, L., 2020. Urgent need for an integrated policy framework for biodiversity loss and climate change. <i>Nature Ecology & Evolution</i>, 4(8), pp.996-996. • OECD (2021). Adoption of Technologies for Sustainable Farming Systems: Wageningen Workshop Proceedings. [online] Paris: OECD. Available at: https://www.oecd.org/greengrowth/sustainable-agriculture/2739771.pdf [Accessed 12 Aug. 2021]. 																																		
Call for Abstracts	The session welcomes contributions with focus on (i) efficient and resilient best management practices to conserve biodiversity across multiple levels; (ii) monitoring and assessment of the impacts of agricultural practices and technologies from academia and business sectors, (iii) the role of different temporal and spatial patterns of land use and integrated landscape management from practitioners, and (iv) integrative policy and incentive measures that enhance the positive and mitigate the negative impacts of agriculture and climate change on biological diversity, productivity and capacity to sustain livelihoods.																																		
SDGs addressed	<table border="1" data-bbox="423 919 1539 1003"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td> </tr> <tr> <td></td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>X</td><td></td><td>X</td><td></td><td>X</td> </tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		X											X		X		X
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Tracks	Open Tracks																																		
Themes	Climate change, Biodiversity, Agricultural system																																		

Session Title	The Blue Economy: contributing to net zero carbon, a circular economy and the nexus																
Session ID	S21																
Convener/s	Raimund Bleischwitz (UNU FLORES, Germany); Tim Jennerjahn, Martin Zimmer (ZMT Bremen, Germany);																
Description of the context, objectives of the panel and its scientific relevance	<p>The ocean absorbs about 25% of ghg emissions; yet with increasing emissions this proportion is expected to decline (IPCC AR6). It is of utmost importance to maintain the ocean's ability to uptake carbon. Ecosystem management of Fishery, seagrass, mangroves and salt marches will need to be strengthened, and aligned with participatory nexus approaches in coastal zone management. Such scope is underassessed in nexus research, which is predominantly WEF-based with extensions to land and materials but not the seas (except Tundi Agardy in the Routledge nexus handbook); however marine resources provide food and can be expected to play a role for SDGs 2, 6, 7, 11, 13, 14. Research questions addressed are as follows:</p> <ul style="list-style-type: none"> • How can research assess the ecosystem services provided by the ocean for climate change and biodiversity, the 'blue carbon wealth of nations' • What underlying support services are at risk of being overlooked and how would research address these • What can be learned from the emerging cases on a blue economy for nexus research and a circular economy • What governance options exist to unleash the potential of a blue economy and align it with a green, circular net zero economy 																
Call for Abstracts	<p>We expect short presentations made by researchers based on recent policy-relevant papers and ongoing work, complemented by at least one practitioners input. Evidence-oriented approaches will be invited, i.e. data-based and policy-relevant. For instance:</p> <ul style="list-style-type: none"> • Christine Bertram, IW Kiel (published in Nature Climate Change) • Martin Visbeck, Geomar Kiel • Steven Lutz, GRID Arendahl Norway and UAE (led a case study) • Tanya Brodie Rudolph, University of Stellenbosch SA (published in Nature Communications) • n.n. OECD, World Bank, or World Resources Institute, all active on a blue economy 																
SDGs addressed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
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Tracks	Could be an open topic, but connects well to climate change, biodiversity, circular economy																
Themes	Three Options, dependent on final scope: Resource nexus theory, Sustainability Assessment, Governance																