

LfN Sustain/LeNa Conference 2024 Summary Report

Conference title: Planetary justice and societal responsibility in international sustainability sciences and scientific cooperation

Executive Summary:

In March 13-14, 2024, the LfN Sustain/LeNa Conference 2024 brought together over 100 participants from around the globe in a virtual format to discuss different aspects of societal responsibility of research in international sustainability sciences and scientific cooperation. Two keynote presentations set the stage for the conference, addressing questions of equity and planetary justice in the context of sustainability science and unpacking issues of inequality and heterogeneity among the Global North and South, as well as within the Global South. Eight panel sessions, each split across the two days, explored different aspects in more detail, ranging from ethics in research partnerships, the integration of diverse knowledge systems, questions of excellence and research assessment, to relationships among Global North and South actors, tools such as Real World Laboratories, local societal impact of research projects, enablers of responsible research, and science-policy translation. On the second day, group discussions within the panel sessions further deepened understanding of the different addressed aspects by looking at understandings and definitions of societal responsibility, challenges and solutions for achieving it, approaches for assessment and definition, and strategies and best practices to enact more societally responsible sustainability research.

1. Conference Background

Sustainable solutions to global challenges require international cooperation between scientific and civil society actors from very different contexts. Against the background of global responsibility with regard to sustainability, this concerns in particular the cooperation between actors from the Global North and South. Due to different cultural or socio-economic circumstances and a larger set of ethical considerations relevant in an international sustainability context, it is necessary to jointly reflect on the question of research in societal responsibility with international partners. A basis for critical self-reflection of projects in sustainability research is provided by a set of criteria developed in the context of the LeNa Reflection Framework for Research in Societal Responsibility. So far, these criteria have been developed and applied primarily in a German national context. The LfN-Conference 2024 took up this topic and discussed, together with researchers engaging in international sustainability research from the Global South and the Global North, to what extent Sustainability Sciences do justice to different aspects of societal responsibility (for example with regard to the integration of diverse actors and perspectives, but also regarding broader understandings of responsibility as reflected in the concept of Planetary Justice), to what extent understandings and conditions differ in the international context, and what role reflection criteria such as those developed in the LeNa Framework can play in international sustainability science and scientific cooperation. The goal was to jointly reflect on the LeNa criteria, expand on them and look beyond, elaborating what else might be important considerations for Societally Responsible Research in a Global North-South collaboration. A key question in this regard is - what is the responsibility of scientists over the social impacts of their research?

Thus, this conference aimed to:

- Examine the ethical considerations and responsibilities associated with sustainability science in the Global South.

- Explore the societally responsible research concept and practices, in relation to holistic concepts of responsibility such as the concept of Planetary Justice, and the implications for addressing global disparities in sustainability impacts.
- Collaboratively adapt and expand on the LeNa Reflection Framework for Research in Societal Responsibility for use in diverse international contexts.
- Foster collaborative networks and partnerships for advancing global sustainability efforts.

2. Conference Organizing and Scientific Committee

2.1 Organization

Leibniz-Zentrum für Marine Tropenforschung GmbH (ZMT), Bremen

- Prof. Dr. Achim Schlüter
- Dr. Sebastian Ferse
- Dr. Jialin Zhang
- Lea Bohne

Leibniz-Zentrum für Agrarlandschaftsforschung (ZALF), Müncheberg

Akademie für Raumentwicklung in der Leibniz-Gemeinschaft (ARL), Hannover



2.2 Scientific Committee

Achim Schlüter, Sebastian Ferse (ZMT); Katharina Helming, Stefan Sieber, Michelle Bonatti, Lasse Loft, Heidi Webber, Katharina Löhr (ZALF); Moritz Maikämper, Britta Bockhorn (ARL); Rajesh Tandon (Participatory Research in Asia - PRIA); Milka Chepkorir (ICCA Consortium)

3. Conference Agenda

Day 1 (13.03.2024) Framing the theme and global responsibilities inputs: exploring diverse aspects of societally responsible science								
12:45-13:00	Dial-in and virtual arrival							
13:00-13:10	Welcome, housekeeping							
13:10-13:30	Opening plenary - Societally responsible research and the LeNa criteria							
13:30-14:15	Keynote 1 - (Societally) responsible sustainability science in a Global North context (30 min + 15 min break)							
14:15-15:00	Keynote 2 -(Societally) responsible sustainability science in a Global South context (30 min + 15 min overall Q&A)							
15:00-15:10	Network Break (10 min)							
	Parallel Sessions							
15:10-16:10	1A	1B	1C	1D	1E	1F	1G	1H
16:10-16:20	Network Break (10 min)							



16:20-17:20	1A	1B	1C	1D	1E	1F	1G	1H
17:20-17:30	Day 1 Wrap-up							
Day 2 (14.03.2024) Practical applications and collaboration: towards holistic views on societal responsibility and collaborative action								
12:45-13:00	Dial-in and virtual arrival (15 min)							
Panel Discussion (45 min): Science for planetary justice: partnership to make it work								
13:00-13:45	Panel Discussion							
13:45-14:00	- Network Break (15 min)							
14:00-15:00	2A	2B	2C	2D	2E	2F	2G	2H
15:00-15:10	- Break (10 min) -							
15:10-16:10	2A	2B	2C	2D	2E	2F	2G	2H
16:10-16:15	- Break (5 min) -							
16:15-17:00	<p>Closing Plenary: charting the path forward for global sustainability cooperation, reflection on enabling conditions</p> <p>Each parallel session chairs provide a short summary on each question in one or two sentences</p>							
17:00-17:15	Summary, concluding remarks and good-bye (15 min)							

4. Conference Highlights

4.1 Keynote Speakers

Katharina Helming:

Introducing the eight LeNa criteria identified from literature. A core virtue is that these assist in addressing what and how research is done.

Frank Biermann:

The talk centered on issues of inequality and justice within the field of sustainability science, emphasizing how current narratives often overlook these critical dimensions. The concept of "human impact" in the Anthropocene, for instance, tends to gloss over the deeply entrenched inequalities that characterize global society. Metrics such as carbon footprints and the distribution of wealth are highly skewed, revealing significant disparities between different regions and social groups. The framing of sustainability science within the context of the Anthropocene is inherently normative and often downplays historical roots of inequality, particularly the legacies of colonialism over the past 400 years.

Scholars from the Global South are frequently marginalized within academic discourse, facing systemic barriers that limit their visibility and representation in scientific research. Structural constraints, including gatekeeping within academic and scientific institutions, skew dominant narratives, further misrepresenting the voices and experiences of the Global South. This inequality extends beyond science into global civil society, where the poor and marginalized communities in the Global South are underrepresented.

Global governance, too, lacks effective mechanisms for equitable and just representation. The "one country, one vote" system, for example, poses challenges for both the legitimacy and effectiveness of international decision-making processes. As a result, there is an urgent need for research on how to create more effective and inclusive global governance frameworks.

There is also a call for science to break free from the confines of academia and become more engaged with societal issues. Scholars should take on a more activist role, participating in and advocating for just and sustainable solutions. A case in point is geoengineering, particularly solar geoengineering, which raises significant questions about effectiveness, decision-making

authority, and potential geopolitical conflicts. For example, what happens if some countries wish to proceed with solar geoengineering while others oppose it?

Research and development in areas like geoengineering are often performative, potentially delaying essential climate action. The very prospect of technologies like carbon capture and storage (CCS) can serve as a justification for postponing necessary emissions reductions. Additionally, solar geoengineering offsets are already available on the market, raising concerns among engaged scientists. More than 500 scientists have signed an open letter urging governments to commit to banning certain forms of geoengineering.

Some countries have already taken action—Mexico, for example, has banned geoengineering within its borders, and several African nations have voiced opposition at the United Nations Environment Assembly (UNEA).

In conclusion, sustainability science must be understood through the lens of profound global inequalities and aligned with the pursuit of planetary justice.

Danashree Jayaram:

The second talk addressed issues of inequality and heterogeneity not only among Global North and South, but also within the Global South. There is huge heterogeneity within the Global South, different challenges in different countries, different potential, different history.

We are in a state of many multiple challenges, we are in a systemic crisis, current global challenges are affecting the Global South. This creates the challenge for scholars in the Global North to think about the issue in more systematic ways.

At the same time, there is a failure of multilateralism; Global North countries are not able to adequately recognize the challenges of the Global South, as was seen in the covid pandemic (reluctance to share vaccines); similar issues are seen in climate finance.

Development of South-South initiatives, e.g. in the ESG network, can bring different ontologies, epistemologies, perspectives into one space.

Sustainability science has been more focusing on natural sciences, and this again led to strengthening the overrepresentation of the Global North as its dominance is stronger in the natural sciences. There is a clear underrecognition of the Global South in sustainability science. IPCC has evolved, has become more diverse, put measures in place to include more of the Global South, but still Sub-Saharan or Latin American representatives of climate scientists have been treated as people of second class.

The current models have problems in that they cannot address justice issues. There is a strong nexus between power and knowledge. The latter has been dominated and is still dominated largely by the Global North; the few researchers from the Global South are coming from very few mostly big countries (Brazil, India). What is happening with all the others?

Countries contributing most raw materials to energy transition like Congo or PNG have an extremely low coverage of access to electricity.

Indigenous knowledge systems are highly important to integrate (e.g. Ubuntu, Talanoa), providing for more diverse forms of joint knowledge creation.

There is a postcolonial development deficit: many countries are still blocked in the development they have taken over from the colonial powers.

Poor data availability for much research in the Global South is omnipresent and poses severe hurdles. A huge gap within the Global South which makes regional collaboration also more difficult. Some countries have capabilities and data, others do not have those options.

Epistemological and ontological pluralism is a key thing; dangers of relativism loom as we embrace more diversity. It is important to also have certain standards on democracy, equality etc., as many places are captured by the elites.

In many countries the main emphasis is very much on natural sciences, despite the fact that social science aspects are of extremely high importance.

Additional points from subsequent discussion: Hegemony of Global North concepts in science. If we write a paper for a Global North journal, we have no other chance than to relate to the Global North scholars, to frameworks that have developed there. So this obviously shapes our mindsets. It is impossible to submit research that is only focussing on a non-western epistemology; one would not be able to publish this in a Western journal with a high impact factor.

4.2 Parallel sessions

Session 1: Ethical considerations and dilemmas faced in research partnerships between the Global North and South

Session Chairs: Kerstin Schopp (University of Tübingen), Vanessa Weihgold (University of Tübingen), Maria Oguche (University of Hohenheim)

Session Synopsis and Goals: Acknowledging the importance of addressing the ethical dimensions inherent in research is a crucial preliminary step in the pursuit of societally

responsible research. However, this initial recognition marks just the commencement of a journey laden with complex ethical dilemmas. This session examined the ethical questions scientists frequently encounter when considering their societal responsibilities, such as how can scientists decide whether to engage with public, and how to do it. Furthermore, the session cast a spotlight on the ethical benchmarks that should guide global research partnerships between the Global North and Global South. Central to the discussion was the imperative to conduct research with unwavering consent and transparency, ensuring that neither the people nor the resources of the Global South are subject to exploitation. It aimed to foster a dialogue that promotes ethical integrity and addresses power imbalances in Global North-South research endeavors.

Summary:

- As an introduction, Vanessa Weihgold linked the different theories of Justice as presented by Frank Biermann et al. (2020) with the ethical matrix that has been developed in the LeNa Shape project. Researchers can evaluate what is perceived and describe it with regards to:
 - Affected Groups, e.g.: researchers, research participants, global society,...
 - Criteria of assessment can be: Liberal egalitarianism, Cosmopolitanism, Capabilities, Liberalism, Critical Perspectives,...
 - This should be done over the phases of the research process
- Maria Oguche (Hohenheim) presented her PhD project on „Implications and trade-offs of livestock intensification in Sub-Saharan Africa”
- Friederike Schmitz gave an input on animal ethics and showed that policies generally are working from a minimalist perspective of animal welfare, while a broad approach of animal welfare would result in making breeding difficult
- Olusegun Samuel gave a talk on Ubuntu as a framework for thinking about conservationist practices. Since Ubuntu focuses on the fact that an individual exists because others are, the perspective shifts to think about what is at stake for the individuals and humanity
- Kerstin Schopp presented research ethics as based in a broad understanding of Sustainable Development that is about morally-acceptable, just, focused on society-nature interrelations, and therefore will lead to criteria for research such as letting affected people participate or even empower them, questioning which knowledge is going to be integrated in the research and who is profiting from this research, but also to

criteria for the researcher, such as adapting their behavior to local practices, and questioning and adapting the research methods

Session 2: Embracing Diversity: Knowledge Integration and Acknowledging Multiple Knowledge Systems

Session Chairs: Anne Ouma (Umeå University), Chioma Ohajunwa (Stellenbosch University), Rajesh Vagiri (University of Limpopo)

Session Synopsis and Goals: In a globalized research environment where diverse knowledge systems intersect, the integration of varied epistemologies becomes not only beneficial but essential. This session explored the methodologies and virtues of synthesizing disparate knowledge systems within the research framework. The goal was to illuminate the ways in which mainstream scientific methods can be enriched by traditional and indigenous knowledge systems that have sustained societies for centuries. The key question addressed was: How can multiple knowledge systems, including Indigenous and local knowledge, be effectively integrated into mainstream research to enhance societal relevance and responsibility?

Summary:

1. Achieving synthesis begins with acknowledgement- How can indigenous and traditional knowledge systems be effectively acknowledged within knowledge systems?

- Prof. Maximus Sofotho -

- Example of Chief Mohlomi, a man who mentored the King of Lesotho, founder of the Kingdom of Lesotho, and who lived from 1720-1815.
- Chief Mohlomi was sharing a Sesotho philosophy of life- on Peace and Justice (during an era of repeated wars). "It is better to thrash the corn than to shape the spear." An Indigenous model of Peace Psychology, Sesotho Mysticism is embedded in an epistemological paradigm with a prevailing contemporary ethnobotanical knowledge preserved in Lesotho.
- Better known as healer of minds and bodies- a model and philosophy that is a precursor of the contemporary SDGs
- Legacy: Mohlomi Hospital engages psychiatry and resolutions of mental challenges during the height of certain worldwide pandemics. Legacy of mental illness treatment by THPs in Lesotho remain.

- Investigation along the lines of modern psychiatry and mindfulness for healing mental illnesses.
 - What other models are out there that have not been shared with the world that are used within communities with results?
 - Ends with a call for Epistemic Equity; Knowledge Equity; Open Science; Access to Knowledge equally for North and South.
2. Synthesis as Systems thinking- What pathways to synthesizing research methodologies can we illuminate? Who are the partners and what are their roles?

- Prof. Dele Raheem -

- Transformation of Food System: There is an urgent need to transform our global Food System in order to deliver health both at individual and planetary levels. This calls for co-creation of knowledge to address all the stages within the Food System from food production to consumption. The sustainability of the Food System is crucial and must involve all citizens. The nature-dependent holistic view of Indigenous peoples will help to ensure a transformed Food System.
- Food Sovereignty: Need for the people who produce, distribute and consume food to also control the mechanisms and policies of food production and distribution.
- A better understanding of knowledge associated with biocultural factors is vital in food sovereignty. A mix of traditional and scientific knowledge will help to ensure sustainability and promote Indigenous foods.
- Indigenous Foods, examples of Ainu/ Japan; Saami/ Scandinavia: More empirical research around food and the nutritional value of traditional foods is needed, together with their promotion. Food culture and traditional knowledge is increasingly being promoted by the Arctic Council as part of sustainable development.
- The co-creation of knowledge from scientific and traditional sources of knowledge on Indigenous foods, which has been passed from one generation to the next, will help to expand and diversify diets.
- The utilization of Indigenous foods can help to mitigate climate change, contributing to the health and wellbeing of the communities.

3. How can we synthesize Indigenous and traditional knowledge systems into a mainstream research space to enhance Planetary and Social Justice?

- Prof. Chidi Oguamanam -

- The Indigenous Question is at the core of a Legal Regime complex that includes the Nagoya Protocol, CBD, BBNJ, WIPO UNESCO, and underlying this all is the UN Declaration on the Rights of Indigenous Peoples.
- The challenge is not to have Indigenous Knowledge Systems (IKS) to be lost in transition from the biological/agricultural revolution to the technological revolution.
- The IPLC Ocean Stewardship is an example of an opportunity waiting for translation.
- Societally responsible research is necessary for planetary justice.

Q& A: Discussion

- 2017 Hokkaido Promotion of Biocultural Heritage
- Saami and Ainu- Commonalities parallel
- Interact better with Nature
- Intergenerational transmission of knowledge
- A lot of interest in reviving food sovereignty
- Climate change can be a consequence if some practices not well managed
- Exportation of food products being encouraged
- Funding politics for small farmers to promote them, highlighting nutritional benefits.
- The need for transformation of food systems and promotion of Indigenous crops mitigation of monocultural crop regimes
- How can we begin to support this - can discussions to engage research be further developed? How can we begin to change the narrative?
- Today Ethical approaches are emphasized within the research regimes with the Saami- as prior the Indigenous people were “objectified” - Today they are included via co-authorship, e.g. reindeer herders who share their stories.
- The promotion and ensuring that the knowledge is kept especially on food, e.g. its preservation. Adding value to existing recipes, plants in cheese preparation etc. Universities of applied sciences and institutions of professional courses providing training opportunities
- The whole Arctic region including Canada is branding their products. Initiative by Ips in the Arctic to develop a market for its distribution.

- The UKULUGISA- Worldview among the Amabomvane Communities that addresses the nexus Humanity-Divinity-Nature in balance symbolizes wellbeing
- There is a move to incorporate IKS Healing models into Moholmi Synergizing during HIV/Aids peak
- Research in IKS is not extensive, however communities no longer shy away to embrace IKS
- A big challenge that a big gap exists in research and evidence-based research
- During COVID a lot of knowledge systems were not put onto the world stage, as a lot of Africans used herbs, and home remedies passed on from previous generations.
- A study by the National University of Lesotho catapulted knowledge systems to a significant level
- African economies need to promote funding towards IKS. NRF Portfolio has a specific target for IKS funding.
- Human spirit of an African is intricately linked with nature. When pure it links cosmologically with the rest of the universe, always connecting beyond perceived boundaries.
- Intersecting with the “new science of mindfulness”, which African societies have been involved in historically, to the present.
- It is rare to see educational systems which combine psychology education and traditional healers working with mental health- this is also the case with research space marrying Western and traditional science
- The need for epistemic Justice was emphasized during the session
- How do we translate IKS upwards, and continue to seek various spaces of inclusion, at all levels of engagement?
- We need a social and ecological, inclusive epistemological systems thinking format to reflect on the Blue Economy.
- Research should not isolate or differentiate, but rather work with Indigenous peoples and their ecosystems to reflect both their vulnerability and their resilience. Not to choose one above the other, but carry both as presented by the communities concerned.
- Intergenerational knowledge transfer as social/societal justice
- Acknowledging IKS would involve an openness to transdisciplinarity, storytelling and narratives informed by Southern/African ontologies and epistemologies that inform their beingness.
- The language used and acknowledged for research transactions is key, and has implications for research.

- Inclusion and acknowledgement of Indigenous terminologies in research creates a capacity for the expression of an African human experience that is unique.

Session 3: Quality Criteria and Defining Scientific Excellence Across Borders

Session Chairs: Vera Gerner (Universidad de Costa Rica), Susanne Buehrer-Topcu (Fraunhofer Institute for Systems and Innovation Research ISI)

Session Synopsis and Goals: This session explored diverse standards and methodologies employed globally to assess the quality and impact of scientific research. It recognized that definitions of rigor, relevance, and impact in scientific endeavors are often not universal but are influenced by varying cultural, socio-economic, and institutional contexts. It aimed to explore the multifaceted nature of scientific quality and how it can be fairly and effectively measured across different regions and research traditions. The key question addressed was: In what ways can we redefine 'scientific excellence' to include societal responsibility as a key component, especially in a global research context?

- For all countries, the balance between societal relevance and excellency is a struggle
- Indonesia, India, Costa Rica, coming more from a science system more embedded into society, are aiming to succeed according to Western standards of excellence in science.
- The Western Indian Ocean Marine Science organization seems to be a successful example of balancing societal relevance and excellency. At least it is one of the very few examples of sciences that produces output relevant for governance. Normally excellence science is considered too disconnected from the African context.
- The Netherlands on the other hand, coming from a high performance in relation to excellency, are experimenting with different forms of incentives and to orient scientific production in the direction of societal relevance.

Our session gave insights on the tensions between scientific excellence and societally responsible research in different countries or regions.

As the first presenter, Fajri Siregar, explained, **Indonesia** has a tradition of a very close relationship between scholarship and society. Particularly the social sciences saw themselves as heavily engaged in politics and making and consulting societal processes. There was no

strong request nor tradition in focusing on publishing in peer reviewed journals etc. That has switched completely and now the focus is very much on (international) peer reviewed publications. Every student has to publish their work before defending the thesis. BRIN, the huge Indonesian science organization, is now measuring largely in terms of quantitative indicators of excellence. The important measuring rod is the published papers in peer reviewed journals. The development of the numbers have been impressive. However, the focus might be more on quantity than quality.

According to Leonie van Drooge, the **Dutch** universities are performing rather well in terms of excellency. Most of the universities, despite of their differences, are ranking very high on the international level, despite the fact that NL has no REF, like the UK, and despite the fact that there is a huge heterogeneity between the various universities (e.g. Wageningen vs. Amsterdam), they are all particularly maximizing excellency. There was a strong discussion about if this should continue like this, and there seems to be a consensus that science has to deliver much more for society. Also it was seen that it does not make sense if everybody is trying to deliver on excellency, this has put stress on the people working on it and does not take advantage of the different abilities. NL has chosen a decentralized approach to its science policy. Each university is expected to come up with its own ideas and strategies on how to deliver on societally relevant issues. This is a process, as, e.g., it is still the tradition that the university leadership is sending you a bottle of champagne if you have managed to get a prestigious research grant, but you would not get it for money you obtain from more societally relevant funding sources.

The next talk from Reuben Makomere was on the **West Indian Ocean** Marine Science Association (WIOMSA) and how they deal with the problem of excellency vs. societal relevance. For long there was and still is seen a strong discrepancy between what excellent science is delivering and what is relevant for Africa. Basically Western science was perceived as useless. WIOMSA is somehow managing to breach that gap. There is a lot of relevant research coming out, which is really informing policy processes like the Nairobi Convention. The influence on policies is rather high. On the other hand, members of WIOMSA manage to publish in good/excellent/Western journals. They do it following Western standards, it is not about using other epistemologies or ontologies.

The next talk from Moumita Koley focussed on **India**, which has a diverse set of research organizations. There is a strong divide between the big traditional power houses of research and the normal universities and institutes. Particularly as an entry point, when it comes to

project funding, there is a strong reliance on quantitative indicators and only later on in the process also qualitative criteria are assessed. At least it can be shown that projects are clearly selected according to quantitative/publishing success of the proponents. This leads to some selection of focus in sciences, which is particularly questionable from a societal perspective. The presentation particularly has shown that in public health research the emphasis was mainly put on diseases that are of minor relevance for the Indian society as a whole. India has similar problems to many Global North countries in the sense that our science is without doubt in an ivory tower.

Vera Gerner looked at the **Costa Rican** research landscape. She particularly emphasized the existing tensions between science for excellency and what they call extension. The latter is traditionally in the center of Costa Rican research. This is what has been expected from them to do. And now the ideas of Western excellency are becoming more and more influential on the system. This creates a lot of tensions and also a divide between the disciplines. The excellence orientation is particularly given in the natural sciences and it comes along with the ability and need to express everything in English. For the social sciences the orientation is towards Latin America, and therefore using Spanish language is still in the center. This creates difficulties in interdisciplinary cooperation. Along with this growing focus on international quality standards, Costa Rica continues to emphasize social impact. But combining this focus with the increasingly specialized demands of excellence in research is a major challenge that may require two separate assessment systems.

The last presentation from Jimena Solar compared the **Peruvian** and the **Swiss** systems. Peru universities play a very important role as societal actors. She particularly referred to the Catholic University, which has societal engagement within its statutes. But also in general within the laws of Peru it clearly states that Peruvian universities and research institutes have an important role for solving societal challenges and have a responsibility. This is different to Switzerland, where the law does not foresee such a role. Universities traditionally have been more within their ivory tower, but they start more and more to also consider the societal aspects.

In **summary** it was impressive to see the diversity of situations in different places, which might be in different positions within the spectrum of societal orientation. You have a rather strong orientation e.g. in Indonesia and Costa Rica, but despite the fact they are strongly struggling to adapt a more excellency-oriented research system. WIOMSA was an example which seems to work out, but the other three examples from the Global South rather showed how the systems are struggling to adapt to a Western excellence-oriented research system. The Dutch system,

which is really well-performing in terms of excellency, is trying to perform better in terms of societal relevance, and they seem to do this in a decentralized and “relaxed” way.

Discussion session second day:

Day 2

Overarching questions

Q1. What is your understanding and definition of societal relevance? (in the context of your chosen sector) Research, industry, or societal research on a global level?

Q2. Challenges and Solutions: Considering the particularities of your chosen sector, what are the societal challenges and issues in your sector? How can research contribute to the societal challenges in the given setting? Additionally, can you highlight any specific solutions that you believe can effectively address these challenges and serve as examples for replicable research?

Q3. Assessment Criteria and Judgement: How would the quality and societal relevance of research be assessed and judged in your field? What criteria are considered essential for this assessment?

Q4. Stakeholders and Inclusion: In your opinion, what should be the stakeholder(s) or group(s) for assessing the societal challenges and defining replicable research solutions? Can you describe specific, tangible practices that researchers can incorporate related to your discipline to maximize societal research?

	Q1 understanding				
	Move away from journal orientation	Each country should define its excellency	In LA the societal contribution is a necessary legitimating of Universities	Following dora & extend on impact factors	Research methods, which could play a central role
	Redefine what is excellency then including societal relevance	Peru has societal responsibility of science in the law (Swiss not)	It also could be easier for each scholar or scientist, moving away from case studies to a generalisation, but also sharing concrete lit input	Differentiating between relevance: responsibility - but do not know often about the relevance, allow for many things, but in a responsible way	Publically funded research should be available for all (Corona Vaccine)
	Q2 Challenges / Solutions				
	Stretch between traditional excellency & SR in many systems	Solution: we should see it as two sides of a coin, they are connected	The integration worked well, until the indexes arrived (was no voluntary change)	Solution: not the outside should tell us what is excellency	See the common things in societal challenges (e.g. NL with Bangladesh, but have to deal with river delta issue)
	Solution: not about how much how many, not ticking boxes,	Solution: very pluralistic system instead of chasing the target	Challenge: scientists can well talk about excellency, but when SR becomes generic solution, creating of scientists this narrative of SR	Challenge: local & big countries have different challenges, the small country scholars have to integrate into other systems	
	Q3 Assessment Criteria & Judgement				
requires qualitative measurement	Look for more to the process than to the end product				
Much more quality instead of quantity of output	Moving beyond excellency				
Contextual understand (certain common features like participation, but other wise it depends on local context, discipline etc.)	Assessment should be done according to the mission of the organisation (e.g. Fraunhofer)				
Who is going to measure & judge, the local population should judge, criteria on who should have which weight in the assessment	reappraisal of good research (not necessarily excellent)				
Good research is a necessary condition for engaging with society	Criteria on the process: accessibility, language understandable, ethical standards				
	Q4 Strategies and Practices:				
	Building the narrative that changes our understanding of excellency	We think of excellency about nature & science, that excludes most other social sciences and others	Interdisciplinarity as a strategy to open the mind	Interdisciplinarity is a necessity for addressing societal challenges	
	Consequences of reaching or not reaching assessment have to be reconsidered	Sign manifestos (DORA, Leiden), however often great disparity	Time, for coming up with creative solution (research requires time)	Diversities in the ways towards SR	
		Trust in the system (in research)	Change from most excellent to most relevant (Q3, who decides relevance)	Diversity of research organisations, funding organisations, panels & peers	

Clear was the need to move away from a paper- and impact ranking-measurement of excellency; it is even important to move away partly from excellency (good is good enough). When we include other factors, it shall then be up to the research organization to partly determine in which area they want to be excellent (or performing rather well). Those criteria are, for example, then given by the mission of the organization. If we are then talking about measuring the societal impact, it is clear that we rather have to base it on qualitative rather than quantitative criteria, and that it is highly context dependent what it would mean to have impactful and societally-responsible research. Obviously, this also raises the question who is then evaluating this. Obviously to a certain degree and on a certain level (e.g. project evaluation), it should then be society, e.g. the local community, that is engaged in the evaluation. The different countries have very different traditions in societal relevance and excellency orientation. In most

Latin American universities, societal relevance and engagement with the society has always been an important issue, potentially to the lack of orientation towards moving beyond the case study. For India on the other hand, the more one remains in the ivory tower the more it has been seen as excellent. The Catolica in Peru was mentioned as a good example of being able to combine the two (perfectly financed private university); Costa Rica also does not perform badly, but problems started to arise when measurable inputs came in. This made scholars focus very much on the quantitative achievements and let them forget about the societal goals, which is the fundamental license to operate in their society. If they do not bring (direct) benefit to society, they have hardly any legitimacy for receiving public money.

Session 4: Evolving perspectives on Global Collaboration

Session Chairs: Tina Asmussen, Deutsches Bergbau-Museum Bochum

Session Synopsis and Goals: The aim of this session was to comprehensively examine the historical roots and contemporary imperatives of global collaborative exchange in- and beyond Academia. We explored and critically reflected colonial as well as post-colonial power dynamics that have shaped this relation over time and are still present today. Focusing on the nuanced interplay of resources, knowledge, and authority, the discussion critically examined the social, political and infrastructural dynamics within these collaborations. By scrutinizing the asymmetrical power structures inherited from colonial legacies, the panel unpacked the lingering challenges and implications of so-called North-South collaboration. While drawing on insights from collaborative practice from within and beyond academia, the panel illuminated the persistent disparities and discussed new perspectives for transformative approaches to foster equitable partnerships beyond “North” and “South” determinisms. The key questions addressed were: How can evolving collaborations across the globe be structured to promote mutual learning and equitable sharing of benefits, aligning with principles of societal responsibility? How can digital infrastructures promote this exchange without fostering new modes of exclusion and asymmetries?

In Session 4 we discussed:

- How can evolving collaborations across the globe be structured to promote mutual learning and equitable sharing of benefits, aligning with principles of societal responsibility? This includes: a. How collaboration needs to be organized? b. How is access to resources distributed? c. How is data collecting and data analysis shared?
- How (and if...) can digital infrastructures promote this exchange without fostering new modes of exclusion and asymmetries?

- And thirdly, a very important issue when discussing collaboration is the entire field of knowledge communication and dissemination (Open Access and open Science).

Session 5: Responsibility and ethical aspects in Real World Laboratories in an international context

Session Chairs: Dr. Markus Egermann (Leibniz Institute of Ecological Urban and Regional Development, Dresden, Germany), Dr. Marina Novikova (Leibniz Institute of Ecological Urban and Regional Development, Dresden, Germany)

Session Description: Real World Laboratories (RWL) have been developed in transformative sustainability research. They are seen as sites of societal, organizational, and individual transformation. Here, depending on the context, partners from academia, civil society, business, administration, and politics collaborate on researching, developing, and testing sustainable solutions. Participants are not merely observers but active agents of change. In addition to research and transformation goals, real-world laboratories also pursue educational objectives. They aim to make new transformation approaches transferable to other regional contexts and to convey the conditions for successful transformation to a broader audience.

Due to their transdisciplinary and particularly transformative nature, RWL work raises different ethical questions for participants and suggests a specific responsibility of researchers working in such settings. Hence, the German Network of "Real World Laboratories for Sustainability" currently elaborates an Ethical Codex for research in RWL. Within the RWL community, it serves as a central reference point for self-reflection on shared ethical attitudes, raises awareness of ethically relevant aspects of one's own work, provides guidance in challenging situations, and contributes to overall reflective practice. Externally, it aims to illustrate the standards and expectations that can be placed on RWL work. Lastly, it serves as an element of informed teaching and support for RWLs. Throughout, the Code is to be understood in conjunction with general ethical guidelines of good scientific practice – especially those of the German Research Foundation and the European Federation of Academies of Sciences and Humanities.

The 15 thematic fields of the Ethics Code are divided into three areas: The "Real World Laboratories in Society" section addresses external relations of RWL, whether material (such as appropriate forms of publication) or immaterial (such as the legitimation of one's own engagement). In contrast, the "Partnership in Real World Laboratories" section addresses internal relations in RWL, i.e. questions about the interaction with practice partners. Finally, the "Individuals in Real World Laboratories" section addresses the challenges that each individual participant in RWL faces.

The conference session built up on the current draft of this Ethics Code, which was presented

by one of the speakers, and discussed its suitability and implications against an international background, incorporating insight from speakers presenting cases from Asia, Africa and North America and reflections from Australia.

In this parallel session, several speakers elaborated upon their insights and their experience from the Real-World laboratories research and practice. Dr. Marc Dusseldorp (Institute for Technology Assessment and Systems Analysis (ITAS), Karlsruhe, Germany) presented the Code of Ethics for RwLs of Sustainability in which he elaborated upon the three pillars of the Code of Ethics, namely:

1. **Real-world Laboratories in Society** focusing on Engagement for Sustainability, Real-world Laboratories as Social/Societal Actors, Selection of Partners, Responsibility towards the Environment, Legitimacy through adopting a scientific approach, and Targeted Publication of Results;
2. **Practice Partners in Real-world Laboratories** focusing on Building Good Relationships, Power Relations and Vulnerable Persons, Fair Distribution of Burdens and Benefits, Conflict Cases and Moderation, Confidentiality, Data Protection, Anonymity and Training and Empowerment of Practice Partners;
3. **Individuals in Real-World Laboratories** elaborating on Role Conflicts, Boundary between Professional and Private Life, and Self-Exploitation and Self-Care.

Dr. Christopher Luederitz (McGill University, Montreal, Canada) gave a presentation entitled “How can ethical theories support knowledge co-production? Insights from a real-world laboratory on climate action in Canada”, in which he reflected upon the use of theories of ethics in the knowledge co-production. The following four theories of ethics were introduced:

“Utilitarianism is based on four principles: (i) consequences matter, (ii) consequences have to serve the good, (iii) the good is something hedonistic, and (iv) the greatest well-being of the greatest number counts. Deontological ethics adheres to the categorical imperative as a universalizing principle. Actions would be considered morally good if they are guided by rules or duties, considered as universally applicable by the person doing the action. Virtue ethics focuses on the processes and capacities that support deliberation and actions to enable learning how to work with broad ethical principles, such as inclusion and justice, in specific situations. Contractualism emphasizes agreement, which includes individuals either justifying their own interests to the group or foregoing their interests given the logical arguments of others in the group.” (Luederitz et al., 2024).

In the third talk, Dr. Bettina Wachter (Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany) presented her ongoing research “From conflict to coexistence: Evidence based solutions for the farmer-cheetah conflict in Namibia”. She presented an RWL on the conflict and coexistence of local farmers and cheetahs in Namibia. This presentation introduced a new angle related to the ethics of human- nature relationships in transdisciplinary research settings. It highlighted the importance of adopting a normatively neutral and pragmatic approach by the scientists in order to build trust with the local community, incorporate the local farmers’ needs and eventually move from conflict to co-existence between the local farmers and cheetahs.

Session 6: Maximizing Local Societal Impact: Strategies for International Collaboration Research Projects

Session Chairs: Hanli Malherbe (ZMT), Camilo Arrieta (ZMT)

Session Synopsis and Goals: This session aimed to explore and identify effective strategies for ensuring that international research collaborations translate into tangible benefits at the local level. It focused on the design and implementation of collaborative research projects and knowledge exchange strategies that not only achieve academic excellence but also have a significant, positive impact on local communities. The key question addressed was: What strategies are most effective in ensuring that international research collaborations lead to tangible, positive impacts on local societies, and how can these strategies be scaled or adapted globally?

Presentation Highlights

Denis Karcher: Societal problems can not be solved by science alone. What are the types and challenges of knowledge exchange, in terms of knowledge generation, sharing, mobilization, translation, and use? The importance of funding agencies that are impact oriented, support societal impact and non-science outcomes, as in Australia, was shown. Talked about what kind of stakeholders form part of a research project, and what is their role depending on their skills and their priorities.

Camilo Arrieta: Showed how impacts are not just positive, and how within research negative impacts can be generated when not evaluating or taking into account the possible impact research might bring. Among them are loss of trust, parachute science dynamics, harmful results, research fatigue and conflict of interest. Highlighted the importance of self-evaluating the research, to see

who will benefit from the research, and the importance of co-designing in order to increase the societal impacts, and to have an overview of what could be the negative impacts.

Johana Herrera (step in: Laura): Showed a case study from Colombia, where all the results and research is focused on improving the wellbeing of a community. Within their results, the researchers train the community with technical skills such as reading, and generating maps, legal aspects and managing information. These trainings are done for preparing the communities to negotiate and being able to support themselves in disputes with different bureaucratic, private and governmental organizations. One of the outputs is a Geographic Information System, that is `alive` with the input of the communities, making the communities data collectors, and able to analyze the results.

Tim Jennerjahn: Presented a case study in China, where the input of nitrogen from a river is causing a major impact on the Blue Carbon ecosystem. Within this project, researchers contribute through capacity building and knowledge exchange to raise awareness, and support decisions in order to engage policy makers and different stakeholders into protection and ecosystem restoration. The engagement was through workshops, talks at schools, production of fact sheets, and a website with open access to the produced material, among others.

Ivonne Vivar: Presented a case study from Peru, in a coastal marine ecosystem composed by a wetland, lagoons, and estuary in a desert area, with high use of fisheries. Researchers characterized the productive activities, and looked for perceptions on extreme climate events, in order to gather information to analyze future challenges and generate recommendations. The results were discussed and feedback by the different actors gathered, in order to strengthen commitment with the stakeholders and the relationship, as well as to understand new perspectives to harness sustainability.

Hanlie Malherbe & Ximena Dulanto: Presented a case study from Peru, where they are engaged in developing a Marine Atlas using Geographical Information Services, in order to generate a geo portal. The atlas included functional areas, in order to explore information that encompass digital governance, involving the visualization, participation and intervention from the different users. Workshops were conducted in order to explain to users how to develop maps, story maps, and manage the tool, in order to make the stakeholders interactive participants of the geoportal.

Question Feedback

Question 1 (What is your understanding and definition of ‘societal relevance/responsibility’ in the context of your session, particularly for achieving societally responsible research on a global scale?): From research results, knowledge exchange is the usability of knowledge for evidence-informed management decisions and societal realities through transdisciplinary engagement, including attributes like credibility, legitimacy, inclusivity, timeliness, accessibility, and transparency. When defining societal relevance/responsibility in research, the word responsibly came as a highlight, meaning to be true in what you communicate and your intentions with the stakeholders, as well as being open to understand the differences. In order to generate impact, it's crucial to understand the gaps of information that the area has, being essential to use the knowledge that is already generated in the area, and the knowledge that exists which might not be published. It's essential to highlight the ownership and relevance of the different existing knowledge. The collaboration process must be transparent, involving stakeholders from all relevant sectors including authorities, communities, and research institutes. Collaboration and inclusion of local actors in every step is imperative to ensure maximizing local impact. Identifying stakeholders' needs and knowledge is imperative for the project design process, which generates ownership and increases societal impact. Targeting these societal needs is important to build and maintain trust and a mutual understanding, particularly for future collaboration with researchers, and to generate relevant research. Co-design projects must be participatory in nature, which may include citizen science concepts, with research objectives produced as a shared vision from the different agendas and societal requirements. Results dissemination and study outputs must be shared and to maximize decision-making processes benefiting all stakeholders. Outputs should be thought and planned in order to be usable, not just for science.

Question 2 (Considering the particularities of your session topic, what are the current challenges and issues in achieving societally responsible research from the perspectives of various stakeholders in the global setting? Additionally, can you highlight any specific solutions that you believe can effectively address these challenges and serve as enablers for responsible research?): Broadly, challenges include funding, strategic planning, and evaluation (incl. measures) for socially relevant and responsible research. Time and effort are often not represented. Challenges appear when trying to generate societal impact as distinct cultures, internal structures and bureaucratic procedures are among nations and societal groups. A solution is to take the time and resources to understand the local culture and how authorities and institutes operate, which leads to the challenge of sufficient funding and project timelines. Identifying the ownership of information is a challenge. Clearly communicating who has access to which information at specific times during the project needs to be clearly communicated with all actors. Articulation among researchers and non-researchers can be challenging. Solutions are to train scientists to communicate their objectives in a more

understandable manner and to highlight the benefits such research will have on the local society. Scientists must also listen and be open to adapt their scientific practices to the needs of the local stakeholders. There's the difficulty to make every stakeholder happy, being a solution to seek a common goal, where everyone obtains something, and in a general term no one loses. This can be managed by controlling the expectations, and by creating projects that solve societal issues, with a common research question done by the different interested actors, where the different views and agendas are taken into account. One challenge is the dominant agendas, which could be structures inside of science, or regional following coloniality dynamics. Ways of solving this start from being aware of the hierarchies and racial dynamics, with institutional parameters and strategies to decrease these power dynamics through collaborations that openly want to seek for communal creation of the research. Funding is a challenge when they do not accept, or take into account the different activities that generate impact outside the scientific outputs. Such as capacity building, time for building communication, or developing community empowerment, between others, that generates a direct and immediate impact.

Question 3 (How could the quality and societal relevance/responsibility of research be assessed and judged in your field? What criteria are considered essential for this assessment?): These assessments are mostly done qualitatively, and the process involves raising awareness about research, utilizing it, and sharing impact stories. However, there's a deficiency in explicit, comparable measures to assess effectiveness. Assessment and judgment is crucial if impact wants to be measured, and when impact is the goal, and not just scientific papers. Transdisciplinarity by integrating local knowledge, participatory methods and scientific result dissemination. Be involved with societal discussions on the impact of the scientific results to support decision making processes. It is important to be transparent about the objectives, design, methods and results. Maintaining feedback processes among stakeholders regarding funding, project design, community result validation will minimize conflict. Understand the conflicts (among actors, local communities, global north and global south) which may arise during the course of the study and to accept these limitations by adapting research objectives as needed (not only at the start of the project, but throughout its implementation). Fulfillment of knowledge exchange and capacity building objectives for future sustainability and ongoing work among the local actors. Generating impact assessments, and setting indicators that can track the results and its applicability. Setting and evaluating if the impact and results planned would have a real application, and set who would be the stakeholders that would gain from the research. Maintaining good communication can track how the other participants are being impacted by the research. Going back to the mistakes, and trying to have continual improvement, and conflict resolution strategies..

Question 4 (In your opinion, what would be valuable recommendations or strategies for ensuring that this aspect is adequately and ethically considered in research practices? Can you provide specific, tangible practices that researchers can incorporate into their work to promote societally responsible research?): Identify clearly for whom and by whom the research will be conducted, what is the purpose of the research and what interests does it serve. As part of the international cooperation process, identify which entity (research institutes or the state) will drive the project to ensure its sustainability. Consider long-term perspectives and methods to ensure project sustainability. Identify knowledge exchange workshops including local actors and communities. For optimal knowledge exchange with non-scientist, adapt communication methods, be flexible, patient and realistic about the expectations. Interactive participation workshops to draw local knowledge and discuss the benefits of the research for decision making. Dissemination workshops for result validation and identification of adaptation, mitigation, and conservation measures. Targeted capacity building and training programs to reach all stakeholders, dependent on their involvement in the project. These may include training in technical skills, fieldwork, and experiences of the successes of similar work in other regions. Make time for risk analyses at the start and during the course of the project. Research funders and boundary spanners can improve social relevance of research by engaging in longer-term relationships with societal partners and ensuring early and meaningful partnerships to identify what questions to be asked and what actors will be involved.

Session 7: Enablers and Applied Solutions for Responsible Research

Session Chairs: Michelle Bonatti (Leibniz Centre for Agricultural Landscape Research (ZALF)), Katharina Loehr (Leibniz Centre for Agricultural Landscape Research (ZALF))

Session Synopsis and Goals: This session aimed to identify and discuss the key enabling conditions and practical solutions that foster societally responsible research within the scientific community. The key question was: How can the current framework of funding, evaluation, and career progression be restructured to better support and incentivize societally responsible research? The primary focus was on exploring the various factors, strategies, and practices that facilitate ethical, equitable, and impactful research.

Presentations

Vivi Stravou: She reflected on science as a global enterprise and the key principles to be followed as an overall structure to foster rights to participate in science. Implementation of them is a

“battle”. She highlighted the importance of individual reflectivity (how we do science at the individual level).

Alon Zinony: Ethical boards all around the world regulate scientific studies to reduce risk for individual participants. At the same time, little consideration is given to how science can cause indirect harm to broad societal groups. In the talk, he discussed the difficulties of mitigating indirect harm in science and proposed straightforward steps to make science more socially responsible like understanding the social context and potential negative impacts for that (regulations), and bottom-up norms (at individual level open access platforms). Link to related paper: <https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1010954>

Jürgen Kopfmüller: Presented an integrative approach of enabling conditions within the science system that allows for research being more societally responsible, involving a modification of the “excellence” term and its application. There are 8 criteria for assessment that can be applied at different levels (funding agencies to individuals).

Augusto Mozine: He discussed how diversity can influence research agendas and enhance study design and frameworks in terms of power relations. Additionally, from the perspective of coloniality, insights were also presented into how the epistemic divide between the Global North and South can manifest in biased fieldwork or research results. Brazil has tried several initiatives to integrate marginalized groups into the university systems.

Renata Reynaldo: The talk proposed a dialogue based on the contributions of dissident feminist perspectives - with the articulation of ecofeminism, postcolonial, decolonial, and socialist black feminist perspectives – to promote planetary justice and societal responsibility in international sustainability sciences and scientific cooperation.

Link to related paper: <https://onlinelibrary.wiley.com/doi/full/10.1111/gwao.13054>

Session 8: Integrating Societal Responsibility in Science-to-Policy Translation

Session Chairs: Rajesh Tandon (Participatory Research in Asia (PRIA)), Pragya Chaube (UNESCO Chair in Community-Based Research and Social Responsibility in Higher Education), Gustav Kessel (ISC Committee for Freedom and Responsibility in Science (CFRS), Royal Society of New Zealand Te Apārangi, Wellington, NZ)

Session Synopsis and Goals: This session aimed to explore how the principles of societally responsible research can be effectively integrated into the process of translating scientific

knowledge into policy and societal applications. It focused on the vital role of scientists in not only conducting responsible research but also in ensuring that their findings inform policy decisions in a way that aligns with societal needs and ethical considerations. The key question addressed was: What approaches are most effective in translating scientific research into policy and societal applications in a way that upholds the principles of societal responsibility? Other major areas focussed on were: (i) inclusion of multiple knowledge epistemologies in science advisory process (ii) sustainable mechanisms to include grassroots actors in science-to-policy translation

Key topics included:

The intersection of societally responsible research with science-to-policy translation, examining how societally responsible research principles can guide researchers in providing policy advice. Strategies for communicating research findings responsibly, ensuring that scientific advice is accessible, unbiased, and reflects a comprehensive understanding of societal implications.

Case studies showcasing successful instances where research informed by societally responsible research principles significantly influenced policy-making, highlighting the methodologies and ethical considerations involved.

Challenges in maintaining societal responsibility while navigating the complex landscape of policy advice, including addressing diverse stakeholder interests and managing potential conflicts between scientific integrity and policy objectives.

The role of participatory and inclusive research methods in ensuring that policy advice is not only scientifically sound but also socially equitable and reflective of diverse community needs. Mechanisms for inclusion of grassroots science advice.

The goal of this session was to underscore the importance of societally responsible research in the realm of policy-making and to provide actionable insights on how researchers can effectively bridge the gap between science and policy while upholding ethical and social values.

Presentations:

Gustav Kessel (chair): Gustav described pushback from scientists in response to engagement with Indigenous communities for marine biological research in New Zealand. From the perspective of the ISC's core principle of Freedom and Responsibility in Science, Gustav then discussed the apparent decline in scientific freedoms globally, and how this relates to societally responsible science, which may also be under increasing threat (through e.g. indications that scientific fraud and misconduct are on the rise, the increased weaponization of science as research budgets are redirected towards defense applications, and the fact that despite much progress, discrimination of all kinds remains systemic in the science system from a global

perspective). Gustav pointed out that while global scientific/academic freedoms are being tracked extensively, comprehensive tracking of how well scientific responsibilities are being upheld is lacking.

Sophie Duncan: Sophie discussed the policy and organizational conditions required for societally engaged research to thrive, and how engaged research can effectively inform change at various levels (from a UK perspective). Sophie focused especially on responsibility in the higher education sector, where she argued for three key factors that can help to embed public and societal engagement in higher education: 1) institutional assessment capability through self-assessment tools (such as 'the Edge tool') and external assessor accreditation programs; 2) more effective capacity-building to allow researchers who are engaging in societal responsibility to actively share their experience and knowledge with the wider research community; and 3) a funding system which truly supports societally responsible research. Sophie also discussed working with policymakers to create research systems which reward and incentivise responsible research practices.

Mwemezi Rwiza: Mwemezi discussed the power and worldview disparities between researchers and policymakers in sub-Saharan Africa, emphasizing that policymakers tend to view issues through a lens of short-term political gain rather than long-term change and sustainability while societally responsible research typically takes quite a long time. Mwemezi noted that dialogue, with well-considered message packaging of research findings, is key to resolving such tensions, and that grassroots mobilization backed by the poor majority does well at attracting policy makers' attention. Mwemezi reiterated the need for researchers to build trust with affected communities, achieving research findings WITH these communities, and framing results FOR communities. This will enable communities to utilize research findings to more effectively advocate for change themselves. Mwemezi also pointed out that higher education, in particular, can seem extremely detached from the daily lived reality of the public, especially poor and Indigenous communities - a hurdle that needs to be overcome for effective engagement to take place.

Natasha Udu-gama: Natasha (from the perspective of the AGU's Thriving Earth Exchange) discussed the role of societally responsible science as a collaboration between science and communities which should address community priorities, which serves to empower communities (especially those which have historically been marginalized) to lead, learn from and benefit from research. Addressing problems with diverse perspectives is a strength of community science, which allows it to address complex issues effectively. Natasha emphasized that researchers

who engage in community science should ask themselves “what will be different in the community after the work is done?” in order to direct focus towards creating tangible, lasting, and positive impact (by producing meaningful outputs such as data, tools, recommendations etc.). Natasha also reflected on some challenges in community science, such as the fact that some communities do not feel ready or are hesitant to collaborate with scientists, and the critical need for scientists to be interested in working with communities and to be trained to do so.

Day 2 Focal questions:

Q 1. How do we understand and define ‘societal responsibility’ in the context of science-to-policy translation?: Societally responsible science-to-policy-translation relies on a responsible partnership between scientists and policymakers. On the one side, scientists must ensure that their research is conducted responsibly, taking into account all stakeholders and the wider implications of their research, as well as any inherent uncertainties. On the other side, policymakers must balance basing decisions on the best available evidence, with societal needs and long term sustainability. This requires a collaborative approach between science and policy, which is based on a shared goal of acting for the global public good. Further, it was discussed that definitions of societal responsibility (with regards to policy-translation) should: consider nuances of context and power dynamics (what works in one community/setting may not work in another); embrace diversity of all kinds (including languages, methodologies, knowledges, value systems etc.); accessibility and ownership of data; responsibilities to the planet, environment, and non-human animals in addition to human society; the level of policy in question (do definitions differ between institutional, national and international policy arenas?); and definitional generality versus specificity (too general risks lack of utility, while too specific risks exclusion).

Q2. What are the current challenges and issues holding back a societally responsible science-to-policy-translation process globally? And what solutions exist?: The panel acknowledged that challenges and solutions will look different for different parts of the world (especially global north versus south) and from the perspectives of different stakeholders. Regardless, the following challenges were discussed: the fact that research findings are complex and uncertain, and that this complexity and uncertainty does not make for easily actionable policy; a lack of ability among scientists to communicate complexity and uncertainty in the policy space; political interference and short-term goals motivated by term limits rather than long-term sustainability; continued lack of stakeholder engagement (especially indigenous communities); resource constraints; lack of awareness, interest, and training among scientists for societal responsibilities

and community engagement; geopolitical tensions making international policy progress on scientific issues difficult; balancing responsibility to society with research freedoms; science being outside the lived reality of many community groups; hostility towards science among some communities due to historic harms. Conversely, the following solutions were discussed: improving scientists' communication ability; enhancing stakeholder engagement; promoting the value of evidence-based policy; addressing political interference; investing in research infrastructure; raising awareness of principles around scientific responsibilities towards society; increasing global knowledge sharing, collaboration and capacity building.

Q3. How can societal responsibility in science-to-policy-translation be assessed, and what criteria would be useful for this?: Apart from the question of who would conduct such assessments, the panel was supportive of all criteria already described in the LeNa reflection framework and discussed the following additions: data sovereignty and accessibility (including catering to local languages; equitable involvement / inclusivity (by race, gender etc., both on the part of the researchers and as represented in the engaged community); evidence-based decision making; conflicts of interest (including political); stakeholder engagement; dissemination and public awareness of findings and policy impact (beyond the engaged communities and stakeholders). The panel also discussed the need for quantitative disciplines to acknowledge the validity and rigor of qualitative data, and the possibility of actively engaging communities and stakeholders in feedback processes (e.g. on level of engagement or perceived impact of policy informed by findings) as a means of assessment.

Q4. What strategies and practices can we recommend, which will ensure that science-to-policy-translation is conducted in a societally responsible way?: The panel put forward the following strategies and practices: Responsibility considerations need to be incentivised, among both researchers and policymakers, for example, through imposed requirements and reporting, recognition of scientists who fulfill societal responsibilities well, and recognition of the value of community knowledge; All stakeholders should be engaged early and throughout the research process; scientists who encounter pushback in the pursuit of socially responsible research practices should continue to advocate for their inclusion in research processes and raise awareness - perceptions among initially hostile peers can and do change; Scientists must engender appetite for policy action by highlighting the wider relevance and urgency of research.

4.3 Panel discussion (day 2)

Panel Discussion - Stefan Siebert (moderator), Pragya Chaube, Michelle Chevelev-Bonatti, Leonardo Valenzuela Pérez

Intro by Stefan Siebert: summary of first day, outlook to second day, setting the context for the four questions to be addressed in each panel.

Pragya: Q1 - inequalities of resource distribution - colonial history important when looking at South (e.g. India: “manufacturing hub”); North: emphasis on technological solutions, South: focus on trad. wisdom, resilience, traditional knowledge; importance of traditional knowledge integration (which is not static but evolves); UNESCO framework to integrate communities and trad. Knowledge; respect vital, as well as transdisciplinarity

Michelle: Q2 - a lot of global North in the Global South and vice versa; the question is where in the Global North and South, and at which level, things are taking place in the scientific system; Colonialism and power are a lot more present in the Global South narrative and that should be more present also in the Global North; Global North should integrate more a lot of other forms of epistemologies and world views. The suggestions from the two keynotes have been extremely helpful.

Leonardo: Positioning the issue of climate change, as it is really affecting what we are going to see in the next decades to come, needs to be reflected when thinking about our collaboration; the adaptation strategies might have very different perspectives on the Global North and South. Within marine science all infrastructure is existing in the Global North; Global South has very limited possibilities. We have to increase the capacities around the world, as well as partnership. What is currently happening is good (GEOMAR), but they do not have an emphasis on equity and various perspectives on knowledge, and should not be extractive and instrumental.

Round of concrete steps:

Pragya: we are working in silos, we need to build capacity, how to go out and meet society, give up the ivory tower; system design perspective, analyze how institutions are designed, we have to change the entire perspective, we need more assessment of research that is considering this societal impact

Michelle: Again the level and the disciplines are important to differentiate how to act, from the perspective of sustainable land use practice: how do we integrate communities and research, in theory we have a lot of frameworks of community engagement, but we often have instrumental

rationalities, we use communities for supporting our suggestions. We already have a lot of our ideas, we need to shape a lot more with the communities. What is the role of the community, how much power do they really have, sharing the resources, the literature is clear on it, but the reality is still much more complex, we should not see the communities under this instrumental rationality.

Leonardo: enabling conditions - framework of UN Ocean Decade, different philosophies but common goal - hubs for collaboration, community of actors, ecosystem for collaboration. Blue Economy: not everything from the economy is sustainable. Working with communities and governments to see how to make more sustainable - use common framework to come together and jointly understand e.g. climate activism, develop solutions; collaboration across communities/actors not usually working together. UN Decade provides such a platform that can be model/replicated in other contexts.

5. Attendees and technical details

5.1 Total Number of Attendees

Total attendees:

114

Details on visits to conference sessions:

Page	Total time spent	Average time spent	Unique visitors
Dial-in and virtual arrival (13-03-2024 12:45 - 13:00)	5 hours, 22 minutes, 23 seconds	11 minutes, 56 seconds	27
Welcome, housekeeping (13-03-2024 13:00 - 13:10)	7 hours, 34 minutes, 54 seconds	14 minutes, 12 seconds	32
Opening Plenary: Societally responsible research and the LeNa criteria (13-03-2024 13:10 - 13:30)	17 hours, 54 minutes, 23 seconds	23 minutes, 21 seconds	46
Keynote: Societally responsible sustainability science in a Global North context (13-03-2024 13:30 - 14:15)	1 day, 12 hours, 40 minutes, 59 seconds	38 minutes, 36 seconds	57

Keynote: Societally responsible sustainability science in a Global South contex (13-03-2024 14:15 - 15:00)	1 day, 11 hours, 35 minutes, 7 seconds	37 minutes, 27 seconds	57
Parallel Session 3: Quality Criteria and Defining Scientific Excellence Across Borders (13-03-2024 15:10 - 17:20)	16 hours, 59 minutes, 11 seconds	1 hour, 32 minutes, 39 seconds	11
Parallel Session 5: Responsibility and ethical aspects in Real World Laboratories in an international context (13-03-2024 15:10 - 17:20)	13 hours, 49 minutes, 43 seconds	1 hour, 22 minutes, 58 seconds	10
Parallel session 2: Embracing Diversity: Knowledge Integration and Acknowledging Multiple Knowledge Systems (13-03-2024 15:10 - 17:20)	1 day, 3 hours, 11 minutes, 5 seconds	1 hour, 25 minutes, 50 seconds	19
Parallel Session 7: Enablers and Applied Solutions for Responsible Research (13-03-2024 15:10 - 17:20)	16 hours, 45 minutes, 8 seconds	2 hours, 5 minutes, 38 seconds	8
Parallel session 1: Ethics Related to Exercising Social Responsibility in Global Collaborations (13-03-2024 15:10 - 17:20)	15 hours, 41 minutes, 57 seconds	58 minutes, 52 seconds	16
Parallel Session 6: Maximizing Local Societal Impact: Strategies for International Collaboration Research Projects (13-03-2024 15:10 - 17:20)	20 hours, 16 minutes, 39 seconds	1 hour, 41 minutes, 23 seconds	12
Parallel Session 8: Integrating societal responsibility in Science-to-Policy Translation (13-03-2024 15:10 - 17:20)	11 hours, 48 minutes, 58 seconds	1 hour, 18 minutes, 46 seconds	9
Parallel Session 4: Evolving perspectives on Global North-South Collaboration (13-03-2024 15:10 - 17:20)	1 day, 1 hour, 28 minutes, 34 seconds	1 hour, 24 minutes, 55 seconds	18
Day 1 Wrap-up (13-03-2024 17:20 - 17:30)	4 hours, 42 minutes, 21 seconds	10 minutes, 51 seconds	26
Dial-in and virtual arrival (14-03-2024 12:45 - 13:00)	9 minutes	1 minute, 48 seconds	5
Panel Discussion: Societally-responsible science for planetary justice: partnership to make it work (14-03-2024 13:00 - 13:45)	22 hours, 50 minutes, 2 seconds	48 minutes, 55 seconds	28



Networking Break (14-03-2024 13:45 - 14:00)	54 minutes, 3 seconds	13 minutes, 30 seconds	4
Parallel Session 3: Quality Criteria and Defining Scientific Excellence Across Borders (14-03-2024 14:00 - 16:10)	10 hours, 34 minutes, 11 seconds	1 hour, 10 minutes, 27 seconds	9
Parallel Session 6: Maximizing Local Societal Impact: Strategies for International Collaboration Research Projects (14-03-2024 14:00 - 16:10)	10 hours, 22 minutes, 14 seconds	1 hour, 43 minutes, 42 seconds	6
Parallel Session 8: Integrating societal responsibility in Science-to-Policy Translation (14-03-2024 14:00 - 16:10)	13 hours, 52 minutes, 5 seconds	1 hour, 44 minutes	8
Parallel Session 2: Embracing Diversity: Knowledge Integration and Acknowledging Multiple Knowledge Systems (14-03-2024 14:00 - 16:10)	8 hours, 23 minutes, 41 seconds	1 hour, 2 minutes, 57 seconds	8
Parallel session 1: Ethical considerations and dilemmas faced in research partnerships between the Global North and South (14-03-2024 14:00 - 16:10)	9 hours, 53 minutes, 10 seconds	37 minutes, 4 seconds	16
Parallel Session 4: Evolving perspectives on Global North-South Collaboration (14-03-2024 14:00 - 16:10)	3 hours, 4 minutes, 3 seconds	46 minutes	4
Parallel Session 5: Responsibility and ethical aspects in Real World Laboratories in an international context (14-03-2024 14:00 - 16:10)	3 hours, 29 minutes, 34 seconds	34 minutes, 55 seconds	6
Parallel Session 7: Enablers and Applied Solutions for Responsible Research (14-03-2024 14:00 - 16:10)	7 seconds	7 seconds	1
Closing Plenary (14-03-2024 16:15 - 17:00)	22 hours, 44 minutes, 43 seconds	48 minutes, 44 seconds	28
Wrap-up (14-03-2024 17:00 - 17:15)	7 minutes, 3 seconds	3 minutes, 31 seconds	2

Documentation

All slides, panel and session transcripts are available on request.

Emissions statistics

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