Report of the Chair of the Scientific and Technical Advisory Panel to the 67th GEF Council Meeting

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STAP SCIENTIFIC AND TECHNICAL ADVISORY PANEL

An independent group of scientists that advises the Global Environment Facility

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1. Introduction

This report provides an update on the work of the Scientific and Technical Advisory Panel (STAP) to the Global Environment Facility (GEF) since the 66th GEF Council meeting in February 2024.

2. Screening of Global Biodiversity Framework Fund proposals

STAP screened the first three Global Biodiversity Framework Fund (GBFF) projects, comprising projects in Brazil (2) and Mexico (1). The projects addressed the drivers of biodiversity loss and identified significant opportunities to contribute to the Global Biodiversity Framework targets and to support actions led by Indigenous Peoples and local communities in the conservation, restoration, sustainable use, and management of biodiversity.

The projects provided varying levels of the information expected in a CEO endorsement document.[1] Overall, the proposals addressed some essential elements of good project design in the STAP

[1] STAP notes that the three proposals were developed within a very short time – less than the nine months recommended in the GBFF project cycle policy.

screening guidelines.[2] All three were rated "minor" in accordance with STAP's screening guidelines (i.e. that STAP has identified some scientific and/or technical issues that should be addressed).[3]

Areas of strength in the projects include:

- A focus on areas with globally significant biodiversity and substantial potential to generate global environmental benefits (GEBs)
- Interventions that seek to promote actions led by Indigenous Peoples and local communities, in line with the goal of the GBFF
- Detailed baseline information on the system and issues the project seeks to address
- Adoption of technically sound intervention approaches, such as Project Finance for Permanence and Plans for Territorial and Environmental Management of Indigenous Lands
- Significant potential to generate socioeconomic co-benefits for local communities

STAP reviews GBFF projects at the CEO endorsement stage.[4] These projects were developed in less than the nine months usually allowed between the award of a project preparation grant and the submission of a CEO endorsement document. Some elements of the projects could be improved, as described in the STAP screens. One of the projects did not reflect the level of stakeholder dialogue expected in a CEO endorsement document, although it indicated the groups that the project team intends to consult. The theory of change of two projects needed to better present the logical pathway to achieving expected project outcomes as well as the assumptions underlying the pathways. One project also needed to clearly explain the expected socioeconomic co-benefits. Consideration of uncertain futures of how drivers might unfold could also be improved in all projects.

3. STAP initial perspective on GEF-9

At the GEF Council meeting in December 2020, STAP provided an initial science and technology perspective to contribute to the GEF's thinking in the run-up to the GEF-8 replenishment process. This document presented the case for the GEF to pursue transformation at multiple levels – through individual projects, at portfolio level, and as a partner in influencing systemic change in key sectors of the global economy.

Updating and building on this foundation, STAP is undertaking a more extensive consultation process in developing its perspective for the GEF-9 replenishment period. This consultation draws on the STAP Science Day events[5] held during the GEF Assembly in August 2023 and the ongoing review of emerging

[2] STAP reviews projects against a set of criteria that are outlined in the STAP guidelines for screening GEF projects.
[3] STAP has three ratings for projects (concur, minor, and major). A rating of *concur* indicates that STAP acknowledges the project's scientific and technical merit; a rating of *minor* means that STAP has identified some scientific and/or technical issues that should be addressed; and a rating of *major* means STAP has major scientific and/or technical concerns about the project that should be addressed.
[4] For other GEF proposals, STAP reviews the project concept (Project Identification Form) and expects that some aspects of project design will be developed during the project preparation grant stage.
[5] These events include the Youth Leaders Learning Exchange and the Indigenous and Local Knowledge Event. A summary of key takeaways from the STAP Science Day is available at: https://www.stapgef.org/resources/summary-and-key-takeaways-stap-science-day

signals and trends, such as those included in the STAP Chair's GEF Assembly presentation and the STAP Chair's presentation at the February 2024 GEF Council meeting.

In April and May this year, STAP organized a series of six virtual consultations, three each in the Eastern and Western Hemispheres. These consultations were facilitated by Panel Members and brought together experts and thought leaders from the social, environmental, and physical sciences from across the globe. The purpose was to gather insights on the implications of current global trends in these areas to inform GEF strategy and programming priorities.

The emerging picture is **a moment of unprecedented global change.** The economic drivers of environmental degradation continue to accelerate, as measured by factors such as consumption, energy demand, land use, and resource extraction. As undeniable evidence of human transformation at the global scale accumulates, environmental outcomes are increasingly the focus of **economic and social tensions.**

This is combined with **stresses on the institutions that enable international environmental governance.** The erosion of democratic norms in many regions is occurring alongside rising public awareness and concern about environmental change and its links to social and economic vulnerability, migration, conflict, and security. **Disruptive, AI-powered technologies** have the potential to generate efficiencies and accelerate the pace of economic transformation in sectors such as energy, transportation, food production and distribution, manufacturing, and waste management, environmental monitoring, and risk forecasting. But these technologies also bring new risks, including institutional risks such as those affecting processes of public deliberation over societal goals.

Amid these challenges, **national governments frequently struggle to achieve policy coherence.** Over the long term, policy incoherence exacerbates social inequalities, impacting all countries. Meanwhile, **the financing gap continues to grow.** Governments often struggle to marry their commitments to international environmental progress with domestic demands to address social equity, jobs, economic growth, and livelihood security. Plus, in many sectors, there is a retrenchment of private sector commitment from environmental, social, and governance standards which can slow progress.

Yet the science underpinning climate change is improving. There is a robust convergence of evidence on the nature of the systemic risks we face and the tipping points beyond which change gains momentum and becomes practically irreversible. Importantly, alongside the Earth system tipping points to be avoided, there is emerging evidence on the positive tipping points that signal the potential for lasting social and economic transformation to deliver GEBs. Likewise, there is a sharpening understanding of the factors that influence the "lock-in" of environmentally unsustainable economic systems and that counter efforts towards positive transformational change. While recognizing the complexity of the change processes required, there is a clear scientific consensus on the urgency and necessity of coordinated action.

In addition to helping STAP clarify key dimensions of the global context outlined above, grounded in the latest science, the consultations have aimed to distil evidence that can inform strategic directions for the GEF. Three cross-cutting priorities have come into focus:

a) **Operationalizing the whole-of-society approach.** Accelerating progress on global environmental goals amid significant headwinds requires the GEF to catalyse and reinforce action by other players, including governments, civil society, and the private financial sector. Given the competing societal demands, the GEF needs to be able to support recipient countries in identifying and advancing actions that jointly reduce social inequities and increase livelihood security for poor and marginalized groups while delivering GEBs. This includes enhanced mechanisms to effectively engage women, youth, and Indigenous Peoples. The focal question is:

   In the context of a whole-of-society approach, what strategies best help recipient countries recognize the synergies between GEBs and social and economic co-benefits, including those related to social justice and equity?

b) **Achieving policy coherence amid competing priorities.** Reaching beyond ministries of environment, the GEF is seeking to consistently engage such ministries as finance, energy, and transportation to help craft more integrated investment strategies and eliminate perverse subsidies. Policy incoherence is a symptom of critical failures of governance; by contrast, strengthening the institutions of transparent and inclusive governance can bolster the links between environmental progress, economic development, and social stability. Also important are cross-scale governance mechanisms to make national and subnational decision-making better aligned with regional and global environmental commitments. The focal question is:

   What strategies best help recipient countries achieve policy coherence (across sectors and across subnational, national, and regional scales) in the context of competing environmental, social, and economic priorities?

c) **Catalysing transformational change that endures.** Official development aid supporting environmental goals is dwarfed by private investment flows and public sector investment targeting economic growth. To achieve lasting influence at a greater scale, GEF assistance must be designed to strategically leverage and influence these larger investment flows. These efforts must take advantage of opportunities for innovation in technological, institutional, social, and cultural dimensions alongside innovations in financial mechanisms. At the same time, it is essential to identify and manage inherent risks. The focal question is:

   What pathways are most effective in channelling international financing towards catalysing transformation – leveraging and accelerating action by the private sector, civil society, and governments to achieve global environmental goals?

In addition to probing these focal questions, STAP's consultations aim to provide space to deliberate on operational implications for the GEF's evolving portfolio of investments and operations. These topics include:

- Good practices that can inform a reimagined results framework that tracks leading indicators of transformation and integrates societal co-benefits
- Mechanisms to ensure greater continuity across project cycles and replenishment cycles and greater coherence across financing sources while also encouraging innovation, adaptation, and well-informed risk-taking
- External partnerships critical to maximizing the GEF's effectiveness in generating support for actions that deliver GEBs, enable policy coherence, and contribute to transformational change
- Evidence on capacity-strengthening approaches, especially within recipient countries, to achieve greater societal engagement, policy coherence, and system transformation
- Knowledge management practices to accelerate learning around key innovations among GEF projects and Integrated Programs and within broader global and regional networks

A final STAP paper will be ready for discussion with the GEF Council in December. This paper will inform the launch of the technical advisory group process for GEF-9 organized by the GEF Secretariat, which is planned to commence early in 2025.

4. STAP reports

4.1. STAP information note #2 on blended finance

The GEF is increasingly expected to leverage more private investment to deliver GEBs,[6] including through blended finance projects using GEF non-grant instruments. Many blended finance projects are more complicated than conventional GEF Trust Fund projects (see STAP's information note #1 on blended finance).[7] They often involve more responsibility for delivery of GEBs being transferred to entities beyond the GEF Partnership, and the pathway from the GEF providing funding to the eventual delivery of GEBs is often much longer. These elements are important for attracting and scaling private sector investment and need to be addressed in project design to ensure that GEBs are successfully delivered.

STAP's review[8] of the academic literature on blended finance found that the volume of literature is still quite limited; lessons for project design from theory, as well as from the practitioner literature, are only beginning to be systematized. The literature identified a difference in culture between those who design the finance logic of blended finance projects and those concerned with the impact logic (in the GEF context, to deliver GEBs). This divergence can lead to different expectations and assumptions.

[6] See https://www.thegef.org/documents/global-environmental-benefits for a full list of GEBs.
[7] See https://stapgef.org/resources/information-note/stap-information-note-1-blended-finance
[8] See https://stapgef.org/resources/information-note/stap-information-note-1-blended-finance

STAP suggests that the finance and GEB logics should be addressed equally and together in project design and that the two cultures should be encouraged to converge.

Some of these issues are considered in projects, but STAP has not found that these interactions are addressed systematically when it screens blended finance projects. The GEF's policy, selection criteria, and assessment process[9] for blended finance projects tend to address the finance and GEB logics separately.[10] The GEF's policy mentions GEBs briefly, and all but one of the eight selection criteria for projects address the finance logic, with the usual GEF Trust Fund requirements to deliver GEBs also required to be met. This means that attention is not drawn to the interactions between the finance and GEB logics.

This matters because in most blended finance projects, responsibility for investment management is transferred to an entity outside the GEF Partnership at an early stage, with some involvement of a GEF Agency. In projects with longer impact pathways, there is less opportunity for adaptive management once the finance arrangements are signed off. Therefore, design principles that ensure the delivery and monitoring of GEBs need to be clear at the project design stage and embedded in governance arrangements.

STAP suggests that three considerations could be usefully included in blended finance project calls to help actively bridge the links between the finance and GEB logics:

- Consideration 1: Does the design of the blended finance instrument account for how the GEBs will be delivered by the project?
- Consideration 2: What are the incentives for those who are responsible for delivering GEBs to do so, and what is the role (if any) of technical assistance?
- Consideration 3: How will the governance of the project ensure that the expected GEBs and financial returns are both delivered, especially when impact pathways are longer?

4.2. Delivering climate change adaptation benefits in GEF Trust Fund projects

This STAP advisory document reviewed 37 GEF-8 Trust Fund projects[11] to better understand the extent to which they could deliver climate adaptation benefits in addition to their intended GEBs across the GEF Trust Fund focal areas.[12]

[9] See GEF Blended Finance Global Program and Non-Grant Instruments Policy Update
[10] The finance logic is addressed by the GEF's Advisory Group of Financial Experts, while the GEB logic is addressed by the GEF Secretariat thematic staff.
[11] The STAP analysis focused on the GEF-8 project cycle. It included all 37 Project Identification Forms approved by the GEF Council up to the February 2024 GEF work program. The analysis excluded Program Framework Documents for Integrated Programs and other programs in GEF-8, as the overarching program documents do not contain the specificity necessary to identify adaptation benefits and the child project documents are much shorter and less detailed than standard Project Identification Forms.
[12] Conserving and sustainably using biodiversity, reducing greenhouse gas emissions, strengthening transboundary water management, reducing chemicals and waste, and sustainably managing and restoring land.

The analysis used the Adaptation Rationales and Benefits Framework,[13] which classifies climate adaptation benefits into three categories: reduced exposure (a reduction in the frequency and/or magnitude of one or more climate impacts on a person, population, activity, resource, or system targeted by the project), reduced sensitivity (a reduction in the impact of a climate-related event on a person, population, activity, resource, or system), and enhanced adaptive capacity (an increase in the ability of a person, population, or system to manage climate impacts or realize an opportunity emerging from climate change, including by transforming how they live).

The analysis focused on the following questions:

- How is climate change adaptation characterized in the project?
- Does the project deliver climate adaptation benefits?
- Could the project deliver climate adaptation benefits without compromising the intended GEBs?

STAP found that 10 of the 37 projects reviewed (27%) were likely to deliver adaptation benefits and that half of these projects were likely to deliver more than one adaptation benefit. These benefits were found in projects in all focal areas except for Chemicals and Waste.

The analysis also determined that 22 projects (approximately 60%) *had the potential* to deliver new or additional climate adaptation benefits if designed differently, without negatively affecting the delivery of targeted GEBs. Most of these potential benefits were found in multi-focal-area projects, followed by projects in the International Waters, Biodiversity, and Climate Change Mitigation focal areas.

In addition to these primary findings, STAP found that overall, the characterization of climate change impacts in most projects was insufficient, with only five projects (approximately 13%) clearly describing such impacts. STAP also found that 21 projects showed inconsistencies in their portrayal of climate change adaptation, as evidenced by the misalignment between the Rio marker, project taxonomy, and identified climate adaptation benefits.

To deliver greater adaptation benefits, STAP recommends the following:

- Clearly identify climate trends relevant to project activities and goals and incorporate this information into the underlying logic as part of the project rationale.
- Describe the pathways from the identified climate trends to impacts on the project's intended GEBs and beneficiaries as part of the project's theory of change.
- Ensure that climate adaptation benefits are accurately reflected in project taxonomy and Rio markers to ensure proper tracking and reporting of these benefits, for example in the GEF Corporate Scorecard.

[13] Carr, E.R., and Nalau, J. (2023). "Adaptation rationales and benefits: a foundation for understanding adaptation impact." Climate Risk Management 39:100479. https://doi.org/10.1016/j.crm.2023.100479.

4.3. Fostering cooperation and managing conflict: STAP information note on GEF transboundary water projects

STAP has previously provided advice on the dimensions of environmental security relevant to the GEF and how to achieve durable outcomes in fragile and conflict-affected situations. The new STAP information note on fostering cooperation and managing conflict dives more specifically into the transboundary water aspects of environmental security. It summarizes recent GEF and non-GEF experience with transboundary water projects, develops a conceptual basis for assessing the links between transboundary water resource management and cooperation and conflict dynamics, and suggests implications for future GEF work in this area.

The scientific and policy communities and the media have frequently noted the prospect of increasing competition for shared water resources, leading to conflict. However, shared water resources have also been a source of cooperation between States, with research confirming that cooperation is significantly more common than conflict. Challenges like climate change and the increasing pressure on water resources might alter this. Hence, there is a need to understand the interactions between transboundary water resources, their management, and the connections to cooperation or conflict.

Transboundary water projects are usually designed to support and enhance the benefits of cooperation. This can promote a "virtuous" cycle that begins with cooperation on a shared water resource and could lead to cooperation beyond water (e.g. to environmental peacebuilding). Projects could also be designed to prevent or resolve conflict; for example, competition for natural resources, which, if left neglected, could lead to a "vicious" cycle of instability, conflicts, and deterioration of natural resources.

To promote the "virtuous" cycle, it is essential to explicitly define and monitor the GEBs intended to be achieved, put in place effective legal, institutional, and policy interventions, and ensure coherence in policies in and across countries. So is the identification, achievement, monitoring, and evaluation of co-benefits from transboundary water cooperation, which can help secure widespread support for such projects, highlight their value for money, and guide future investments.

Avoiding or resolving the "vicious" cycle requires understanding the root causes and drivers of change, designing and implementing interventions that address those causes and drivers, promoting long-term cooperation, and delivering GEBs and co-benefits. Explicitly addressing environmental security during project design, effectively engaging stakeholders throughout project design and implementation, developing narratives of possible futures that recognize fragile and conflict situations, and identifying and addressing links between conflicts and environmental outcomes in the project theory of change are also essential.

The note suggests that the GEF:

- Clearly define the intended GEBs from individual International Waters projects and the cooperation mechanisms required to achieve them and ensure appropriate and adequate monitoring of their achievement
- Identify, track, and communicate the co-benefits emerging from water-related cooperation beyond the water sector itself (e.g. broader natural resource protection, livelihood improvement, peacebuilding)
- Analyse the underlying factors and trends contributing to water-related conflict or cooperation to inform and improve project design and implementation towards cooperation for GEBs (through systems thinking and future narratives of potential environmental degradation)
- Continue to assess general conflict risks during project development, allowing for flexible project management to respond to conflict situations during project implementation and considering conflict and fragility in monitoring project outcomes

5. STAP activities

GEF IEO 4th Conference on Evaluating Environment and Development

STAP participated in the 4th Conference on Evaluating Environment and Development organized by the GEF Independent Evaluation Office (IEO), which took place on 5–7 March 2024. The conference featured such topics as integration, transformational change, systems design, co-benefits, nature-based solutions, and behavioural change. Dr Rosina Bierbaum, STAP Chair, gave a keynote on emerging ways science can inform evaluation and moderated the panel discussion on the same topic. Dr Edward Carr, the outgoing Panel Member for Climate Change Adaptation, was a panellist in the behavioural change session. Dr Sunday Leonard, STAP Secretary, moderated the session on nature-based solutions.

Regional adaptation programming and strategy workshops

Dr Rosina Bierbaum gave briefings at two GEF regional adaptation programming and strategy workshops. The first was focused on non-least developed country small island developing States (SIDS) in the Caribbean (14 March 2024), and the second focused on non-least developed SIDS in the Pacific, Indian, and Atlantic Oceans (27 March 2024). Her presentation featured information on the latest science on climate change impacts in SIDS. She also presented STAP's enabling elements for good project design to help countries with their project design and implementation.

GEF Agency Retreat

STAP will lead two sessions at the GEF Agency Retreat, which will take place on 13–14 June. The first session focuses on innovation and risk, addressing the new GEF risk appetite statement and framework. In particular, it centres on guidance for assessing, mitigating, and rating innovation risk within GEF investments. The second session will present findings from STAP's GEF-9 preliminary consultations and provide an opportunity for the agencies to give their views.

Review of GEF Trust Fund and Least Developed Countries Fund work programs

STAP reviewed 23 GEF Trust Fund projects and programs, 13 Least Developed Countries Fund projects and programs, and one multi-trust fund (GEF Trust Fund and Least Developed Countries Fund) program for the June 2024 work program cycle. The STAP Chair will present STAP's observations from screening the work program during her GEF Council presentation.

6. STAP future work

In addition to developing its initial perspective for GEF-9, STAP will (1) provide an information note on community-based approaches as recommended by the GEF-IEO, (2) work on metrics and core indicators, and (3) develop a paper on the financing of Chemicals and Waste projects. STAP will also organize an expert workshop on blended finance.

7. Panel Member updates

Changes in STAP

STAP is pleased to welcome two new Panel Members who will be present at the GEF Council meeting:

> **Dr Ermias Betemariam** is the new Panel Member for the Land Degradation focal area. He is a land health scientist at the Center for International Forestry Research and World Agroforestry. His research focuses on land degradation and restoration, soils, and spatial science to understand land health constraints, target interventions, and influence policy. He is a member of the Science-Policy Interface of the United Nations Convention to Combat Desertification and contributes to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.
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> **Dr Jonathon Barnett** is the new Panel Member for Climate Change Adaptation. He is a human geographer in the School of Geography, Earth and Atmospheric Sciences at the University of Melbourne. His research investigates social impacts and responses to environmental change and seeks to explain the implications of environmental change on cultures, food security, inequality, migration, political instability, and water security. He has conducted field-based research on social vulnerability and adaptation to environmental change in Australia, China, Timor-Leste, and Pacific Island countries. He co-directs the Oceania Institute at the University of Melbourne, served six years as editor of *Global Environmental Change*, and was a lead author for the Intergovernmental Panel on Climate Change Fifth Assessment Report.

Dr Betemariam and Dr Barnett are replacing **Dr Graciela Metternicht** and **Dr Edward Carr**, respectively, who have completed their terms as Panel Members.

Dr John Donaldson will complete his term as the Panel Member for Biodiversity at the end of September 2024. The recruitment exercise for a replacement is underway. We are incredibly grateful to him for his service to the GEF family.

Other activities of Panel Members

Dr Rosina Bierbaum co-edited *Bringing Nature into Decision-making*, a special issue of *The Philosophical Transactions of the Royal Society* published online on 22 April 2024. The table of contents for the issue can be accessed here. This special issue is a further product of a joint meeting on the same topic between the US National Academies and the Royal Society in London in 2022, at which both Dr Bierbaum and GEF CEO Carlos Manuel Rodriguez gave keynote addresses. Dr Bierbaum engaged in a 3,000-person training session with the Climate Reality Project in New York City on 12–14 April 2024. She answered questions from the audience on climate change along with Dr Gavin Schmidt, Director of the Goddard Institute for Space Studies, and former Vice President Al Gore. Dr Bierbaum is also chairing the International Institute for Applied Systems Analysis Committee of External Scientific Reviewers to evaluate research carried out in 2021–2024 and to provide feedback and suggestions to be incorporated into future research plans.

Dr Ngonidzashe Chirinda, Panel Member for Climate Change Mitigation, is coordinating a new Africa Carbon Flagship program aimed at accelerating progress in achieving climate change mitigation and adaptation targets in selected African countries. He was a panellist on the webinar "Livestock Methane: The Use and Misuse of GWP", organized by the Changing Markets Foundation. In May, he co-chaired the 9th International Symposium on Soil Organic Matter held in Ben Guerir, Morocco. In the past few months, Dr Chirinda has co-authored publications on the effects of contour-based rainwater harvesting and integrated nutrient management on maize yields in semi-arid regions of Zimbabwe and on climate change awareness and adaptation strategies by smallholder farmers in semi-arid areas of Zimbabwe.

Dr Miriam Diamond, Panel Member for Chemicals and Waste, continued to be involved with activities related to establishing the Science-Policy Panel to contribute to the sound management of chemicals and waste and to prevent pollution, including as an invited speaker in a webinar sponsored by the United Nations Environment Programme Secretariat. In addition, she moderated a webinar by the International Panel on Chemical Pollution that explored the question of what the Science-Policy Panel might consider. Dr Diamond attended the fourth session of the Intergovernmental Negotiating Committee to develop an international legally binding instrument on plastic pollution (INC-4) held in Ottawa, Canada, in her role as a member of the Scientists Coalition. She also participated as an expert in the panel of the San Francisco Estuary Institute regarding emerging contaminants. In the past few months, Dr Diamond has published peer-reviewed papers on the impact of legislative controls on plastic microbeads found in Great Lakes water and flame retardant use in vehicles. Her work as Environment Commissioner for novel entities with Future Earth continues.

Dr John Donaldson, Panel Member for Biodiversity, has been working with NGOs and local communities across Sub-Saharan Africa to establish plant conservation and recovery programs in areas with high extinction risks. In February 2024, he visited Tanzania to meet with government agencies and communities and is currently preparing workshops and field visits for Mozambique,

Zimbabwe, and other East African countries. He also led the completion of the third global assessment of extinction risk for cycads, one of the few plant groups that has been comprehensively assessed for the International Union for Conservation of Nature Red List of Threatened Species and is a critical indicator of the health of the world's biodiversity.

Dr Susanne Schmeier, Panel Member for International Waters, gave a keynote address on the relevance of water conflicts and cooperation for the security community and moderated a panel discussion at the Munich Security Conference in February 2024. She also participated in the World Water Forum in Bali, Indonesia, in May 2024, presenting on several topics, including the legal and institutional mechanisms for addressing contemporary water challenges and public participation and stakeholder engagement in water resource governance. In the past few months, Dr Schmeier has co-authored publications on trends in transboundary water conflict and cooperation and the role of institutionalized cooperation in transboundary basins in mitigating conflict potential over hydropower dams.