

# A just world on a safe planet

# PIK Alumni Newsletter No. 8

06/2023

## Dear PIK Alumni,

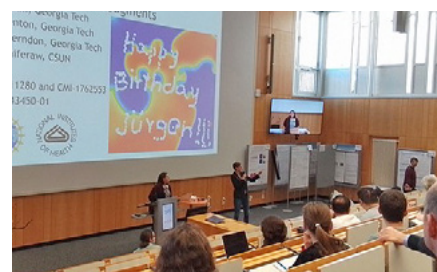
### First study quantifying Earth System Boundaries

“We are in the Anthropocene, putting the stability and resilience of the entire planet at risk. This is why, for the first time, we present quantifiable numbers and a solid scientific foundation to assess the state of our planetary health not only in terms of Earth System stability and resilience but also in terms of human wellbeing and equity / justice.” This was the statement by PIK Director Johan Rockström on the publication in Nature of a new study, of which he was the lead author.

The eminent team of authors have for the first time quantified a set of safe and just Earth System boundaries for a number of key biophysical processes and systems such as climate, the biosphere, and water. The concept of Safe and Just Earth System Boundaries, proposed by the Earth Commission of which Rockström is one of the Co-Chairs, provides one of the most holistic measurements of Earth's finite limits, and mark a step change in understanding how to protect people and planet. For the first time, safety and justice for humanity on Earth is assessed and quantified for the same control variables regulating life support and Earth stability. Justice, assessed based on avoiding significant harm to people across the world, leads to more stringent Earth system boundaries. More about this key publication can be found in a [PIK press release](#) and on the website of the [Earth Commission](#). More publication highlights by PIK scientists can be found in the selection below.

Over the first half of 2023 has seen a number important events – for instance Johan Rockström spoke at the [Petersberg Climate Dialogue](#) hosted by the German government, which focused on preparation for the COP28 in November. There were a number of visits to PIK including from [Bettina Stark-Watzinger](#), Federal Minister for Education and Research; a high-level [delegation from Pakistan](#); a group of ambassadors from EU countries; and member of the Bundestag Jens Spahn.

**A major conference** and special event took place on the Telegrafenberg campus in March 2023: the [Nonlinear Data Analysis Modeling Conference](#) (NDA23) and celebration of the [70th birthday of Jürgen Kurths](#) attracted around 300 scientists, including many of Jürgen Kurths' past and present collaborators. The conference brought together leading scientists with senior and young researchers who deal with nonlinear dynamics, complex systems, machine learning, and their applications for data analysis and modelling in different disciplines. Various



experts in the field contributed with talks and poster presentations to the conference. The participants discussed new directions in complex systems science and its applications from the view of different disciplines.

A focus issue in the journal Chaos on “Nonlinear dynamics, synchronization and networks: Dedicated to Jürgen Kurths' 70th birthday” is in preparation.





# Publication Highlights

In case you missed them, here are some of PIK's publication highlights of recent months.

## Smart nitrogen management can strongly reduce pollution

A team of international researchers including Benjamin Bodirsky from PIK suggest in their paper, published in *Nature*, key measures to reduce nitrogen losses from crops, while increasing the crop yields' efficiency.

Agriculture has been using more and more industrial nitrogen fertilizers and manure. However, over half of these nitrogen inputs to croplands are currently lost to the environment, contributing to air pollution and its related diseases, water eutrophication, soil acidification, climate change, and biodiversity loss. Thus, nitrogen pollution has become a global challenge and imminent crisis.

[Read more here ...](#)

## Berlin could produce much of its vegetables locally

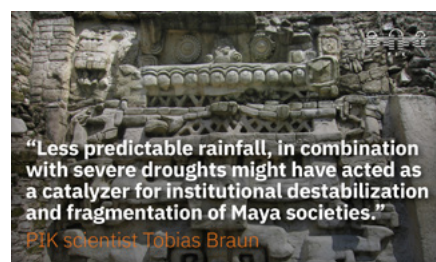
A study by Marion de Simone and members of the Urban Transformations group

published this spring has shown that Berlin could produce a surprisingly large proportion of its vegetable needs. To do this, unused areas would need to be repurposed and turned into urban gardens. This would include flat roofs, allotments, cemetery areas that are no longer in use, or even supermarket parking lots. However, the use of this land is linked to many preconditions.

[Read more here ...](#)

## Less predictable rainfall important for Maya decline

A team of researchers from PIK and Potsdam University discovered that reduced predictability of seasonal rainfall might have played an important role in the disintegration of Classic Maya societies about 1100 years ago.



The research team studied variations in stable isotope signatures from a stalagmite that was collected in a cave near Uxbenka/Belize, an important archaeo-

logical site in the former heartland of the Maya. The carbon and oxygen isotope ratios are sensitive recorders of local and regional rainfall dynamics.

[Read more here ...](#)

## Large-scale nature conservation efforts alone will not preserve benefits for our societies

The enlargement of protected areas and carbon price incentives for reforestation alone will not stop biodiversity decline and the ongoing loss of critical ecosystem functions, if they are not accompanied by measures that also target managed landscapes. A new study published in *Nature Communications*, to which many members of the cross-RD Land Use group contributed, shows that even in scenarios with a high demand for land it is possible to maintain biodiversity-friendly landscapes, which also provide critical services such as pollination and healthy soils. The research demonstrates that land use is not a zero-sum game but that it matters where farmland is located in order to promote landscape diversity. With the right incentives, farmed landscapes could be managed in a way that enhances the numerous benefits nature offers to society and that support the biodiversity conservation targets of protected areas. [Read more here ...](#)

# Workshops around the world

Following removal of the travel restrictions caused by the Corona virus in last couple of years, PIK scientists are again organising and attending more in-person events around the world. Here are reports from a couple of them:

The *B-EPICC* team conducted a 3-day workshop **“Strengthening Resilience against Climate Change”** in May 2023 in Addis Ababa. Ethiopia became a partner country to the B-EPICC project in 2022. The workshop was conceived as a showcase of the project's work with partners in Ethiopia.

In his opening remarks, the German Ambassador to Ethiopia, Mr Stephan Auer, highlighted the importance of international collaboration to strengthen resilience against climate change. The team from PIK, together with in-country partners, introduced its scientific

capabilities and priorities in the areas of monsoon and El Niño forecasting, agriculture, water and hydrology, forests and biodiversity, as well as migration. Capacity building and knowledge transfer activities of the project were also presented, including the web portal *ClimateImpactsOnline*.

The following two days focused on the Risk Assessment report “Assessing

the Evidence” being developed by PIK scientists in collaboration with IOM, and on agriculture. Amongst others, Dr Teferie Demissie from the International Livestock Research Institute (ILRI), AICCRA and NORCE demonstrated the impact of climate change on livestock in East Africa. The workshop was rounded off with a visit to the Debre Zeit Agricultural Research Center (DZARC) in Bishoftu, which is one of the oldest and largest agricultural research systems in



Workshop participants, Addis Ababa, 10th May 2023. © Andrea Kamberg



Africa. On site, the group had the chance to visit the National Tef Research Program. The day provided valuable insights into local research capabilities in agricultural research. More information on the workshop's content and its presentations can be found [here](#).

## CashEval Workshop in Ulaanbaatar

On 20 April 2023 a dissemination workshop entitled "Living with climate risk in Mongolia" took place in Ulaanbaatar, Mongolia. Scientific insights on the vulnerability of herding households to extreme winter events (dzud) in Mongolia were shared with local and international stakeholders. The prime objective of the event was to disseminate output from research projects led by PIK that and focus on adaptation to climate change in Mongolia, including the *CashEval* and *ADAPT* projects. Read more about the workshop [here](#).

## Another cross-sectoral PROCLIAS / ISIMIP workshop

was held in Prague from 5-8 June, filled with plenary and parallel sessions on ISIMIP simulation results, data and protocols for climate impact simulations, IPCC representative key risks and cross-sectoral



Workshop participants, PROCLIAS / ISIMIP workshop, Prague, 5-8 June 2023

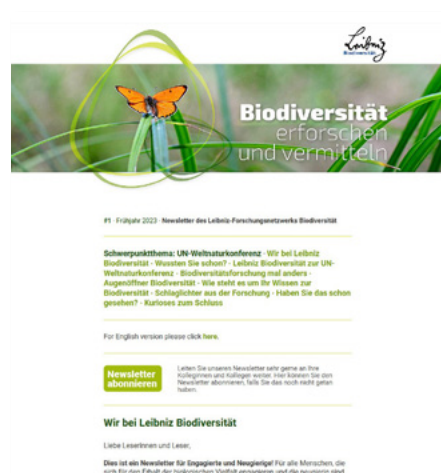
climate impacts. More than 100 on-site participants and almost 200 remote attendees from 14 different time zones contributed to the great success of this event. During this joint activity of the *COST Action PROCLIAS* and the *Inter-sectoral Impact Model Intercomparison Project (ISIMIP)* a huge variety of plenary sessions and parallel meetings took place: ranging from the presentation of ISIMIP3 and PROCLIAS task group updates to discussions on how to properly address representative key risks (IPCC), and from sector kick-off meetings to poster presentations, and

an early career session.

With a large variety of sectoral meetings on for example 'lakes', 'forests', 'water quality' and 'fisheries', the workshop was able to bring together a wide range of researchers including renowned as well as early-career scientists from diverse sectors. You can find the workshop program and available presentations and slides on the [workshop website](#).

The next ISIMIP-PROCLIAS workshop will take place at PIK (Potsdam, Germany) in summer 2024 (dates tbc).

## More news



The *Leibniz Research Network Biodiversity*, which is being coordinated at PIK by Kirsten Thonicke und Eva Rahner, has launched its first newsletter. *Newsletter #1* focuses on the UN Biodiversity Conference, but future issues will cover other research topics and activities from the 18 Leibniz Biodiversity partners as well. New subscribers are welcome!

PIK has begun a collaboration with the *Career Center Telegrafenberg*. The centre, which aims at providing career guidance particularly for scientists at the postdoc stage, was founded a few years ago at our neighbouring institute GFZ. Since the start of 2023 the services offered by the Career Center are also available to

postdocs from PIK. They include career counselling, academic career talks, and informal coffee chats (via zoom) with former Telegrafenberg scientists working outside science in different branches. Alumni both of GFZ and of PIK will be approached to pass on their experiences to younger colleagues.



# Congratulations to ...

**Ottmar Edenhofer** was recently appointed a member of the *Berlin-Brandenburg Academy of Sciences and Humanities* (BBAW). The BBAW — formerly the Prussian Academy of Sciences with a history stretching back more than 300 years — unites outstanding scholars and scientists in Berlin and Brandenburg in supporting the sciences and promoting dialogue between science and society.

**Kati Krähnert** was appointed Professor of Climate Change and Development at the Faculty of Economics at Ruhr University Bochum in a joint appointment with RWI - Leibniz Institute for Economic Research. She took up the post at the beginning of the year, while continuing as co-lead of the PIK FutureLab Inequality, Human Wellbeing and Development.

**Alexander Popp** - who leads the Land Use Management working group in research department Sustainable Solutions - was recently appointed Professor for Sustainable Land Use and Climate Protection at the Department of Ecological Agricultural Sciences at Kassel University.

**Fred Hattermann** of the PIK hydrology group has been appointed an Honorary Professor at Eberswalde University for Sustainable Development (HNEE) for the discipline Climate Change and Hydrology.

**Nico Wunderling**, postdoc in research department Earth System Analysis, was awarded the Friedrich Hirzebruch Doctoral Prize of the German Academic Scholarship Foundation (Studienstiftung) for his outstanding dissertation “Nonlinear dynamics and interactions of tipping elements in the Earth system.”

**Johan Rockström** was named by TIME in its annual list of the *100 most influential people in the world*. Rockström said: “I’m very honoured to be part of the Time100 list. This is a confirmation of the importance and global reach of our research at the Potsdam Institute for Climate Impact Research.

## PIK's Alumni programme



Please keep us up to date: Send an update to [alumni@pik-potsdam.de](mailto:alumni@pik-potsdam.de) if you have changed your job or want to update your details in our Alumni database. We'd also welcome news about your recent publications, personal achievements, or research activities. Best wishes to all! **Alison Schlums**, Alumni Officer

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### IMPRESSUM

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### NEWSLETTER

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PIK Alumni website: [www.pik-potsdam.de/en/people/alumni](http://www.pik-potsdam.de/en/people/alumni)

### KEEP US UPDATED

If you have moved to a new job or your contact details have changed, please let us know by sending an email to [alumni@pik-potsdam.de](mailto:alumni@pik-potsdam.de).

### DATA PROTECTION STATEMENT

We use your data to keep in touch with you as Alumni, to provide you with occasional news about the Potsdam Institute and its activities, and to send targeted information

about scientific and other events. PIK's full [privacy policy](#) can be found on the PIK website (Section 7.2. relates to Alumni). If you have any concerns or queries about the use of your personal data, please contact us.

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